CAL POLY MASTER PLAN AND EIR

March 21, 2001

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The Master Plan Team Would Also Like to Acknowledge the Contributions of the Following:

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Landscape Advisory Committee
Biological Sciences Advisory Committee
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Associated Students, Inc.
Student and Faculty projects in all academic colleges

Campus/Community Task Force members

City of San Luis Obispo
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Cuesta Community College
San Luis Obispo Council of Governments

The Master Plan team would like to thank the Department of Landscape Architecture and the Department of Natural Resources Management for their contributions to the Geographic Information System database and analysis for Cal Poly lands.
EXECUTIVE SUMMARY

Cal Poly

California Polytechnic State University, founded in 1901, is a predominately undergraduate, teaching university specializing in applied technical and professional fields. With its unique tradition of “learn-by-doing” education, Cal Poly students receive both theoretical knowledge in the classroom and practical experience in laboratories and fields, ensuring that graduates are prepared for careers in the 21st century.

About 70 percent of Cal Poly’s students major in engineering, agriculture, business, architecture or related fields. Programs in the liberal arts, science and mathematics, and teacher-education build on the University’s polytechnic character. More than 90 percent are undergraduates; the rest are in master’s degree or teaching credential programs.

The campus occupies over 6,000 acres in San Luis Obispo County and 3,200 acres in Santa Cruz County. These lands provide hands-on opportunities for students, especially those studying agriculture, biological sciences, architecture, and engineering, to apply their classroom knowledge to real-life situations.

Cal Poly, with its national reputation for excellence and its desirable location on the Central Coast, receives many more student applications than can be accommodated. The University is only able to enroll about one in five undergraduate applicants.

In Fall 1999, the average GPA and SAT scores for incoming freshmen were 3.64 and 1162.

Regional location map for Cal Poly holdings within San Luis Obispo County
Cal Poly is regularly included in “best colleges” lists. In its past eight surveys, U.S. News and World Report has ranked Cal Poly as the top public undergraduate university in the western United States. The magazine rates the College of Engineering’s Computer Science Department as the best in the country.

Master Plan Background

Cal Poly’s new Master Plan provides principles and guidelines for the physical development of Cal Poly so that the University can sustain its distinctive mission as a polytechnic university into the 21st century. The Plan is designed to meet the educational needs of the campus, respond to the growing demand for higher education - particularly in scientific and technical fields - and address the role of the University as a member of its larger community.

The architectural firm of Allison and Rible prepared the first formal Master Plan for Cal Poly in 1949, based on a projected enrollment of 4,080. In 1958 the California Department of Education dictated that all non-metropolitan state college campuses plan for an enrollment of 12,000 Full-Time Equivalent Students (FTES). This led to the next Master Plan, prepared by the architectural firm of Falk and Booth in 1962, and approved by the California State University Board of Trustees in May 1963. In 1970, the 4th revision to this Master Plan increased the enrollment capacity to 15,000 FTES. Subsequent revisions to add or change building sites resulted from piecemeal planning for new projects - thus, a major review was long overdue.

The projected increase in college-bound students in California referred to as ‘Tidal Wave II’ expands the need for higher education. The high...
demand for a Cal Poly education, particularly in programs not generally available at other public universities in California, brings that pressure to San Luis Obispo. The existing investment in specialized programs, the number and quality of applications, and the economic and societal contributions of graduates all contribute to the perception of Cal Poly as a candidate for growth.

This Master Plan update represents the culmination of a four-year planning process at Cal Poly. The process began with academic strategic planning in the 1997-1998 academic year; involved campus and community task forces in identifying issues during 1998-1999; and invited public comment on a Preliminary Draft in the spring of 2000 and on the Master Plan and Draft Environmental Impact Report in fall 2000. The concluding step will be submission of the Master Plan and Final Environmental Impact Report for approval by the California State University Board of Trustees.

Master Plan Summary

As guidance for approximately the next 20 years, the Master Plan addresses academic program demand, physical and environmental constraints and opportunities, and capital and operating budget requirements to support a future enrollment of 17,500 net academic year and 2,500 summer full-time equivalent students (FTES). The Plan also anticipates a modest increase in technology-supported instruction and enhancements to curricula and advising to accelerate student progress to degree completion. Together these operational changes designed to increase summer enrollment, apply technology and facilitate student progress are expected to increase college year enrollment by about 9 percent without increasing fall headcount.

The physical development portion of the Master Plan focuses on land use and circulation issues associated with increasing enrollment during the academic year, as this scenario involves the most extensive change on campus. Enrollment growth projections translate into a Fall headcount of approximately 20,900 students and about 3,200 regular faculty and staff - an increase of about 17 percent over present capacity - to be accomplished in phases over approximately 20 years. Because demographers expect the demand for higher education to increase rapidly through about 2010, the earlier phases of the Master Plan may need to accommodate more enrollment than later phases.
EXHIBIT i
San Luis Obispo Creek Watershed

LEGEND

- Red: Campus Instructional Core
- Yellow: Residential Communities
- Blue: Public Facilities and Utilities
- Pale Pink: Areas Suitable for Ancillary Activities and Facilities
- Purple: CDF Lease Property
- Orange: Parking (surface & structure)
- Pale Blue: Remote Parking Options
- Light Green: Outdoor Teaching and Learning
  Includes:
  - Recreation, Athletics and Physical Education
  - Natural Environment
  - Preserves
-existing Agriculture Facilities
- Outdoor Teaching and Learning
- Roadways

Environmentally Sensitive Areas
- Biologically Sensitive Areas
- Preserves (Biological, Archeological)
- Significant Riparian Areas
- Reservoirs
- Streams

Not To Scale
The Master Plan redevelops and consolidates academic facilities within an expanded instructional core south of Brizzolara Creek. At the same time, the Plan is designed to protect natural environmental features and prime agricultural lands that form the character of the campus. A central feature of the plan involves creating new student residential communities accommodating approximately 3,000 additional students and provision of faculty and staff housing. Student services and recreational facilities will be expanded commensurate with increased enrollment. Although parking will increase over existing numbers, the ratio of parking to students is planned to decrease during the planning period.

University Land Uses

The Master Plan takes a broad approach to the analysis of the most suitable future use of all Cal Poly’s lands in San Luis Obispo County, including management practices to protect the University’s unique natural environment. The Master Plan team has applied principles from campus and community task forces that met during Spring 1999 to designate future land uses and develop the following physical plan elements.

Natural Environment

Environmentally sensitive areas and assets are designated as an overlay, determined by physical and biological features of the land. Principles focus on stewardship, protection, enhancement and sustainability.

Outdoor Teaching and Learning

“Living laboratories” (e.g., agricultural fields and units, ecological study areas, and design village) are central to Cal Poly’s mission and must remain integrated with the campus.

Campus Instructional Core

Additional enrollment requires about 250,000 s.f. of new instructional space in the campus core. Principles focus on creating a compact, “student-friendly, learner-centered” area with more open space and better pedestrian and bicycle circulation, and which is energy and resource-efficient.
Executive Summary

Residential Communities
New student housing complexes are conceived as living/learning communities, directly accessible to the campus instructional core. New undergraduate student housing for 3,000 students on campus will reduce community impacts of enrollment growth.

Recreation
Flexible outdoor recreational fields and indoor facilities will serve the changing student population.

Circulation, Alternative Transportation, and Parking
Circulation systems both provide access to the campus and movement within it. The Master Plan encourages alternative forms of transportation to reduce congestion and parking. Internal circulation focuses on “user-friendly” pedestrian access and increasing vehicle access efficiency. Parking ratios are decreased.

Public Facilities and Utilities
Essential support facilities can be located outside the campus instructional core unless they require a central location to function effectively. The Master Plan encourages a responsible approach to resource and energy use in planning and design.

Support Activities and Services
A wide array of academic and support activities must be available to serve Cal Poly’s diverse student, faculty, staff and visitor populations - in both the instructional core and new residential communities.
Ancillary Activities and Facilities

A number of activities that serve the broader community as well as Cal Poly are complementary to the University’s instructional mission. However, not all of these facilities need to be provided within the campus instructional core.

Key Modifications in Master Plan and Draft EIR published in October 2000

The University circulated the Master Plan and Draft Environmental Impact Report for review and comment from October 10 through December 8, 2000. Nearly sixty individuals and organizations offered comments and suggestions. Many of them are included as editorial changes; others are discussed in the formal response to the EIR as required by the California Environmental Quality Act. In some instances, the Master Plan Team made significant additions to the Plan - these are summarized below, and noted in the margins of the appropriate pages.

• The current approved Master Plan map and a technical map showing the proposed new Master Plan have been added.
• The Introduction adds a section describing the organization of the document.
• The Existing Conditions chapter provides more detail about environmental constraints and opportunities on portions of Cheda Ranch. It also contains a revised analysis of soil conditions using the Natural Resources Conservation Service (NRCS) Capability Classification system rather than the Storie Index.
• The University Land Use element now includes a section on Building and Landscape Design Guidelines.
• The Outdoor Teaching and Learning element includes further discussion of the importance of protecting these lands for instruction and applied research.
• The Residential Communities element contains new sections providing more information on housing conditions in the San Luis Obispo area and expanding on Cal Poly’s commitment to student housing.
• The Public Facilities and Utilities element addresses Sustainable Campus Planning and Design.
• The Alternative Transportation element clarifies campus support for encouraging students, faculty and staff to place less dependence on the private automobile.

A summary of changes drawn from comments on the Master Plan and Draft Environmental Impact Report has been added.
• The Parking element shows the net change in parking supply and demand and how reductions in parking demand may be achieved.

• The Support Activities and Services element addresses Commercial Retail Services in more detail.

• The Ancillary Activities and Facilities element defines likely future activities more clearly.

• The Implementation chapter contains new sections on Land Use and Project Review Procedures and Master Plan Monitoring and Review. It also has an expanded list of implementation studies to be completed.

• The Master Plan and Final EIR become Volume I, and the Comments and Responses to the EIR become Volume II.

Environmental Impact Summary

The development of the Master Plan occurred in the context of campus environmental constraints and opportunities. Environmental planners were part of the Master Plan Team from the outset and provided guidance that influenced the location and approach to all of the Master Plan components. This process allowed the team to evaluate a number of alternatives and choose, in most instances, the environmentally superior approach prior to inclusion in the Plan. Throughout the text of the Master Plan marginal notes indicate these choices.

Chapter 6 of the Plan is the draft Environmental Impact Report required by the California Environmental Quality Act (CEQA). It describes in detail the environmental consequences of the Plan and mitigation measures to reduce the severity of the impact. Table 6.1 summarizes impacts and mitigation measures.

Additional information regarding the Master Plan process is available at the following web site:

www.facilities.calpoly.edu/Facilities_Planning/FPDB/mp/

This website is also linked directly from:

www.campusprojects.calpoly.edu
**Key Master Plan Elements**

A  Centennial Green
B  University Union Plaza
C  Northeast Green
D  Northwest Green
E  Alumni Center/Retreat
F  New Residence Apartments
G  Engineering East Redevelopment
H  South Perimeter Pedestrian Way
I  North Perimeter Pedestrian Way
J  North Mountain Residence
K  New Residence Halls
L  Brizzolara Creek Enhancement Project
M  New Residence Apartments
N  New Residence Apartments
O  California Boulevard Extension
P  New Sports Complex
Q  Residence Apartments (Underway)
R  Highland Drive Entrance
S  New Corporation Yard and Farm Shop
T  Rodeo
U  New Highland Drive Alignment
V  Feed Mill
W  Crops Unit
X  Agriculture Pavilion
Y  Child Care Center Addition
Z  Visitor Center
AA  Student Research Facilities
BB  Athletic Field House
CC  Engineering 3
DD  Engineering 3 Addition
EE  Architecture 2
FF  Science Center
PS1  Parking Structure 1
PS2  Parking Structure 2
PS3  Parking Structure 3

**Existing Key Buildings**

01  Administration
03  Business and Education
06  Performing Arts Center
11  Agricultural Sciences
18  Dairy Science
32  Equine Unit
34  Dexter Building
35  Kennedy Library
42  Mott Gymnasium
43  Recreation Center
48  Environmental Horticulture
60  Crandall Gymnasium
61  Mustang Stadium
65  University Union
105-110  Red Brick Residential Halls
112  Vista Grande
113  Sierra Madre Hall
114  Yosemite Hall
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<td>2. Education</td>
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<td>5. Development Center</td>
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<td>45A. &lt;Davidson Music Center Addition&gt;</td>
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<td>48. Environmental Science</td>
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<td>11. Business</td>
<td>49. President's Residence</td>
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IMPLEMENTATION

None
INTRODUCTION

Who are we and why are we doing the Master Plan update?
How did we get here?
How did we put this document together?
**PLAN PURPOSE**

**Master Plan Statement**

The review of Cal Poly’s Master Plan is a process that both reveals and prepares. Demanding candid self-examination, the review compels the University to reveal its values and its defining characteristics. The process also challenges us to consider how Cal Poly’s mission and identity have prepared the University to meet the needs of an increasingly complex workplace and pluralistic society. Thus, a successful planning effort is simultaneously both retrospective and future-focused for it underscores the connections between what we have achieved and what we are, and what we seek to become. Whether examining the historical record or considering the University’s next century, we must ensure that our sense of mission is clear and compelling both for those within the University and for our several external constituencies. Such clarity is essential to developing a sense of shared purpose, promoting institutional community, and gaining the resources to support our high standards and aspirations.

**Vision, Values, Identity**

Cal Poly’s vision and values focus on our identity as a predominantly undergraduate, largely residential, public, polytechnic university that measures its worth and success primarily in terms of academic excellence, student learning and service to the State of California.

Student learning and service connect through an educational approach captured in the phrase “learn by doing.” More than a slogan, “learn by doing” is a guide to educating students to do what they study, to apply the principles that they learn, to act on their ideas in a world that requires action to solve problems and advance society, and to reflect on the consequences of their actions. The very development of this new Master Plan affords the University an opportunity to apply its learning philosophy to itself. Student projects, campus participation in task forces, the Provost’s seminar, and seminars celebrating Cal Poly’s centennial year all have engaged the campus community in formulating the Master Plan.

Cal Poly promotes a healthy dialogue between its polytechnic programs and the liberal arts and sciences. The University aims to enable its students “to see life whole,” to gain an appreciation not only for the basic knowledge and aptitudes that the liberal arts and sciences develop,
but also for their social, ethical and environmental dimensions, that is, the habits of heart and mind that contribute to the development of a well-informed and responsible citizenry.

The distinctly residential character of the University underscores an institutional obligation to promote learning and service beyond the formal settings of instruction through student clubs and organizations, the performing arts, athletics, internship and co-op programs, and community service. These activities enrich the lives of our students, enliven the campus, foster a culture of connected learning, and encourage civil engagement.

The University recognizes the relationship between the physical spaces where student learning and life occur and the spirit of learning. Both built and natural environments should complement each other and foster the educational goals of the University. The University’s commitment to the education of the whole person requires that our campus facilities and spaces support the social and physical developmental needs of our students in addition to their intellectual growth.

As a public university, Cal Poly recognizes its special obligations to serve public interests and gain public trust. The quality of our graduates and the integrity of our mission are the strongest ways with which we fulfill this obligation. The University recognizes the responsibilities of its mission and statewide service mandate to grow enrollments particularly in those polytechnic and professional areas that are not broadly available in the State.
As a highly selective University with a strong national reputation, Cal Poly acknowledges the exemplary obligation of leadership and seeks to participate in and shape the critical conversations regarding higher education in the State and nation.

**Characteristics of the Cal Poly Mission**

*Cal Poly Mission Statement*
(adopted as part of the University’s Strategic Plan, as amended through 1995)

As a predominantly undergraduate, comprehensive, polytechnic university serving California, the mission of Cal Poly is to discover, integrate, articulate, and apply knowledge. This it does by emphasizing teaching; engaging in research; participating in the various communities, local, state, national, and international, with which it pursues common interests; and where appropriate, providing students with the unique experience of direct involvement with the actual challenges of their disciplines in the United States and abroad.

Cal Poly is dedicated to complete respect for human rights and the development of the full potential of each of its individual members. Cal Poly is committed to providing an environment where all share in the common responsibility to safeguard each other’s rights, encourage a mutual concern for individual growth and appreciate the benefits of a diverse campus community.

**Mission**
- Polytechnic
- “Learn by doing”
- Primarily undergraduate
- Student-centered community
- State-of-the-art education (programs, practice, pedagogy and services)
- Social and intellectual diversity
- Statewide service area
- Technological currency

“Learn By Doing”

Applied research project
Key Institutional Characteristics

- Public
- Selective admissions
- Residential campus
- Major at entrance
- National reputation

Aspiration

- Model for public higher education

Values

The following set of values can be applied to academic, budget, human resource, information technology and physical planning and development.

1. A student-centered, learner-directed culture, where teaching and learning resources systematically foster active learning.

2. A flexible institution that can sustain its unique polytechnic character and “learn-by-doing” tradition as well as anticipate and adapt to changes in the 21st century environment.

3. A confident community where all campus constituents work together to create the future.

4. A supportive environment that is physically comfortable and attractive, personally safe, culturally diverse, and intellectually stimulating.

5. A socially responsible university that meets public needs (e.g., access, affordability, diversity, community and State needs).

6. An environmentally responsible campus that demonstrates high regard for biodiversity as well as energy and resource conservation and long-term sustainability.

7. An effectively managed organization that values quality and responsiveness in instruction, service, and support activities.
**PLANNING PROCESS**

**Integration of the Plan and CEQA**

At the outset, the University chose to integrate environmental analysis into the development of the Master Plan. During the development of the Master Plan, analysis of environmental constraints and opportunities informed the plan-making process. Resulting findings guided and, to some extent, limited the alternatives considered under the Master Plan. For example, prime agricultural lands were identified early in the planning process so that no development would be proposed in those areas.

Land use, housing and transportation policies were designed to reduce the likelihood of impacts from the many proposals considered. Recent experience with other campus projects, as well as input from Master Plan Task Forces, reminded the Master Plan team of sensitivities in adjoining neighborhoods.

**Program Environmental Impact Report (EIR)**

The EIR is set forth in Chapter 6 of the Master Plan. The EIR is a “program” document, as compared to a “project-specific” document, and focuses on identifying and mitigating broad impacts associated with the implementation of the Master Plan rather than detailing the impacts of each Plan component.

Mitigation for impacts in this EIR is also more general; measures either provide standard operating procedures (such as for construction) or they aim to guide future planning. The implementation of mitigation measures will be monitored under CEQA. The mitigation monitoring plan is attached as Appendix E.

**Implementation, Monitoring, and Review of the Master Plan**

Following adoption of the Master Plan, Cal Poly will engage in a series of implementation studies (specified in Chapter 7). As projects are planned and built, they will be reviewed and monitored for compliance with the environmental mitigation requirements as well as with meeting plan expectations to reinforce the academic quality of the University. The Campus Planning Committee will review the Master Plan annually so as to advise the campus whether conditions have changed sufficiently to warrant a major update.
Master Plan Calendar

College Year 1997-98

Task
- Unit strategic plans, building on University strategic plan, Cal Poly Plan, and disciplinary environmental scans – COMPLETED

  Responsible Group: Colleges, divisions

College Year 1998-99

Summer

Task
- Draft discussion paper; prepare draft process; identify Master Plan format; clarify interim process and pending projects; identify stakeholders – COMPLETED

  Responsible Group: Master Plan team (Administrative staff with consultants)

- Review draft process and identify initial issues – COMPLETED

  Responsible Group: Campus Planning Committee

- Prepare talking points for public discussion (President Baker, others) – COMPLETED

  Responsible Group: Master Plan team

- Meet with campus and community leaders to discuss process and issues – COMPLETED

  Responsible Group: Campus Representatives (President Baker with key community leaders)

Fall

Task
- Establish Web site; assemble data, including additional needs; establish scope of Master Plan – COMPLETED

  Responsible Group: Master Plan team

- Synthesize issues to be addressed by planning process and refine scope; identify task force topics; identify opportunities for faculty and student involvement – COMPLETED

  Responsible Group: Master Plan team
Fall-Winter

Task
• Brief campus groups, including deans, college councils, ASI, Senate Budget and Long-Range Planning Committee regarding process – COMPLETED
  Responsible Group: Master Plan team

• Develop and review alternative enrollment scenarios – COMPLETED
  Responsible Group: Deans’ Enrollment Planning Advisory Committee

Winter

Task
• Hold public meetings on and off campus – COMPLETED
  Responsible Group: Master Plan team

• Confirm task forces and charges – COMPLETED
  Responsible Group: Campus Planning Committee

Spring

Task
• Recommend principles to guide development of Master Plan – COMPLETED
  Responsible Group: Campus/community task forces

College Year 1999-2000

Summer

Task
• Translate enrollment analysis into initial facility requirements; begin analysis of physical planning elements and their inter-relationships, including initial environmental analysis for Master Plan – COMPLETED
  Responsible Group: Master Plan team, with advice from Campus/community task forces

Summer-Fall

Task
• Discuss policy issues and preliminary Master Plan concepts – COMPLETED
  Responsible Group: President and vice presidents
**Fall**

**Task**
- Conduct follow-up analysis - COMPLETED
  
  *Responsible Group: Master Plan team*

**Fall-Winter**

**Task**
- Brief campus groups - e.g., Campus Planning Committee, Strategic Management Group, University Planning and Budget Advisory Committee, Senate Budget and Long-Range Planning committee, College councils, CAGR Land Use Committee, Biological Sciences Advisory Committee, ASI, Foundation, and faculty and students involved with class projects - COMPLETED
  
  *Responsible Group: Master Plan team*
- Develop preliminary draft, including physical planning alternatives (for main campus and ranches in San Luis Obispo County) - COMPLETED
  
  *Responsible Group: Master Plan team*

**Spring**

**Task**
- Review preliminary draft, including physical planning alternatives - COMPLETED
  
  *Responsible Group: Campus/community task forces; City and County representatives*
- Coordinate review of preliminary Draft Master Plan and Initial Environmental Study by campus and community. - COMPLETED
  
  *Responsible Group: Master Plan team, Facilitator*

**College Year 2000-01**

**Summer**

**Task**
- Develop Draft Environmental Impact Report, including environmental mitigation measures - COMPLETED
  
  *Responsible Group: Master Plan team, informed by review of Draft Master Plan and Initial Study*
**Fall**

**Task**
- Coordinate review of Draft EIR on and off campus - COMPLETED
  
  **Responsible Group:** Master Plan team

**Winter**

**Task**
- Final review and adoption of Master Plan on campus - PENDING
  
  **Responsible Group:** Campus Planning Committee; Strategic Management Group

**Spring**

**Task**
- Submit Master Plan to Board of Trustees for approval - PENDING
  
  **Responsible Group:** President Baker, Master Plan team

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**CAL POLY MASTER PLAN UPDATE PROCESS**

![CAL POLY MASTER PLAN UPDATE PROCESS Diagram](image-url)
ORGANIZATION OF THE MASTER PLAN

Volume I

Volume I of the Cal Poly Master Plan presents the guiding framework, enrollment assumptions, and development suitability analysis upon which a series of physical plan proposals are built. In addition, it contains the environmental impact analysis for the plan and a chapter on implementation.

Introduction

The Introduction explains how the plan is based in the University’s academic mission, the planning process, and the organization of the document. The Plan presents the Planning Process in some detail, as it is important to document the kinds of analysis, public involvement and deliberations involved in creating the Plan.

Chapter 2

Chapter 2, Guiding Framework, summarizes the context and challenges we face in creating the Master Plan. In addition, it sets the general direction or approach the Plan takes in addressing key challenges. These comprise the goals of the Master Plan. Further, the document indicates how the campus and community has advised Cal Poly in making critical decisions about the direction of Plan.

Chapter 3

The chapter on Long-Range Enrollment Scenarios (Chapter 3) establishes the options the University has considered regarding future growth. Based on work from the Deans’ Enrollment Planning Advisory Committee, it both provides numerical projections and an analysis of which academic programs might grow in the future.

Chapter 4

Next, the Existing Conditions chapter (4) presents a summary of the geographic and environmental characteristics of Cal Poly’s lands in San Luis Obispo County. This analysis provides the basis for assessing physical constraints and opportunities, identifying areas that are suitable for future development.
Chapter 5
Chapter 5, Physical Plan Elements, presents the land use, housing and transportation proposals that stem from the guiding framework, enrollment scenarios and development suitability analysis in chapters 2, 3 and 4. The Master Plan team organized the physical portion of the plan using the concept of plan elements. This terminology follows the convention established by the State of California for preparing community plans. However, it differs in identifying a particular set of elements pertinent to Cal Poly. It includes a Support Activities and Services element to ensure that the physical plan addresses locational issues associated with providing such services. Each physical plan element provides information on Background and Issues, a set of Principles that apply to that element, and then a discussion of Plan Components that represent the actions the University is proposing to fulfill the goals of the Master Plan.

Chapter 6
Next, Chapter 6 constitutes the Environmental Impact Report for the Master Plan. While each physical plan element includes a brief summary of Environmental Consequences in Chapter 5, Chapter 6 includes all information required to comply with the California Environmental Quality Act (CEQA). The comments on the October 10, 2000 publication of the Master Plan and Draft Environmental Impact Report and responses to them are contained in Volume II.

Chapter 7
Finally, the Implementation chapter (7) describes the next steps in achieving the Master Plan. It includes a discussion of Phasing, identifies additional studies necessary to achieve the Plan, and establishes future Communication and Consultation practices to guide both the implementation of the Master Plan. This chapter also provides for monitoring of plan implementation and for future review and revision of the Plan to ensure that it meets expectations and remains current in meeting University needs.
What challenges do we face as we develop this plan?
How have we used advice from the campus and community to make the Master Plan?
CONTEXT AND CHALLENGES

Context

Cal Poly’s Long-Range Enrollment Plan and Master Plan Update emerge from the following context:

• Cal Poly mission and statewide charter from Title V, emphasizing academic excellence in polytechnic curricula and applied “learn-by-doing” instruction.

• Student learning outcomes developed in the “Commitment to Visionary Pragmatism” report as the desired characteristics of a Cal Poly graduate.

  http://www.calpoly.edu/~communic/univ/visionary.html

• Responsibility to the State of California as a member of the California State University system with a unique role.

• Contribution as a member of the community in the Central Coast of California.

Several reports and resolutions published in the past 15 years contributed to the guiding framework for the Master Plan Update:

• The Academic Senate Long-Range Planning Committee report (1988) discussed possible growth to 17,400 FTES with proper planning. The Academic Senate adopted an additional resolution on “Principles to Govern Enrollment Growth at Cal Poly” in May 1999 and two additional resolutions in June 2000: “Resolution on the Growth Component of the Proposed Master Plan Revision,” and “Operational Measures to Monitor and Maintain Academic Quality in the Face of Potential Enrollment Growth.”

  http://www.calpoly.edu/~acadsen/

• The University Strategic Plan (1990-1994, amended through 1995) includes the concept that institutional size should be commensurate with planning, resources, and impacts.

  http://www.calpoly.edu/~communic/univ/stratplan.html

• The Land Use Diagram (1993) identified possible future sites for campus core expansion, outdoor agricultural labs, and recreational facilities.

• The Cal Poly Plan (1996) emphasized modest growth during the academic year and significant expansion of Summer Quarter, and
established principles for balanced development of the University focusing on educational quality, student learning and progress, institutional productivity, assessment and accountability.

http://www.calpoly.edu/~inststdy/cp_plan/index.html

- College and unit strategic plans (1997-98) identified academic and other programmatic factors critical to the future of the University.


http://www.president.calpoly.edu/articles/outlook4.98.html

- The campus self-study for the Western Association of Schools and Colleges (WASC) accreditation review (1999-2000) underscored the importance of the intellectual, social, and physical environments to Cal Poly as a “Center for Learning.”

http://wasc.calpoly.edu/innovative/innovative.html

- Ten campus and community task forces met during Spring 1999 and recommended over 500 principles to guide the Master Plan Update.

http://www.facilities.calpoly.edu/Facilities_Planning/FPDB/mp/task_forces.htm

Challenges and Directions

Within this context, the Long-Range Enrollment Plan and Master Plan Update seeks to address the following questions. Statements in *italics* indicate the general approach being applied to address each challenge.

**Question 1**

Given Cal Poly’s mission and commitment to academic quality as well as an increasing demand for higher education in California, how can the University educate more students, with or without increasing the physical capacity of the campus?

a. **Student Progress - Develop advising, streamline curriculum development, etc. per Cal Poly Plan, WASC self-study, and Advising Task Force to facilitate progress to degree completion.**

b. **Distributed Teaching and Learning - Increase off-site and technology-mediated instruction to enhance student learning.**
c. **Year-Round Operations (YRO), particularly expansion of Summer quarter**
   - Increase Summer enrollment to 40 percent of Academic Year Full-time Equivalent Student (AY FTES) level.

d. **Increase Academic Year Full-Time Equivalent Students (AY FTES)** - Increase campus instructional capacity to a level that can be supported by an on-campus residential learning community for all new undergraduate enrollment. Analysis of land potentially suitable for on-campus housing capacity indicates that Cal Poly may be able to house an additional 3,000 undergraduates, which translates to an increase in instructional capacity to about 17,500 net AY FTES.

**Question 2**

Given Cal Poly’s mission and the need for academic programs not broadly available in the State of California, *what should be the future composition of academic programs and student enrollments?*

e. **Expand curricula and student enrollment in strategic academic programs, particularly biotechnology, engineering, and other advanced technology programs.** [See more detailed discussion in Chapter 3, under Academic Plan for Enrollment Growth.]

**Question 3**

Given Cal Poly’s setting on the Central Coast of California, *how can the University balance external pressures for enrollment growth with the character and resource capacity of the surrounding communities?*

f. **Make the Master Plan self-mitigating with respect to major environmental and community impacts.** For example:

- Providing housing on campus for new undergraduate enrollment growth will help to avoid additional housing and traffic impacts on the community of San Luis Obispo.

- Encouraging students, faculty and staff to shift away from automobiles toward alternative transportation systems will reduce traffic congestion, improve air quality and limit the need to supply parking.

- Planning future campus facilities and support services so as to minimize and mitigate environmental impacts on and off campus to the full extent feasible as part of project design.

**Question 4**

Given Cal Poly’s mission, academic programs and land holdings, *how*
can the University create and enhance its natural and built environment and provide technological support for both indoor and outdoor facilities that meet student learning needs and faculty and staff needs for scholarly and professional development?

g. Land use - overall direction

- Define and designate land uses consistent with University mission: environmental assets (as an overlay), instructional core and support, outdoor teaching and learning, student residential community, recreation, parking, and ancillary activities. Such designations will be used for all lands on the main campus, San Luis Obispo Creek Watershed ranches and Chorro Creek Watershed ranches in San Luis Obispo County.

- Apply six basic principles to land use planning: balance among land uses that serve the University’s academic mission, environmental suitability and sustainability, compatibility between adjacent uses, proximity among related uses, compactness in the instructional core, and community-building.

- Acknowledge that active learning can and should happen anywhere. To accomplish this, develop Design Guidelines that stress flexible facilities that provide space for interactions among faculty, students and staff, enable the use of different pedagogical styles, and are supported by state-of-the-art technology.

**Question 5**

Given Cal Poly’s predominantly undergraduate, residential character, how can the University provide facilities and services that integrate diverse student needs for physical and social development with intellectual development?

h. Establish a natural and built environment that reflects the way that students are expected to learn in the 21st century. This implies full access to information technology as well as opportunities for collaborative and active learning, teamwork, leadership development, and working with diverse populations, consistent with the desired characteristics of a Cal Poly graduate.

i. Provide for a full range of academic and student services in support of expanded instructional facilities and new residential learning communities. This implies programming for curriculum, advising, recreation, social, and other student services and auxiliary services, concurrent with physical Master Plan development and phasing.
Question 6
Given Cal Poly’s mission, character, and physical setting, how can the University create and enhance a visual image through the Master Plan that reflects the University’s identity - that is, through land use patterns, and the form of structures and spaces?

j. Reinforce a “student-friendly/learner-centered” physical environment that reflects Cal Poly’s core academic programs and pedagogy. Design and landscape guidelines will supplement the Master Plan to provide detailed guidance regarding such design issues as way-finding, architectural vocabulary, open space-systems, and sense of place and purpose. Support and auxiliary services will reinforce this image and follow the design guidelines.

Question 7
Given academic program needs and limited operating budgets and capital resources, how can Cal Poly redevelop selected areas within the instructional core and expand academic and support facilities so as to avoid disruption of existing academic activities?

k. Sequence redevelopment and new development to take advantage of available land first. Then, phase so as to relocate activities to make additional land available concurrently for residential development and new instructional facilities.

l. To the extent feasible, schedule each phase to include a balance of instructional and support facilities, student housing, and parking, subject to analysis as to the timing and feasibility of obtaining funds, incurring debt and/or establishing partnerships to finance facilities.

m. Explore innovative project financing and delivery options such as public-private partnerships, Foundation support, enterprise partnerships and “design-build” project development.

Question 8
Given Cal Poly’s context and role in its community, what processes should the University adopt and implement to communicate with the campus and broader community regarding planning and project development issues?

n. Recognize that the University belongs both to the community of higher education and to its local community, sharing the same regional environment with many neighbors. To this end, the University will broaden its communication and consultation both on and off campus with respect to campus planning issues.
The Master Plan Task Forces reconvened in March 2000 and provided comments that helped to refine the Preliminary Draft of the Master Plan.

Approximately 50 individuals and organizations suggested additions and modifications to the Preliminary Draft. The Master Plan team was able to accommodate many of them in preparing the October 10 publication. Key changes that resulted from campus and community input included the following:

- Relocation of student housing further away from Brizzolara Creek;
- Establishment of a Brizzolara Creek enhancement area;
- Incorporation of findings from University Union planning process;
- Refinement of circulation, alternative transportation and parking proposals;
- Identification of key impacts of concern to neighbors.

Then, about 60 individuals and organizations commented on the Master Plan and Draft Environmental Impact Report issued on October 10. Again, the Master Plan incorporated most of the suggestions for strengthening the Plan and environmental impact analysis. Comments on the Master Plan and Draft EIR contributed to the following additions:

- Revision of the soils analysis;
- Reinforcement of the importance of Outdoor Teaching and Learning lands to the University’s mission;
- Elaboration on the local housing market and Cal Poly’s commitment to student housing;
- Specification of sustainable campus planning and design expectations;
- Clarification of support for parking reduction and alternative transportation policies and incentives;
- Addition of a section on master plan monitoring and review.

The resulting reports contained over 500 recommendations, many of which were very specific. Further, a number of the task forces included detailed examples to illustrate their recommendations. The professional planning team kept the complete list of recommendations as a reference, and published the task force reports on the Master Plan Web site. Then, the team consolidated the task force recommendations into a set of more general principles to guide the development of the Master Plan. These principles appear at a general level as part of the Guiding Framework for the Master Plan, and in more detail in each physical planning element and in the section on plan implementation.

Document Incorporation

The following sections indicate where the Master Plan team incorporated each task force’s recommendations in the physical planning elements of the draft Master Plan.

Land Use Task Force

See Master Plan Elements
Land Use,
Natural Environment,
Outdoor Teaching and Learning,
Campus Instructional Core,
Residential Communities,
Recreation, Athletics and Physical Education,
Public Facilities and Utilities,
Circulation,
Parking,
Support Activities and Services
Ancillary Activities and Facilities

Comments
Additional details to be reflected in Land Use and Project Review Procedures as part of Master Plan implementation.

Natural Environment Task Force

See Master Plan Elements
Land Use
Natural Environment
Outdoor Teaching and Learning
Campus Instructional Core

Comments
Additional details to be reflected in Best Management Practices as part of Master Plan implementation;
Process principles at general level in Guiding Framework;
Additional details to be reflected in Land Use and Project Review Procedures as part of Master Plan implementation.

Built Environment and Technology Task Force

See Master Plan Elements
Land Use,
Natural Environment,
Outdoor Teaching and Learning, Campus Instructional Core,
Public Facilities and Utilities,
Circulation,
Alternative Transportation,
Support Activities and Services

Comments
Additional details to be reflected in Land Use and Project Review Procedures, Design Guidelines and Landscape Plan as part of Master Plan implementation
Housing Task Force

See Master Plan Elements
Land Use,
Campus Instructional Core,
Residential Communities,
Recreation, Athletics and Physical Education,
Alternative Transportation,
Support Activities and Services

Circulation Task Force

See Master Plan Elements
Land Use,
Campus Instructional Core,
Circulation,
Alternative Transportation,
Parking

Utilities and Resources Task Force

See Master Plan Elements
Land Use,
Natural Environment,
Outdoor Teaching and Learning,
Public Facilities and Utilities,
Ancillary Activities and Facilities

Public and Support Services Task Force

See Master Plan Elements
Land Use,
Campus Instructional Core,
Residential Communities,
Recreation, Athletics and Physical Education,
Public Facilities and Utilities,
Circulation
Support Activities and Services

Neighborhood Relations Task Force

See Master Plan Elements
Land Use,
Natural Environment,
Campus Instructional Core,
Residential Communities,
Alternative Transportation,
Parking,
Support Activities and Services,
Ancillary Activities and Facilities

Comments
Process principles at general level in Guiding Framework; Additional
details to be reflected in Land Use and Project Review Procedures as part
of Master Plan implementation.

Intergovernmental Relations Task Force

See Master Plan Elements
Land Use

Comments
Process principles at general level in Guiding Framework; Additional
details to be reflected in Land Use and Project Review Procedures as part
of Master Plan implementation.

Economic Impacts Task Force

See Master Plan Elements
Land Use
Campus Instructional Core
Residential Communities
Support Activities and Services

Comments
Community impacts also addressed as part of Master Plan implementa-
tion.

Refer to the Master Plan web site for a matrix showing how the Master Plan
team responded to comments on the Pre-
liminary Draft (May 1) and October 10
publication of the Master Plan and Draft
Environmental Impact Report.

Refer to the Master Plan web site for
a complete version of task force
principles.

www.campusprojects.calpoly.edu
3 Long-Range Enrollment Scenarios

How do we measure enrollment?
How might the campus change to enhance education in California?
What assumptions are we making about Cal Poly’s growth?
What are the mixes for enrollment?
ENROLLMENT GROWTH FACTORS

Background

Comparative Data - Growth Projections
A number of recent reports have used different methods to estimate the demand for higher education in the next decade. However, none of the enrollment projections for the CSU go beyond 2010-11, whereas population projections for California and San Luis Obispo communities extend to 2020-21. Western Interstate Commission on Higher Education (WICHE) projections show that the number of high school graduates - the primary source of increased demand for higher education known as “Tidal Wave II” - would peak in 2007 or 2008. This means that higher education impacts would peak over the following four to six years.

The WICHE data and projections shown below illustrate how the traditional college-age population declined after the end of the World War II baby boom. However, by the mid-1990’s the number of high school graduates had exceeded the earlier peak, and is projected to grow until about 2007 - 2008. Then, WICHE projects a decline for the subsequent five years. After that, however, the U.S. Bureau of the Census projects that the population under age 18 in California will increase again by 2015, generating additional demand for higher education.

Public High School Graduates in West

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<th>Year</th>
<th>Graduates</th>
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<tbody>
<tr>
<td>1978-79</td>
<td>400,000</td>
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<tr>
<td>1979-80</td>
<td>450,000</td>
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<td>1997-98</td>
<td>1,350,000</td>
</tr>
<tr>
<td>1998-99</td>
<td>1,400,000</td>
</tr>
<tr>
<td>1999-00</td>
<td>1,450,000</td>
</tr>
<tr>
<td>2000-01</td>
<td>1,500,000</td>
</tr>
<tr>
<td>2001-02</td>
<td>1,550,000</td>
</tr>
<tr>
<td>2002-03</td>
<td>1,600,000</td>
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<tr>
<td>2003-04</td>
<td>1,650,000</td>
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<td>2004-05</td>
<td>1,700,000</td>
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<td>2006-07</td>
<td>1,800,000</td>
</tr>
<tr>
<td>2007-08</td>
<td>1,850,000</td>
</tr>
<tr>
<td>2008-09</td>
<td>1,900,000</td>
</tr>
<tr>
<td>2009-10</td>
<td>1,950,000</td>
</tr>
<tr>
<td>2010-11</td>
<td>2,000,000</td>
</tr>
<tr>
<td>2011-12</td>
<td>2,050,000</td>
</tr>
</tbody>
</table>

TABLE 3.1
The following table summarizes comparative growth rates as a reference for long-range enrollment planning at Cal Poly.

<table>
<thead>
<tr>
<th>Recent Annual Rate</th>
<th>Projected Annual Rate</th>
<th>Policy</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA population</td>
<td>1.5%</td>
<td>1.1 - 1.7%</td>
<td>CA Dept. of Finance (1999)</td>
</tr>
<tr>
<td>SLO County pop.</td>
<td>1.8%</td>
<td>1.8 - 2.9%</td>
<td>CA Dept. of Finance (1999)</td>
</tr>
<tr>
<td>SLO City pop.</td>
<td>0.7%</td>
<td>1.0%</td>
<td>City of SLO (1999)</td>
</tr>
<tr>
<td>Cuesta College</td>
<td>5.0%</td>
<td></td>
<td>Cuesta College (1998)</td>
</tr>
<tr>
<td>CSU</td>
<td>2.5%</td>
<td>2.4 - 3.9%</td>
<td>CA Dept. of Finance (1998)</td>
</tr>
<tr>
<td>CSU</td>
<td>1.4 - 2.2%</td>
<td></td>
<td>RAND (1996)</td>
</tr>
<tr>
<td>CSU</td>
<td>2.4 - 2.8%</td>
<td></td>
<td>CSU (1998)</td>
</tr>
<tr>
<td>CSU</td>
<td>2.5 - 2.9%</td>
<td></td>
<td>CPEC (1999)</td>
</tr>
</tbody>
</table>

**Critical Enrollment Measures**

Enrollment and master planning must address three critical enrollment measures because each affects the University and the community in different ways.

*College-Year Full-Time Equivalent Students (CY FTES)*

The total amount of instruction offered during four academic quarters is represented by College-Year FTES. For example, any significant increase in Summer enrollment could add to instruction, support student progress, and help meet the demands of “Tidal Wave II” without significant changes in physical capacity. However, growth in CY FTES would require proportionate increases in the campus operating budget. CY FTES is also the basis for determining appropriate levels of instructional support - e.g., library and information resources, student:faculty and student:staff ratios.

*Net Academic Year Full-Time Equivalent Students (Net AY FTES)*

For instructional space planning, the critical measure is the amount of instruction that actually uses classrooms and laboratories on campus. Thus, to calculate net AY FTES we subtract all instruction that is not scheduled in a classroom or laboratory on campus. The exclusion covers all supervision courses (senior project, master’s thesis) and other instruction listed as “to be arranged.” However, even this “other” on-site instruction requires campus support from faculty and administrative services. Cal Poly’s present physical capacity is 15,000 net AY FTES.

*Fall Head Count*

Many campus programs and services, as well as most community impacts, are based on number of students. For example, recruitment, admissions, orientation, advising, record-keeping, most services offered by Student Affairs, and fee revenues all are based on head count. We use full-time
head count to calculate retention and graduation rates. Further, housing (on or off-campus), commuting, and other community impacts derive from the number of students enrolled. Analysis focuses on Fall head count as Fall is the peak term - and most new students enter in Fall quarter.
LONG-RANGE ENROLLMENT SCENARIOS

Introduction
During the 1998-99 academic year, the Deans’ Enrollment Planning Advisory Committee (DEPAC) developed four general scenarios to illustrate different ways in which Cal Poly might be able to educate more students - with or without expanding the physical capacity of the campus.

Student Progress
In addition to curricular and administrative support, increase student course load to 15 for full-time undergraduates.

Distributed Teaching and Learning
Double or triple the present enrollment in off-site programs, whether traditional study abroad, media-assisted, or internships and coops.

Increase Academic Year Full-Time Equivalent Students (AY FTES)
Consider a range of annual growth rates varying from 1% to 2.8%.

No Growth in Academic Year Enrollment
Consider the potential for Summer enrollment to reach the CSU goal of 40% of an average term during the academic year.

Year-Round Operations (YRO)
Rather than consider Year-Round Operations as a separate scenario, DEPAC addressed how scheduling changes might support each other scenario. Further, DEPAC focused on the expansion of Summer Quarter as a way to educate more students without increasing enrollment during the academic year.

Principles
These scenarios stemmed from discussions of the University’s academic mission, stressing the following principles:

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1 For 1998-99 the Provost named the following to DEPAC: Bob Clover (for Jerry Hanley), Information Technology Services; Linda Dalton, Institutional Planning and Analysis; Juan Gonzalez, Student Affairs; Martin Harms, College of Architecture and Environmental Design; Steve Kaminaka, Academic Senate Budget and Long Range Planning Committee; Euel Kennedy, Enrollment Support Services; Bob Kitamura, Facilities Planning; Bonnie Knupp, Institutional Planning and Analysis; Susan Opava, Research and Graduate Programs; Rick Ramirez, Budget and Analytic Business Services; Walter Rice, College of Business; and Harry Sharp, Chair, Extended University Programs and Services. Kimi Ikeda, Office of the Provost, frequently contributed. The following text draws directly from the DEPAC “Report on Long-Range Enrollment Scenarios,” dated March 1, 1999.
The University will be informed and guided by its mission. Cal Poly will remain polytechnic with a strong majority of our enrollments in “polytechnic” programs within which “learn by doing,” the “hands-on” approach to education, will characterize the lives of our primarily undergraduate student body. Across the campus these students will engage in state-of-the-art programs, pedagogy, and practices in the environment of a student-centered community where the faculty and staff serve students in a context of social and intellectual diversity, a learning community that is diverse in every sense with a statewide mandate to educate highly qualified and motivated citizens from all over California.

In addition, Cal Poly currently incorporates and will continue to incorporate the following characteristics for the foreseeable future:

- **Selective** - admission is sought by far more qualified applicants than can be accommodated.
- **Residential** - meaning that more than 80% of students move to the campus or the immediate surrounding community for the purpose of obtaining their education. They are not “commuters.”
- **Major at Entrance** - the students matriculate directly to a degree program.

The University’s very name, CALIFORNIA POLYTECHNIC STATE UNIVERSITY, SAN LUIS OBISPO, lengthy to be sure, proclaims much. Cal Poly is a public institution with a statewide mandate to emphasize higher education in “polytechnic” subjects. Simultaneously, the University adjoins the City and is in the County of San Luis Obispo. Cal Poly is “special” not only to its own residents, but to other Californians, thousands of whom would, if they had the opportunity, literally “trade places.” It follows that the changes in enrollment, facilities, faculty, and staff should be in the best interests of both the University’s local and statewide constituencies.

Within the context summarized above, DEPAC offered four basic enrollment scenarios as a starting place for discussion. In doing so the committee noted that the University may choose particular elements of any (or all) of these or other possible models for campus development over the next decade or two.
Alternative Futures: Four Scenarios

Student Progress: Students Graduating Sooner and Cal Poly Educating More Citizens (but not at any one moment)

The substance of this scenario is a group of suggestions that aim at (1) increasing the percentage of students who graduate and (2) decreasing the time they take to do so. Some suggestions (e.g., more evening classes, courses and modules of courses offered via the Internet) echo elements of other scenarios. Almost all of the suggestions (such as improved advising by department faculty and advising centers, automated on-demand degree audits, curriculum streamlining, devising effective techniques that enable more students to finish their senior projects) could be pursued regardless of what other direction the University takes on enrollment.

Presently, Cal Poly’s retention and graduation rates, although the highest in the CSU, are substantially lower than comparable figures for University of California campuses with which we effectively compete for entering freshmen. The scenario calls for research, including “exit interviews,” with students who leave without graduating to understand the causes of this problem and identify potential remedies.

Distributed Teaching and Learning: Off-Site and/or ‘Virtual’ Enrollment

In this scenario University enrollment grows but the headcount of students on campus may not. At any moment an increasing percentage of students will temporarily reside elsewhere. Science majors, for example, can spend a quarter on board the California Maritime Academy’s training ship, The Golden Bear. At present, six to ten faculty and up to 150 students take the Spring quarter in London Study, a program that could operate year-round. Smaller numbers, usually accompanied by a couple of faculty, have spent terms in Mexico, Japan, Thailand and similar remote locations, as well as in nearby urban areas such as San Francisco. Scores - sometimes hundreds - of students may be away from the campus for a term and sometimes as long as a year. The numbers could increase, and simultaneously these students may augment off-campus learning by enrolling for classes offered here. They would communicate with instructors through e-mail and hold discussions with classmates around the world via two-way on-line video on the Internet. The campus is making plans that will enable dozens of students to enroll for a quarter in residence on the Swanton Pacific Ranch in Santa Cruz County. While there, they will simultaneously enroll for on-campus courses by two-way video.
Other Cal Poly students may use “distance education” technology to enroll for campus-based courses during the quarters (usually summer) they are “at home” rather than in San Luis Obispo. One example: community college students who are transferring into Cal Poly’s professional programs as juniors might take one or more essential “prerequisite courses” via the World Wide Web in the quarter(s) just before they move here. That could mean cutting a year off the time they would otherwise be in residence to obtain degrees.

Although most students could benefit from participation in one or more “distributed learning” experience, Cal Poly is residential. There are authentic intellectual, social, and personal benefits in the residential student life. The University wants undergraduates to spend most of their educational careers on or in the immediate vicinity of the campus. Therefore, this University does not anticipate offering “external degrees” at the undergraduate level. Nevertheless, the expanded use of “distance learning” in varied forms can increase Cal Poly’s FTES enrollment without increasing the local headcount at any given time.

More On-Campus Academic Year Enrollment

In this scenario both headcount and FTES (full-time equivalent students) on campus during the academic year would increase to a figure beyond the campus’s current physical Master Plan capacity of 15,000 AY FTES. Capacity can be increased by the construction of additional facilities: classrooms, laboratories, offices for faculty, etc. on the campus or by the leasing of instructional space elsewhere in the community.

“Capacity” could also be redefined upward (e.g., by increasing the number of hours per week that the campus schedules instructional space). That would mean more classes offered in the very late afternoon, evenings and/or on the weekends. Also, a few of our academic programs presently operate below “program capacity.” Small enrollment increases in those (mostly graduate) programs could be accomplished with modest impact on the physical and fiscal resources of the campus.

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2 For Cal Poly “residential” means the great majority of students have homes elsewhere. They moved to San Luis Obispo and took up temporary residence in a campus housing unit (or perhaps an apartment complex nearby that is populated almost entirely by other students) for the purpose of obtaining a Cal Poly education. The great majority will leave the community upon graduation. The committee recognizes that at some small liberal arts colleges the term “residential” means almost every student resides literally on the campus, but that the meaning of “residential” at Cal Poly is the one in general use in higher education today.
DEPAC observed that in recent years the CSU has funded all enrollment growth on a “CSU average” basis. That funding method, unlike the “mode and level” formula the state used in prior decades, fails to recognize higher costs inherent to this University’s polytechnic emphasis. As a result, State-assisted enrollment growth at the current “average” level will gradually, but inevitably, diminish the quality of the programs that give the University its strong reputation. DEPAC also assumed that any substantial increase in the headcount of students enrolling at San Luis Obispo during the academic year would be expected to have more or less proportionate impacts (positive and negative) on the local community.

No More On-Campus Academic Year Enrollment
The essence of this scenario is that AY (Academic Year) FTES on campus would not change significantly. Under this scenario, “College Year” enrollment, which includes enrollment in the summer term, might increase substantially. (Prior to budget cuts summer headcount enrollment in 1990 was 6464, or 37% of the Fall Quarter headcount. FTES that summer equaled 27% of fall figure. Students who enroll for the summer also carry lighter loads than during the academic year.)

If this scenario were adopted in isolation - without elements of other scenarios - and if the State of California continues to grow as predicted, the University’s share of all CSU students could be somewhat smaller than at present. Cal Poly is the only CSU campus (or one of only a few) that offers several polytechnic programs (e.g., architecture, graphic communication). Hence under this scenario, industry and State pressures could lead to increased enrollments in those “hard to find” programs. With “steady state” total enrollment on the campus as a whole, that would mean enrollments in other programs would have to be reduced. Such enrollment shifts would exacerbate the financial squeeze that derives from the CSU’s “average cost” funding.

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1 This observation concerning the CSU’s current practice for distribution of state general funds poses a challenge for any growth; however, the difficulty may be particularly acute for the “More AY FTES Scenario.”

4 Very few of Cal Poly’s academic facilities are air-conditioned, so all day summer use would be difficult (and in selected instances dangerous) unless and until ventilation is much improved or air-conditioning is installed and used. What’s more, each summer some facilities are presently closed for major maintenance. As a result, plant capacity in the summer is less than during the academic year. More troublesome obstacles to a very large summer quarter derive from generations of student and faculty practice. Even if the state provided additional funding, it is not clear that faculty would be available or that students would enroll in significantly larger numbers.
ALTERNATIVE FUTURE GROWTH ASSUMPTIONS AND RATES

Overview

The Master Plan team used a range of annual growth rates from comparative communities and institutions to illustrate their implications for Cal Poly. In order to make these alternative projections, the team drew on the long-range enrollment scenarios to make a set of assumptions about the variables that affect both headcount and full-time equivalent enrollment:

- Average student load will increase slightly (from the Student Progress scenario);
- Summer enrollment will increase significantly (from the discussion of Year-Round Operations); and
- Off-site instruction will increase modestly (from the Distributed Teaching and Learning scenario).

Changes in any of these require both campus policy and the means for implementation.

The following table projects enrollment to 2020-21 for several different growth rates. Cal Poly expects future enrollment growth to occur in phases rather than follow a smooth rate of increase. Nevertheless, an increase in summer and the addition of 3,000 students in fall over twenty years would be approximately equivalent to a 1.5 percent annual increase.

<table>
<thead>
<tr>
<th>CY FTES</th>
<th>Net AY FTES</th>
<th>Fall Headcount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past and Present</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highest Enrollment, 1990-91</td>
<td>16,892</td>
<td>17,758</td>
</tr>
<tr>
<td>Most Recent Year, 1999-00</td>
<td>15,565</td>
<td>14,031</td>
</tr>
<tr>
<td>Enrollment Targets for 2000-01</td>
<td>16,010</td>
<td>14,506</td>
</tr>
<tr>
<td>Current Master Plan Capacity -- No Increase in 15,000 AY FTES</td>
<td>16,870</td>
<td>15,000</td>
</tr>
<tr>
<td>Alternative Future Growth Rates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.0% Growth Rate</td>
<td>Projections to the Year 2020-21*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>19,342</td>
<td>15,855</td>
</tr>
<tr>
<td>1.5% Growth Rate -- Moderate Growth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5% Growth Rate</td>
<td>21,244</td>
<td>17,414</td>
</tr>
<tr>
<td>2.0% Growth Rate</td>
<td>22,261</td>
<td>18,247</td>
</tr>
<tr>
<td>2.3% Growth Rate</td>
<td>23,324</td>
<td>19,119</td>
</tr>
<tr>
<td>2.8 Growth Rate -- CSU High</td>
<td>24,662</td>
<td>20,216</td>
</tr>
<tr>
<td>2.8 Growth Rate</td>
<td>27,056</td>
<td>22,178</td>
</tr>
</tbody>
</table>

Note: Projections calculated from 2000-01 targets
Two additional factors affect the enrollment capacity of the University and facility requirements.

First, campus policy regarding the number or proportion of students to be housed on campus contributes directly to the continuation and reinforcement of Cal Poly’s character as a residential university. The assumption guiding the Master Plan is the principle that Cal Poly should provide housing on campus for all additional undergraduate students. This principle includes provision of appropriate housing types, support services and amenities to enhance the residential environment as a place for learning.

Second, as space needs vary by discipline, program mix affects both the amount and character of campus space. Thus, an essential next step in enrollment planning is the determination of the demand for and appropriate size of majors in programs critical to the State of California that are not generally available elsewhere.

Table 3.4 shows the implications of adding 3,000 additional students. Columns A and B provide historical data for comparison. Column C shows current capacity. Then column D shows the proposed increase, and column E calculates future capacity. The first four rows show these changes in terms of full-time equivalent student (FTES) enrollment used for budget and space planning. The lower four rows translate these into head counts for Fall Quarter (when enrollment is largest).

The cumulative effect of these projections would be to increase the campus capacity as follows: Fall student, faculty and staff head count and net Academic Year FTES would increase approximately 17 percent over present capacity. In addition, operational changes to increase summer term and to take advantage of distributed teaching and learning opportunities would enable the campus to increase College-Year FTES by an additional 9 percent with no corresponding increase in head count.
<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Highest Previous Enrollment (1990-91)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Past Year (1999-2000)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Current Capacity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Proposed Growth over 20 Years</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Proposed Future Capacity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Full-Time Equivalent Student Enrollment (FTES)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Year Enrollment (net AY FTES)</td>
<td>14,584</td>
<td>14,031</td>
<td>15,000</td>
<td>2,500</td>
<td>17,500</td>
</tr>
<tr>
<td>Summer Enrollment</td>
<td>1,408</td>
<td>805</td>
<td>850</td>
<td>1,650</td>
<td>2,500</td>
</tr>
<tr>
<td>Estimated Off-site and Other Instruction Not Requiring Campus Facilities</td>
<td>900</td>
<td>729</td>
<td>1,020</td>
<td>211</td>
<td>1,231</td>
</tr>
<tr>
<td>Total Enrollment (CY FTES)</td>
<td>16,892</td>
<td>15,565</td>
<td>16,870</td>
<td>4,361</td>
<td>21,231</td>
</tr>
<tr>
<td><strong>Fall Head Counts</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall Student Head Count</td>
<td>17,758</td>
<td>16,470</td>
<td>17,900</td>
<td>3,000</td>
<td>20,900</td>
</tr>
<tr>
<td>Fall Faculty Head Count</td>
<td>1,251</td>
<td>1,107</td>
<td>1,193</td>
<td>200</td>
<td>1,393</td>
</tr>
<tr>
<td>Fall Staff &amp; Administration Head Count*</td>
<td>1,133</td>
<td>1,500</td>
<td>1,581</td>
<td>265</td>
<td>1,846</td>
</tr>
<tr>
<td>Total Head Count (Students, Faculty, Staff and Administration)</td>
<td>20,142</td>
<td>19,077</td>
<td>20,674</td>
<td>3,465</td>
<td>24,139</td>
</tr>
</tbody>
</table>

* Note: 1990-91 Data does not include Cal Poly Foundation and ASI employees. Together, these units now employ about 300 regular staff.
ACADEMIC PLAN FOR ENROLLMENT GROWTH

The most compelling reasons for Cal Poly to increase enrollment derive from the statewide demand for higher education associated with fulfilling the University’s academic mission — both from applicants seeking admission and from employers and graduate schools accepting graduates. Presently, Cal Poly has to turn away nearly 8,000 applicants for Fall undergraduate admissions who meet California State University (CSU) eligibility requirements. With such unmet demand, Cal Poly could fill the proposed enrollment increase of 3,000 headcount from the existing applicant pool. When the University considers the additional demand for higher education in general associated with Tidal Wave II, we can expect that Cal Poly’s applicant pool will continue to grow.

At the same time, the University is well aware that the characteristics of the traditional college age group are shifting with demographic changes in California. For example, two growing population groups have had different college participation patterns. The Asian American population has high college attendance rates whereas the Latino population has had a lower rate of college attendance. In addition, State investments in and standards for primary and secondary education will affect the nature and level of academic preparation of college-bound students. Cal Poly’s recruitment and outreach strategies can reinforce continuing campus efforts to attract a diverse, qualified applicant pool.

Enrollment Growth by Discipline

The Deans’ Enrollment Planning Advisory Committee (DEPAC) set out a number of premises and principles for determining how enrollment growth should occur at Cal Poly. These principles as well as the Guiding Framework for the Master Plan imply that enrollment growth will not be distributed evenly, or proportionately across the campus.

• Create, maintain, expand, reconfigure or phase out academic programs based primarily on fit with the Cal Poly mission as a comprehensive, polytechnic state university, program quality, and State needs.

• Increase enrollment particularly in those polytechnic and professional areas that are not broadly available in the State.

• Incorporate improvements in retention, progress to degree, and graduation rates in planning enrollment growth.

• Set college size by appropriate sizes of individual degree programs, not the reverse.

• Increase the percentage of students in post-baccalaureate programs, particularly “niche” master’s degrees that build on Cal Poly’s polytechnic and professional strengths.

• Phase enrollment growth, allowing some flexibility to address future needs and opportunities.

At the college level, each offers different strengths that support some enrollment growth following these principles as well as the recommendations of other campus committees.²

• The College of Agriculture offers programs that are clearly within the polytechnic, applied learning mission, and that are not otherwise generally available in California.

• The College of Architecture and Environmental Design also offers programs that are clearly within the polytechnic, applied learning mission, and that are not otherwise available. It contributes to social diversity with a relatively large proportion of non-white students.

• The College of Business offers professional programs that attract strong applicants who go on to graduate at high rates. “Niche” master’s degree programs link the MBA with professional work in other colleges. Program costs tend to be lower than in other colleges.

• The College of Engineering offers programs that are clearly within the polytechnic, applied learning mission and with clear contributions to computer technology fields. It contributes to social diversity with a relatively large proportion of non-white students.

• The College of Liberal Arts offers programs that attract strong

Note: The text is from the Cal Poly Master Plan and discusses long-range enrollment scenarios.
applicants who go on to graduate at high rates. It contributes to social diversity with a relatively large proportion of women students. Program costs tend to be lower than in other colleges.

- The College of Science and Mathematics offers programs that connect with the polytechnic, applied learning mission, and attract strong applicants. Program costs tend to be lower than in other colleges.

- The University Center for Teacher Education offers professional post-baccalaureate programs that contribute to a critical State need, building on Cal Poly’s strength in science and technology. It contributes to social diversity with a relatively large proportion of women students.

Or, to assess the relative strengths of the colleges another way:

**Mission**
The professional colleges most clearly meet the criteria associated with the polytechnic mission, applied learning, and limited program availability - Agriculture, Architecture and Environmental Design, Engineering, and to a lesser extent, Business and the University Center for Teacher Education (UCTE).

**Diversity**
The professional colleges contribute to social diversity in contrasting ways. While Architecture and Environmental Design and Engineering have relatively more non-white students; their proportion of women students is low. In contrast, Agriculture and the UCTE enroll more women, but relatively few non-white students.

**Applicant Pool**
The strongest undergraduate applicant demand and quality are concentrated in some professional colleges - Business and Engineering - as well as in Liberal Arts and in Science and Mathematics.

**Student Progress**
The colleges of Business and Liberal Arts not only retain and graduate more of their entering undergraduate students but also receive significant numbers of students who change major out of the other colleges.

**Future Prospects**
The professional colleges - Agriculture, Architecture and Environmental
Design, Business, Engineering, and the UCTE - offer the most direct job prospects for their graduates. In contrast, more undergraduate students from Liberal Arts and from Science and Mathematics continue their studies in graduate programs after completing Cal Poly degrees.

**Resource Requirements**

Not surprisingly, the polytechnic programs in all colleges require a higher investment in faculty, staff, equipment and facilities. Some of these programs are able to obtain significant supplementary support for their academic activities from grants, contracts and donations.

**Critical Mass**

Some specialized facilities and activities are necessary to support polytechnic education, but would not require expansion with enrollment growth - examples include the Campus Farm as well as facilities and equipment such as galleries, printing presses, wind tunnels, materials testing labs, outdoor labs, and field study areas. In some instances the campus chooses to limit the size of unique programs despite demand, due to the specialized faculty, facilities and equipment or higher costs associated with such programs.

Thus, consistent with the principle that college size should be a function of program size, the University has worked with each college to identify programs that meet the enrollment growth criteria and offer the most promise to fulfill Cal Poly's mission as a comprehensive, polytechnic university. Please note that the following tables illustrate the application of the principles for enrollment growth, but do not constitute a list of all programs that might grow. They have been identified from the data developed by DEPAC and from input provided by each college, including college strategic plans.

**Undergraduate Programs**

The following table shows programs with significant potential for future growth based on current demand and program performance (student progress to degree completion). The first group consists of programs that are already large (with more than 300 students currently enrolled in the major), yet have additional demand, applicant quality, and relatively strong retention and graduation rates. One resulting dilemma is that expanding such programs may make it difficult for a college to balance program size among different disciplines.
The second group consists of programs that currently enroll more than 100 students, and that have additional demand, applicant quality, and relatively strong retention and graduation rates. This list also includes new and proposed programs that have not yet been fully implemented.

Undergraduate programs not listed in Table 3.5 may also have potential for growth, but most are currently constrained by limited applicant pools and/or low retention and graduation rates. Demand for some of these programs may grow in proportion to the broader demand for higher education. However, where colleges feel that these programs should grow further to sustain the college mission and meet future societal needs, commitments will need to be made to enhance their visibility and performance. In a few instances these are small, specialized programs that might be converted to areas of concentration within a larger major. In other instances, ‘name recognition’ among applicants may be low, which could be counterbalanced by more focused recruiting. The campus strategic plan also encourages colleges to admit students initially into a more generic program in a college and then guide them into more specialized majors as they learn more about the opportunities available.

<table>
<thead>
<tr>
<th>College</th>
<th>Large Programs with Additional Demand</th>
<th>Moderate-Size Programs with Potential Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>Agribusiness</td>
<td>Agriculture Science</td>
</tr>
<tr>
<td></td>
<td>Animal Science</td>
<td>Recreation Administration*</td>
</tr>
<tr>
<td></td>
<td>Nutrition Science</td>
<td>Earth Science (new program)</td>
</tr>
<tr>
<td>Architecture &amp; Environmental Design</td>
<td>Architecture*</td>
<td>Architectural Engineering*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Construction Management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Landscape Architecture</td>
</tr>
<tr>
<td>Business</td>
<td>Business*</td>
<td>Industrial Technology*</td>
</tr>
<tr>
<td>Engineering</td>
<td>Civil Engineering</td>
<td>Aeronautical Engineering*</td>
</tr>
<tr>
<td></td>
<td>Computer Engineering*</td>
<td>General Engineering</td>
</tr>
<tr>
<td></td>
<td>Computer Science*</td>
<td>Software Engineering (proposed)</td>
</tr>
<tr>
<td></td>
<td>Electrical Engineering*</td>
<td>Bioengineering (proposed)</td>
</tr>
<tr>
<td></td>
<td>Mechanical Engineering*</td>
<td>Mechatronics (proposed)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Microelectronics (proposed)</td>
</tr>
<tr>
<td>Liberal Arts</td>
<td>Liberal Studies*</td>
<td>Art and Design*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Child Development*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Graphic Communications</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Journalism*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Psychology*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Social Science*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Speech Communication*</td>
</tr>
<tr>
<td>Science &amp; Mathematics</td>
<td>Biology*</td>
<td>Biochemistry*</td>
</tr>
<tr>
<td></td>
<td>Kinesiology*</td>
<td>Ecology &amp; Systemic Biology*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Microbiology*</td>
</tr>
</tbody>
</table>

*Note: Programs marked with an asterisk have turned away over half of the CSU qualified freshman and/or transfer applicants for the past two Fall admission cycles (average for Fall 1998 and Fall 1999).
Yet another option is for colleges to consolidate, redesign or replace existing programs in order to add new programs designed to meet emerging needs in their disciplines, professions or industries.

Another enrollment planning issue associated with undergraduate education is fluctuation in the size and composition of the entering class each fall. Over the past decade, the total number of new undergraduate students has varied from about 2500 to 4000; and freshmen/women have accounted for an increasing percentage. In addition, the proportion of freshmen varies from college to college. The Master Plan calls for stabilization of the proportion of freshmen as compared to transfer students from community colleges to facilitate curriculum planning and course scheduling by both the major departments and those providing general education and support courses.

**Post-Baccalaureate Programs**

Consistent with the DEPAC criteria, post-baccalaureate programs should build on Cal Poly’s polytechnic and professional strengths. As recommended by the Task Force on Graduate Education, Cal Poly should:

- Develop new interdisciplinary graduate programs across departments and colleges in areas of cross-disciplinary strength, and
- Continue to develop new integrated bachelor’s and master’s degree programs (4 + 1 and 5 + 1).

The following fields and interdisciplinary areas have potential beyond present levels. Currently, Cal Poly offers few relatively large post-baccalaureate programs - primarily in Business (MBA) and Teacher Education (credential programs). Growth prospects for most master’s degree programs may depend on achieving a critical mass of students and faculty to sustain the level of advanced study required.⁵

**Post-Baccalaureate Enrollment Growth Potential**

*College of Agriculture*

Forestry Sciences (MS) (new program)

---

⁵ This challenge is exacerbated by the lack of differential funding for post-baccalaureate education in the California State University system. See also the Report of the Task Force on Graduate Education (January 2000).
**College of Architecture and Environmental Design**
City and Regional Planning (MCRP), MS degrees in other CAED fields with interdisciplinary elements (proposed)

**College of Business**
Business (MBA), Joint MBA/MS programs with other professional colleges, Accounting (MS) (new program), MS in Information Systems; MS in Financial Engineering; MS in Marketing/Packaging (all proposed)

**College of Engineering**
Joint MS degrees with other professional colleges, Integrated bachelor’s and master’s degree programs (4 + 1)

**College of Liberal Arts**
Public Policy (MPP) (new program), Media Arts (interdisciplinary MA) (proposed)

**College of Science and Mathematics**
Biotechnology (MS) (proposed), Polymers and Coatings (MS) (proposed)

**College of Teacher Education**
Single-Subject Credential program, “4 + 1” B.A./Multiple-Subject Credential program for Liberal Studies undergraduates (new program)

**Phasing**
While the Master Plan focuses on a 20-year planning period, enrollment growth will not likely occur at an even rate during the next two decades. Indeed, careful planning calls for development to occur in phases (discussed later in the Implementation chapter) that link new instructional and residential capacity together. The consequence of phasing is that academic programs will grow at different points. Thus, based on mission and societal demand, Cal Poly may build instructional facilities to accommodate growth in a particular group of related disciplines. This will involve increasing instructional capacity - facilities, equipment, faculty, and staff support - for the support and general courses required as well as for the major courses involved.
EXISTING CONDITIONS

What do we look like now?
What are the existing constraints and resources?
**Definitions of Geographical Areas**

Cal Poly occupies approximately 3,000 acres in each of three sites - two in San Luis Obispo County and one in Santa Cruz County. The planning team has developed the following designations for each area.

---

**3,000 Contiguous Acres Adjacent to the City of San Luis Obispo**

*Campus Instructional Core*

The 155-acre Instructional Core is the area bounded on the south by the property line on the edge of the City of San Luis Obispo, on the west by the Union Pacific Railroad tracks, on the north by Highland Drive and the extension of Highland Drive easterly to a point due north of the present Building 70, and on the east by a portion of Perimeter Road and Grand Avenue. (Note: the northeast boundary is based on the realignment of Highland Drive proposed in the Master Plan.) The Campus Instructional Core is the academic and administrative center of the University.
Extended Campus
This area surrounds the campus Instructional Core on three sides, extending on the west from the Union Pacific Railroad along the Cal Poly property line to Highway 1, west across Highway 1 to include two parcels adjacent to the City of San Luis Obispo, then north along Stenner Creek Road to the Cal Poly property line. The northern boundary goes east, then north and east along the property line to the intersection with the Peterson Ranch property, then southeast across Brizzolara Creek to the Cal Poly property line, and south to the City of San Luis Obispo limits. The Extended Campus includes educational facilities associated with the campus farm, some parking, the on-campus student residential community and recreational facilities as well as some rangelands, creeks and foothills.

Main Campus
Together the Campus Instructional Core and Extended Campus comprise the Main Campus. The Master Plan does not use the term “campus” to refer to any other properties.
San Luis Obispo Creek Watershed Ranches
Cheda Ranch, Peterson Ranch, and Serrano Ranch are contiguous to the Main Campus. When appropriate, the Master Plan refers to them together as the San Luis Obispo Creek watershed ranches (even though a small portion of Cheda Ranch drains into the Chorro Creek watershed).

![Map of Serrano and Peterson Ranches](image)

### Areas of Cal Poly Lands in San Luis Obispo County

<table>
<thead>
<tr>
<th>Area</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Campus</strong></td>
<td>1321.0</td>
</tr>
<tr>
<td>Campus Instructional Core</td>
<td>155.0</td>
</tr>
<tr>
<td>Extended Campus Total</td>
<td>1166.0</td>
</tr>
<tr>
<td>Extended Campus w/o Highland Parcels</td>
<td>1130.0</td>
</tr>
<tr>
<td>Highland Parcel 1</td>
<td>33.0</td>
</tr>
<tr>
<td>Highland Parcel 2</td>
<td>3.0</td>
</tr>
<tr>
<td><strong>SLO Creek Watershed Ranches</strong></td>
<td>1613.9</td>
</tr>
<tr>
<td>Cheda Ranch</td>
<td>442.8</td>
</tr>
<tr>
<td>Peterson Ranch</td>
<td>425.8</td>
</tr>
<tr>
<td>Ecological Study Area (1975)</td>
<td>4.7</td>
</tr>
<tr>
<td>Botanical Garden (1953)</td>
<td>39.1</td>
</tr>
<tr>
<td>Architecture Study Area (1965)</td>
<td>16.5</td>
</tr>
<tr>
<td>Serrano Ranch</td>
<td>745.3</td>
</tr>
<tr>
<td><strong>Chorro Creek Watershed Ranches</strong></td>
<td>3042.9</td>
</tr>
<tr>
<td>Chorro Creek Ranch</td>
<td>534.5</td>
</tr>
<tr>
<td>Walters Ranch</td>
<td>712.7</td>
</tr>
<tr>
<td>SLO Co. School &amp; Calif Archeological Site 544 (1971)</td>
<td>2.5</td>
</tr>
<tr>
<td>Escuelas Ranch</td>
<td>1795.7</td>
</tr>
<tr>
<td>Biological Science Preserve (1967)</td>
<td>211.0</td>
</tr>
<tr>
<td><strong>Total University Acres</strong></td>
<td>5977.8</td>
</tr>
</tbody>
</table>

NOTE: This data was provided by the Natural Resources Management Department and was delineated into GIS from aerial photographs based on existing fencing. This data is in the process of being verified and should be used for preliminary estimates only.

### Table 4.1
3,000 Acres North and West of Cuesta College in San Luis Obispo County

Chorro Creek Watershed Ranches
Chorro Creek Ranch is southwest of Highway 1 and north of Cuesta College. Walters Ranch and Escuela Ranch are northeast of Highway 1, west of Cuesta College. When appropriate, the Master Plan refers to them together as the Chorro Creek watershed ranches.

3,200 Acres in Santa Cruz County

Swanton Pacific Ranch
Swanton Pacific Ranch is located north of Davenport and occupies approximately 3,200 acres east of Highway 1 that is primarily in the Scotts Creek watershed. This area will be addressed in a separate Master Plan.
Summary of Existing Conditions

Cal Poly’s land holdings in San Luis Obispo county include unique and valuable environmental resources, which provide a dramatic setting for the University and support its educational programs. Students and faculty alike enjoy access to diverse ecosystems, rich farmland and productive rangeland. The Master Plan depends on an improved and expanded understanding of these valuable assets as a basis for its recommendations. This section of the Master Plan provides an overview of Cal Poly’s existing physical conditions and a summary of the principal constraints and opportunities associated with land utilization.

An in depth analysis of the Main Campus’ physical conditions is available on the Cal Poly Master Plan Web site. The following overview focuses on seven critical Existing Conditions:

Intergovernmental context, circulation, biological and water resources, slopes, soils, agriculture facilities and resources, and the built environment in the instructional core.

Intergovernmental Context
The intergovernmental context map depicts Cal Poly’s relationship to the surrounding jurisdictions and urban uses. The Main Campus and surrounding lands to the north are in San Luis Obispo County. The surrounding lands include foothills of the Santa Lucia range and are primarily designated for rural and agricultural uses. This scenic setting provides the backdrop for views of the campus from various locations in the City and along Highway 1.

The Main Campus is adjacent to the City of San Luis Obispo on the south and west. The Alta Vista and Monterey Heights single-family neighborhoods border the southern edge of the campus, while the Bishop’s Peak single-family neighborhood lies to the west. The City, including these neighborhoods in particular, is concerned with traffic generated by the campus, parking on local streets, impacts of Cal Poly and Cuesta Community College students and faculty on the local housing market, noise from campus operations and activities and visual impacts such as night lighting.

Apartment complexes along Santa Rosa Street, California Boulevard and Foothill Boulevard house many students from Cal Poly and Cuesta Community College. The commercial areas closest to campus are along Foothill Boulevard and Monterey Street. Students, faculty and staff travel...
to these commercial areas as well as other parts of the City for services not provided on campus.

**Circulation and Parking**

The existing circulation map shows the primary circulation routes, average daily trip totals, campus access points and critical intersections. The hilly terrain to the north and east of the campus and the Union Pacific railroad limit vehicular access to Cal Poly from off campus. While multifamily housing is closest to the California Boulevard entrance, the at-grade railroad crossing on Foothill Boulevard complicates access to the southwestern portion of campus for vehicles, bicycles, and pedestrians. Further, the campus currently provides only limited parking near the California Boulevard entrance. The Grand Avenue and Highland Drive entrances offer more direct access to parking on campus. Nevertheless, as most of the daily-use parking areas are located on the campus’ north side, drivers must travel through the campus to gain access.

Faculty and staff generally arrive during a traditional morning commute period while students arrive at and depart from the campus many times each day to fit their class schedules. This varied commuting pattern affects internal and surrounding circulation by creating multiple “peak-hour” cycles each day. Each time classes change, the campus experiences vehicular congestion and pedestrian and vehicle conflicts along Highland Drive, Perimeter Road, and Grand Avenue.

**Biological and Water Resources**

Cal Poly’s land holdings in the San Luis Obispo Creek watershed include a wide range of valuable natural resources immediately adjacent to the instructional core. Cal Poly’s academic programs take advantage of these natural areas for teaching and research. They include unique landforms, geological formations, plant and animal communities, streams, ponds, reservoirs, and wetlands.

Two streams offer unique opportunities to link the campus to a valuable natural feature. Brizzolara Creek descends from the Santa Lucia foothills on the northeast through Poly Canyon then traverses the northern edge of the instructional core westward to the Union Pacific railroad crossing. At that point it goes underground and re-emerges flowing south to join Stenner Creek. Stenner Creek winds its way south under the railroad trestles in Stenner Canyon then runs parallel to Highway 1. It continues south after crossing Highland Drive before joining Brizzolara Creek.
**Slopes**
As shown on the slopes map, steep hillsides and canyons bound the instructional core on the northeast. Much of the land to the north and west of the instructional core exhibits gentle slopes. This area is dedicated primarily to agricultural uses. The instructional core itself contains numerous slope banks and has an average cross slope of approximately 7%. These topographic features contribute to Cal Poly’s unique setting and provide spectacular views of the City of San Luis Obispo, the surrounding Morros and hillsides. At the same time, the same topographic features present serious constraints to development due to grading impacts, costs and visibility issues.

**Soils**
Cal Poly’s setting is greatly influenced by the amount of productive farmland proximate to the instructional core. This resource has enabled Cal Poly’s College of Agriculture to establish and maintain a broad range of agricultural practices. Within the main campus area there are approximately 248 acres of class 1 soils according to the Natural Resources Conservation Service (NRCS) soil capability class system. These soils are present on slopes between 0-5%, are among the most productive in the County, and support a variety of irrigated and non-irrigated crops, orchards and pastureland. There are approximately 17 acres of class II soils within the extended campus area that are also important. The class II soils are present on slightly steeper slopes between 5-10% and contain soil types that place moderate limits on the range of crops that can be grown. In addition, classes III-VI represent progressively worse soil conditions for agricultural productivity, with class VI not being suited for any type of agricultural use. The Master Plan seeks to protect all remaining class I prime soils for future agricultural use.

**Agriculture Facilities and Resources**
Agriculture facilities and fields surround the instructional core on the west and north, establishing Cal Poly’s agricultural setting. West of the railroad tracks, rich soils between Brizzolara and Stenner Creeks provide fertile ground for a variety of orchards, row crops, experimental crops and pastures. North of the instructional core, the campus farm contains animal units, environmental horticulture facilities, the arboretum, and Irrigation Training and Research Center. Multiple reservoirs and ponds provide water for livestock, irrigation and agricultural wastewater treatment. Cal Poly faculty and students require continued access to these extensive outdoor teaching and learning facilities, consistent with the University’s “learn-by-doing” approach to education.
**Built Environment in the Instructional Core**

Within the instructional core, an historical range of structures, landmarks and memorials enrich the physical environment of the campus. The Built Environment map illustrates the age, quality, and life expectancy of the existing facilities within the Campus Instructional Core. Because the original campus structures were located near the California Boulevard entrance buildings in this area of the campus are among the oldest remaining on campus. In other areas, site layout, building footprint, and floor plans no longer meet campus instructional needs. They also have the greatest incidence of structural deficiency and functional obsolescence. Three general areas show potential for redevelopment within the instructional core: the Science Building area (building 52) in the center of the campus core, the corporation yard area to the northeast, and the southwest corner of campus where many of the buildings have far exceeded their life expectancy. These three areas provide opportunities for redevelopment to accommodate needed instructional space for new enrollment, improve pedestrian circulation, establish more sustainable development and gain green space without encroaching on valuable farmland and environmentally sensitive lands.
<table>
<thead>
<tr>
<th>EXISTING CONDITIONS</th>
</tr>
</thead>
</table>

**EXISTING CONDITIONS**

- SLO City
- Cal Poly
- Downtown Core
- Commercial/Office
- Residential
- Multi-Family Housing

**INTERGOVERNMENTAL**

**EXHIBIT 4.3**

Data Maps: City-Campus View

**LEGEND**

- Purple: Schools
- Cyan: Medical Facilities
- Blue: Primary Roadways
- Yellow: Secondary Roadways
- Brown: Railroad
- Orange: Approximate Projection of the Monterey Heights City Hillside Development Line

**SLO City**

- Bishop Peak
- Highland
- Monterey Hw
- Bishop Peak
- Multi-Family Housing

**Cal Poly**

- Alta Vista
- Monterey Heights
- San Luis Drive
- Multi-Family Housing

**Downtown Core**

- Multi-Family Housing

**Commercial/Office**

- Multi-Family Housing

**Residential**

- Multi-Family Housing

**Multi-Family Housing**

- Multi-Family Housing

**San Luis Drive**

- Multi-Family Housing

**Bishop Peak**

- Multi-Family Housing

**Highland**

- Multi-Family Housing

**Monte
ry Hw**

- Multi-Family Housing

**Alta Vista**

- Multi-Family Housing

**Monterey Heights**

- Multi-Family Housing

**San Luis Drive**

- Multi-Family Housing

**Legend**

- 1/4 Mile (10 Minute Walk)
- 1 Mile

**Scale**

- 0 500 1,000 2,500 5,000

- Feet

**1/4 Mile (10 Minute Walk)**

- 0 500 1,000 2,500 5,000

- Feet

**Scale**

- 1/4 Mile (10 Minute Walk)
- 1 Mile
EXISTING CONDITIONS

EXISTING PARKING

Primary Circulation - Heavy Use
Primary Circulation - Medium Use
Primary Circulation - Light Use
Railroad
Important Intersections
Traffic Volumes
Preserves
Water Retention Ponds
Agricultural Wastewater Treatment Ponds
Riparian Areas
Trees
Streams
LEGEND

- 0% - 5%
- 5% - 10%
- 10% - 15%
- 15% - 20%
- 20% +

- Existing Buildings

EXISTING CONDITIONS
**LEGEND**

<table>
<thead>
<tr>
<th>CAPABILITY</th>
<th>CLASS</th>
<th>Soil Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>II</td>
<td>Soils have slight limitations that restrict their use.</td>
</tr>
<tr>
<td>III</td>
<td>IV</td>
<td>Soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.</td>
</tr>
<tr>
<td>VI</td>
<td>VII</td>
<td>Soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.</td>
</tr>
<tr>
<td>VII</td>
<td>VIII</td>
<td>Soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAPABILITY</th>
<th>SUBCLASS</th>
<th>Soil Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>e</td>
<td>c</td>
<td>Main limitation is risk of erosion unless close-growing plant cover is maintained.</td>
</tr>
<tr>
<td>w</td>
<td></td>
<td>Water in or on the soil interferes with plant growth or cultivation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAPABILITY</th>
<th>UNIT</th>
<th>Soil Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>A problem or limitation is caused by slope or by actual or potential erosion hazard.</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>A problem is limitation is caused by a fine textured or very fine textured surface layer.</td>
</tr>
</tbody>
</table>

**Note:**
1) Soils analysis is based on the Natural Resources Conservation Service’s (NRCS) Capability class system.
2) Regarding the soils labels, (i) refers to a class rating for soils under irrigated conditions (where the same soil under non-irrigated conditions has a different rating).
EXISTING CONDITIONS

AG FACILITIES/RESOURCES
Data Maps: Main Campus

LEGEND

- Agricultural Field Lines
- Agricultural Field Numbers
- Orchards
- Preserves
- Water Retention Ponds
- Agricultural Wastewater Treatment Ponds
- Riparian Areas
- Trees
- Streams

Note: The agricultural field lines shown above represent those depicted on the 1991 Steckman maps and may not represent current conditions, as they may change.
LEGEND

Age of Campus Structures

- 1900 - 1910
- 1920 - 1930
- 1931 - 1940
- 1941 - 1950
- 1951 - 1960
- 1961 - 1970
- 1971 - 1980
- 1981 - 1990
- 1991 - 2000

- Abandoned (or soon to be)
- Obsolete (functionality and maintenance)
- On Historic Register
- More Than 50 Years Old

Note:
1) All year ranges refer to when buildings were built.
2) No new buildings were constructed (in this view) between 1910 and 1920.
Constraints and Opportunities Analysis

Introduction

Thorough examination of the data regarding existing conditions provides insight into the factors that shape the development of the campus. On one hand, a number of unique physical features call for protection and enhancement for their intrinsic value as well as for their contribution to the Cal Poly mission. These include the outlying scenic hills and ridges, environmentally sensitive areas, and unique agricultural lands in both the San Luis Obispo Creek and Chorro Creek watersheds. On the other hand, lands close to the existing campus core must be studied closely as to their suitability for new instructional and support activities.

Constraints

The Master Plan team grouped constraints into three categories or “tiers”: regulatory, cost, and policy, with different degrees of flexibility. The Constraints Summary map in this section of the Master Plan shows how the three kinds of constraints combine to limit the areas suitable for additional facility development.

Regulatory Constraints

Land use activities are rarely prohibited absolutely. Rather some uses, especially when proposed on environmentally sensitive lands, require review by a permitting agency and incorporation of conditions and mitigation measures. Some of the following are not strictly regulatory, but carry similar intent.

Biological Resources

The campus has numerous wetlands, riparian areas (Stenner and Brizzolara creeks), ponds (10 on campus), wet meadows and drainages. Some of these fall under the jurisdiction of the US Army Corps of Engineers as “waters of the US.” Filling or alteration requires permits. Portions of the campus also support a number of rare and endangered species, including steelhead in some waterways and rare plants on serpentine rock formations which are regulated by the California Department of Fish and Game (CDFG) and US Fish and Wildlife Service (USFWS).

Railroad

Union Pacific and the Public Utilities Commission control land along the railroad right-of-way and rarely allow new, at-grade crossings. This limits options for new entrances to campus. Union Pacific may consider moving or “trading” an existing at-grade crossing (e.g., the one on California Boulevard by Poly Grove) for a new location.
**Agricultural Soils**
The conversion of prime agricultural land for facilities development would be a significant impact under the California Environmental Quality Act (CEQA), only permitted if unavoidable, and would require an Environmental Impact Report and acquiescence of the California State University Board of Trustees.

**Cost Constraints**
These include site development, relocating and razing existing structures, and infrastructure provision or modification.

**Slope**
Development on steeper parts of campus, especially the eastern foothills, would cost more because of site preparation and foundation requirements. There is an increased risk of instability. The city and county both have restrictions on development on steeper slopes and may oppose Cal Poly’s developing too far up the hills, principally on aesthetic grounds. Maps for the constraints analysis show slopes greater than 20% which may result in increased development costs.

**Existing Development**
The campus has made relatively recent capital investments in a number of facilities both within the campus core and in the extended campus. Proposed new development patterns need to respect both the factors determining the locations of these facilities and their life expectancy. In parts of the campus where redevelopment is appropriate, relocation costs need to be covered. Costs of razing or renovating buildings that are out of date or functionally obsolete include meeting regulatory requirements with respect to hazardous materials, such as asbestos and lead paint removal.

**Infrastructure**
The Utilidor project defined the core provision of services. Growth at any significant distance from the campus instructional core will require more expensive utility extensions. Water and sewer capacities are not present limitations to growth.

**Policy Constraints**
This category includes areas where campus or California State University policy differs from city and county regulations and practices, neighborhood disputes, and issues of concern to students, staff and faculty. Dealing with these issues on the sports complex and parking structure has resulted in agreements between Cal Poly and adjacent neighborhoods to mitigate impacts.
SELECTED CONSTRAINTS SUMMARY

Data Maps: Main Campus

LEGEND
- **Projects Underway**
- **Sports Complex**
- **Parking Structure**
- **Parking**
- **Primary Roadways**
- **Railroad**
- **Important Intersections**
- **Potential Neighborhood Conflicts**
- **Orchards**
- **Preserves**
- **Riparian Areas**
- **Ponds**
- **Streams**

**Soils:** NRCS Capability Class System

**Class I**
Soils have slight limitations that restrict their use.
Light and Glare
This issue was important with the sports complex and parking structure, but impacts can be mitigated by appropriate design.

Traffic
Added enrollment will increase campus and off-campus traffic. CalTrans and the city will be looking to Cal Poly to contribute to resolution of congestion problems, especially at Grand Avenue, along Santa Rosa/Highway 1, at Foothill and California Boulevard, and at Highland Drive. The Alta Vista neighborhood will insist on maintaining current (or less) traffic on their roads. Traffic also affects air quality.

Aesthetics
Several areas of campus, especially in the extended campus, are visible to neighbors on the hillsides; they will be concerned with the appearance of campus expansion.

Noise
Noise is more a function of specific activities rather than campus growth. This issue was important with the sports complex, but impacts can be mitigated by appropriate design.

Opportunities - Development Suitability
The analysis of existing conditions, constraints and opportunities provides the basis for the Development Suitability map. This map shows what areas on campus may be suitable for various types of new development. Using data entered in a Geographical Information System (GIS) the Master Plan Team mapped natural environmental systems, existing facilities and built environments, surrounding community issues, circulation, access and visual issues, infrastructure, and academic programs needs. The analysis focused principally on the extended campus planning area and Cal Poly’s San Luis Obispo Creek Watershed ranches.

The constraints and opportunities analysis found that most of the land outside the existing instructional core was limited for new facility development due to environmental constraints. Indeed, the only areas available for development are the following:

- Drumm Reservoir area north of Britzolara Creek;
- Feed Mill and Hay Barn Terrace area south of Britzolara Creek;
- Slack Street and Grand Avenue area;
- Dairy Unit area;
- Old Poultry Unit;

A number of comments in the Preliminary Draft suggested more detailed analysis in this section. This is a summary of the overall constraints and opportunities analysis; readers will find more detailed discussion of proposals in the individual Physical Plan Elements. In addition, the Draft Environmental Impact Report (chapter 6) addresses implications of these development proposals.
• Stenner Creek Road and Mount Bishop Road intersection area;
• Properties west of Highway 1 near Highland Drive; and
• Portions of Cheda Ranch including the area known as Goldtree.

These areas are characterized by gentle slopes, relatively good vehicular access and availability of infrastructure, compatibility with surrounding uses, and the absence of class I soils and major biological and environmental issues. The only sites beyond the main campus are the properties west of Highway 1 and Cheda Ranch.

For each of the areas identified above the Master Plan team conducted a more detailed site analysis regarding their suitability to support various university activities. Concept plans were based on an analysis of the microclimate, biological resources and habitat, visual impacts, site access, parking, circulation and traffic, infrastructure, land uses and other site characteristics. The various Physical Plan Elements of the Master Plan describe the proposed facilities. The Master Plan EIR contains the environmental analysis for facility development in these areas.

**Potential Redevelopment Areas**

A number of areas on campus contain older buildings in poor condition and with inefficient building footprints and floor plans. These include the Corporation Yards area and the area in the southwest corner of the campus. Redevelopment of these areas would take advantage of existing infrastructure.

**Intensification of the Campus Core**

Several areas in the core contain older and sometimes functionally obsolete buildings, which are the most obvious candidates for redevelopment. The area around Science building (52) at the center of the core offers the opportunity to develop a much higher density of classroom, office, and support. Redesign of this area could also provide more green space and improve pedestrian circulation. Replacing one-story buildings with multiple-story structures will allow the campus to accommodate more instructional and support space within the campus core and redevelopment areas.
Opportunities for Intensification and/or Redevelopment
Suitable for Facilities Expansion
Suitable for Specialty Housing
Suitable for Agriculture Facilities Enhancement
(or possible remote parking near Stenner Creek Road)
Developed Areas for Which No Changes Are Proposed
White Areas Within the Colored Areas Represent Areas From the Constraints Summary Which Have Limitations for Development
Satellite Development

Rather than expanding out from the existing core of campus, another option would be to establish a separate center of building and activity at a satellite location. This option would require investment in the delivery of services and infrastructure, but could provide opportunities for consolidation and other efficiencies for the activities that would move.

The northwest corner of Cheda Ranch includes an area known as Goldtree. Traditionally, this area has consisted of three fields (C62, C63, C64), totaling about 52 acres. In conducting feasibility studies for ancillary activities at a satellite location, the Master Plan team examined a slightly larger area (including fields C65 and part of C61, but excluding C64 as too steep) to determine which land might be more suitable, con-
considering environmental, regulatory, cost and policy constraints. Based on soil type, slope, and current condition, an approximately 60-acre area was identified as most suitable for potential development, and became known as the Goldtree project area or site. It is close to the Union Pacific Railroad and has access to water, sewage treatment and electricity. Access could be provided from Highway 1 (perhaps from an improved intersection near the site or at Stenner Creek Road) and/or internally from Mount Bishop Road.
PHYSICAL PLAN ELEMENTS
What might we look like in the future?
**University Land Uses**

**Introduction**

Cal Poly presently manages over 9,000 acres for instructional and related uses in three major locations. Cal Poly’s lands adjacent to the City of San Luis Obispo consist of the intensely used campus core and contiguous acreage to the northeast and northwest in the San Luis Obispo Creek watershed. In addition, the campus has three ranches (Chorro Creek, Walters and Escuela) in the Chorro Creek watershed on both sides of Highway 1 north and west of Cuesta College in San Luis Obispo County. Further, the campus manages about 3,200 additional acres at Swanton Pacific Ranch in Santa Cruz County just inland from the coast, north of the community of Davenport (discussed in a section of the Plan to be prepared later). In addition to these three sites, Cal Poly also is involved in leases, consortia, and other research arrangements at off-campus sites, such as a research station in the Carrizo Plain.¹

This element provides an overview of the Master Plan in terms of the balance among different activities that occur in all three locations. It establishes the broadest level of policies and principles and sets the stage for the more specific elements that follow.

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**Environmental Consequences**

Environmental issues have been identified for plan components and are found throughout this chapter in these boxes. The issues identified consist of long-term effects of each component; temporary impacts associated with construction activity are discussed in Chapter 6 of this document. More detail regarding the environmental setting, the quantification of impacts and applicable mitigation is also located in Chapter 6. Chapter 6 constitutes the environmental impact report (EIR) for the Master Plan Update.

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¹ The Master Plan focuses on lands used for instruction and related purposes. Therefore, it does not address any lands managed by the Cal Poly Foundation as part of the University’s investment or endowment portfolio, nor the 600 acres in timber at Valencia Creek in central Santa Cruz County.
Background and Issues

The use of Cal Poly’s lands has emerged historically without a detailed plan for all its property in San Luis Obispo. Previous master plans have focused on the campus core and agricultural facilities in the extended campus to the north of Brizzolara Creek.

Issues

• Lack of clearly designated existing or future land uses, leading to ambiguous expectations and tensions regarding competing demands.

• Inconsistent density and intensity of activity in the campus core.

• Lack of access between campus core and outdoor teaching and learning sites.

• Impacts such as view obstruction, noise, light and odors caused by changes in land uses adjacent to, or visible from, nearby neighborhoods.

• Impacts on the economy, housing market, circulation and transportation systems, public services and environmental resources associated with any increases in enrollment.

• Concern about compatibility of Cal Poly land uses with City and County land use policies.

Principles

The land use element of the Master Plan recognizes that all property has one or more existing or future uses. The land use map designates all these uses. In some instances, one use is an overlay over another - for example, environmentally sensitive areas overlap some lands used for outdoor teaching and learning.

Cal Poly’s approach to land use planning recognizes seven basic principles: balance among land uses that serve the University’s academic mission, environmental suitability and sustainability, compatibility between adjacent uses, proximity among related uses, compactness in the instructional core, provision and protection of green space, and community-building. Consistent with these principles, the land use diagrams in

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2 Issues include items identified by campus and community members during Fall 1998, at public meetings during Winter 1999, during task force discussions in Spring 1999, and at subsequent meetings with campus and community groups in Fall 1999 and Winter 2000.
the Master Plan provide designations for all Cal Poly lands in San Luis Obispo County.³

**Balance**

This principle recognizes that all uses of Cal Poly’s lands must be balanced in support of the University’s academic mission - both within the existing campus core and in surrounding lands. To serve instructional uses, sufficient amounts of land must also be identified for support facilities and services, student housing, recreation, parking and ancillary activities. This principle also stresses foresight in designating future land uses to meet emerging academic needs and to take advantage of promising land management practices.

**Environmental Suitability and Sustainability**

The Master Plan seeks the best fit of instructional and supporting land uses to the widely varying character of Cal Poly’s lands - geology, topography, soils, watersheds, plant and animal communities and scenic views. Following this principle, the Master Plan designates environmentally sensitive areas for protection and retains all currently available prime agricultural soils for agricultural use. Further, the Master Plan recognizes that land use as well as site and building design can take advantage of Cal Poly’s environmental assets, such as its climate and surrounding hills. Thus, the principle of environmental suitability calls for upgrading buildings and grounds within the campus instructional core, for limiting future development to those areas least affected by regulatory and/or high cost environmental constraints, and for enhancing environmentally sensitive areas that have become degraded. The principle of environmental suitability and sustainability also encompasses resource and energy efficient planning and design.

**Compatibility**

Cal Poly recognizes that the institutional nature of a campus is different in scale and intensity from other urban, suburban and rural activities. Thus, this principle calls for establishing and maintaining a buffer between such uses as undergraduate student housing and single-family residential neighborhoods adjacent to campus. At the same time, faculty and staff housing might be built near existing single-family residential neighborhoods. This principle also recognizes that some instructional and related activities generate traffic, noise, light, odors, and other impacts that may affect surrounding neighborhoods as well as other instructional and related activities on campus.

³ The Master Plan team synthesized this list of principles from meetings with the President and senior campus executives and from recommendations provided by the campus/community Land Use, Natural Environment and other task forces during Spring 1999.
Proximity
The Master Plan seeks to connect related activities to facilitate student learning - e.g., access between classrooms and laboratories and faculty offices, access to outdoor learning sites, access to academic and support services such as advising, student organizations, and recreation. Thus, new undergraduate housing should be near existing residence halls, and support services should be integrated within the instructional and residential communities. In contrast, activities that need not/cannot be provided within a 10-minute walking radius can be located at more remote sites - i.e., ancillary activities connected less directly to core instructional programs and/or activities that require significant land area.

Compactness
Cal Poly can use its land more effectively by maintaining and expanding the campus core within a 10-minute walking radius for instructional activities. A compact core can integrate multiple instructional and support functions in three-to-four story buildings and simultaneously provide open space for outdoor learning, passive recreation, and social functions. Compactness also makes it possible to consolidate related activities into “one-stop” service areas for students, faculty and staff. Making the campus core more compact calls for the relocation of some present uses to more optimal sites and redevelopment of selected areas.

Green Space
Green space is an integral part of the environment and is essential to the physical and social well-being of the campus. Cal Poly uses its lands in many different ways, ranging from passive recreation and study, and rural, agricultural uses to intense residential, recreational, and instructional activities. Green space plays a different role for each use, depending on the level of activity. Thus, this principle calls for planning, protecting and managing scenic and environmentally sensitive areas on the main campus, San Luis Obispo Creek watershed ranches and Chorro Creek watershed ranches, consistent and complementary with outdoor learning, and the maintenance of environmental quality to sustain an attractive and resource efficient campus. In addition, it calls for the provision and design of green space as a component of each land use in the extended campus - including agricultural units as well as new residential complexes. The Campus Instructional Core element of the Master Plan addresses the design of a system of green spaces as central to creating a sense of place and visual continuity. Finally, campus green spaces should form links (spaces and corridors) at all scales to provide connections that help orient people throughout the campus.
Community
The Master Plan seeks to create a sense of community and identity on campus through its land use patterns. Centrally, the Master Plan integrates a range of teaching and learning activities within the campus core – active instruction, technology-enhanced learning, small and large group discussion areas. Further, consistent with the principle of proximity, the Master Plan calls for a mixed-use residential community with a range of support services, as well as concentrated activity centers in the campus core that can provide a more intense community center.

Plan Components - Land Use Designations
In order to serve the University’s academic mission, the Master Plan proposes a set of land use categories. Two features of this classification scheme merit comment. First, Cal Poly has developed a set of designations that connect directly to integrated teaching and learning. Thus, the categories do not follow traditional city planning designations, such as housing, commercial, office, and the like. Second, Cal Poly recognizes that all lands have one or more present and future uses. Thus, the Master Plan uses specific terminology, such as “outdoor teaching and learning” and “environmentally sensitive areas” rather than a more generic “open space” designation.

Natural Environment
Existing physical features, policies and regulations determine the environmentally sensitive areas and assets on campus. Recognizing that other activities may also occur in these areas, the Master Plan designates environmentally sensitive areas as an overlay on the land use diagram. The Master Plan also recognizes that the appropriateness of other activities depends on the relative sensitivity of each area. Thus, the Natural Environment section of the Master Plan distinguishes areas for protection, enhancement, and study.

Outdoor Teaching and Learning
With Cal Poly’s polytechnic programs and applied “learn-by-doing” approach to education, a significant amount of teaching and learning occurs outside traditional classrooms and laboratories. The College of Agriculture depends on a wide range of fields, animal units, and research centers as “living laboratories” to support its programs. In addition, students and faculty in the College of Science and Mathematics study different geologic, biological, and botanical features of the campus. Design Village offers experimental design and construction opportunities for the College of Architecture and Environmental Design. The College
of Engineering uses outdoor facilities in such disciplines as transportation engineering. Finally, faculty in the University Center for Teacher Education and College of Liberal Arts take advantage of the campus setting to connect literature and culture with nature. The discussion of Outdoor Teaching and Learning designates land that regularly supports instruction, both within and outside the campus core. The Master Plan calls for Outdoor Teaching and Learning facilities that are designed and managed to promote an integrated teaching and learning environment where both buildings and spaces are central to the learning experience.

**Campus Instructional Core**

The instructional and support activities in the campus core define the life of the campus community. This land use encompasses the facilities and outdoor spaces east of the Union Pacific Railroad, south of Brizzolara Creek, and west of Perimeter Road/Grand Avenue. This 200-acre area concentrates an intense mixture of activity - classrooms, teaching and research laboratories, media support, study areas, advising centers, student organizations, committee meetings, food service, social interaction and recreation. The Master Plan focuses on making the campus core more “student-friendly and learner-centered.” In order to use land more effectively, increase open space, and improve pedestrian and bicycle circulation, the Master Plan calls for expansion and redevelopment of selected areas within the campus core.

**Residential Communities**

The Master Plan designates several areas for residential communities. The most prominent is the expansion of undergraduate student housing to accommodate enrollment growth. Both new residential complexes as well as the existing student residence halls are being redesigned as living/learning communities, with a range of services integrated within them - including study, food service, and personal services. In addition, the Plan designates potential areas for married student housing, and faculty and staff housing, accompanied by appropriate services.

**Recreation, Athletics and Physical Education**

Any change in the number and composition of students affects the amount of land needed for sports and recreation. While the Plan calls for consolidating new athletic facilities north of Brizzolara Creek, other recreational opportunities will remain focused around the Recreation Center south of Perimeter Road, and new facilities will be included as part of the new residential communities.
Public Facilities and Utilities
This land use category recognizes the critical role of public facilities to support the campus, while acknowledging that not all of them need to be proximate to the campus core. Thus, this section of the Master Plan designates land for such functions as the campus warehouse, transportation services, farm shop, and University Police. The Master Plan does not designate infrastructure as a land use. Rather, the discussion focuses on the capacity of these physical and utility systems to serve campus land use activities.

Circulation, Alternative Transportation and Parking
The Master Plan recognizes that parking is a major land use because most students, faculty and staff continue to commute by car. Related elements of the Plan address access and circulation issues and alternative transportation policies, which are designed to reduce parking demand. Nevertheless, the Master Plan must designate some land for surface lots and proposed parking structures to replace parking areas identified for other uses (e.g., in the expanded campus core) and meet projected parking needs.

Support Activities and Services
The Master Plan discusses the nature and extent of academic and support services required to support student enrollment, instruction, and an expanded residential community. However, because these services are designed to be integrated within the campus core and residential communities, the Master Plan does not designate support services as a separate land use.

Ancillary Activities and Facilities
A campus often attracts ancillary activities that contribute to the life of the campus and surrounding community and complement the University’s academic mission. To allow for such future possibilities, the Master Plan identifies areas appropriate for such activities within the instructional core and at satellite locations, such as a portion of Cheda Ranch known as Goldtree. Realization of such possibilities is likely to be tied to opportunities for partnerships with donors and other interested parties.

Plan Components - Overall Future Land Use
This section of the Land Use element provides an overview of the arrangement of future land uses at Cal Poly. Please refer to Chapter 7 for a discussion of campus procedures for considering any proposal to change these definitions or map designations.
Main Campus

The land use map shows that portions of the Campus Instructional Core will be redeveloped and expanded north to Brizzolara Creek, and that new regular instruction and support activities required to meet future enrollment needs will be concentrated within this area. This will require relocating some current facilities, such as the Corporation Yards and Farm Shop to provide additional land for academic use within the core.

The Master Plan continues to designate most lands in the Extended Campus beyond the Instructional Core for outdoor teaching and learning. In addition, the Plan relocates some facilities to provide land for future residential and recreational needs close to the campus core. The map provides an overlay indicating environmentally sensitive areas requiring careful protection, management, and, in some instances, restoration.

The main additions to student housing involve the creation of residential communities that extend north from the present residence halls into the area currently occupied by the beef unit. A smaller student residential complex may be built in the southwest corner of campus. Future faculty and staff housing may be constructed west of Santa Rosa Street (Highway 1). Future athletic facilities would be grouped north of Brizzolara Creek around the Sports Complex, except for some recreation fields within student residential communities. The map identifies one potential area for ancillary activities and facilities in the Extended Campus: the site in the southeast corner near Grand Avenue and Slack Street.

Circulation improvements include connecting California Boulevard to Highland Drive, and extending Highland Drive south of Brizzolara Creek to join an extension of Grand Avenue - all of these with commensurate improvements in intersections and public transportation, pedestrian and bicycle routes. Within the campus core, through traffic will be removed from both North and South Perimeter roads. The Master Plan accommodates parking by adding some additional capacity, but also by reducing the demand through policy alternatives. The Plan replaces surface parking that would be displaced by redevelopment and expansion of the campus core and by new student housing. In addition, the Master Plan provides for two additional parking structures - one near the California entrance in the Campus Instructional Core and one north of Brizzolara Creek in the Extended Campus.
Ph 5

University Land Uses

- Campus Instructional Core
- Residential Communities
- Public Facilities and Utilities
- Areas Suitable for Ancillary Activities and Facilities
- CDF Lease Property
- Parking (surface & structure)
- Remote Parking Options

Outdoor Teaching and Learning
Includes:
- Recreation, Athletics and Physical Education
- Natural Environment
- Preserves

Legend

Exhibit 5.1
San Luis Creek Watershed
Cheda, Peterson and Serrano Ranches in the San Luis Obispo Creek Watershed, and Chorro Creek, Walters and Escuela Ranches in the Chorro Creek Watershed

Future land use at the ranches in both the San Luis Obispo Creek watershed contiguous to the Main Campus and in the Chorro Creek watershed west of Cuesta College will continue to be rural, focusing on outdoor teaching and learning, except as noted below. As on the main campus, an overlay will designate environmentally sensitive areas for protection. Some specific areas will change to accommodate facilities from the Animal Science Department that will be moved away from the main campus to Chorro Creek or Walters ranch. In addition, the land use map identifies an area for ancillary activities and facilities at the Goldtree area on the northwest portion of Cheda Ranch.

Plan Components - Alternative Land Use and Circulation Patterns for Main Campus

The Campus Development map reflects the outcome of a process of weighing different land use and circulation alternatives for the main campus. The Master Plan team explored a variety of options for providing additional instructional and support space, housing additional students, moving sports and recreation facilities, adding parking, and improving circulation. As the team weighed different choices, the principles enumerated above (and in the more detailed plan elements) guided the refinement of the land use and circulation plan.

Analysis of environmental suitability and outdoor teaching and learning requirements limited the area under consideration for expansion of instructional capacity and provision of additional student housing. At the same time, the principles of proximity and compactness called for those activities to be close to the existing campus core. Balancing these requirements led to the plan to remove uses like the warehouse from the core and to relocate selected animal science facilities to simultaneously improve their academic quality and allow for environmental restoration. Environmental analysis of the Goldtree area in the northwest portion of the main campus showed development potential. However, the remoteness of the site (about 2 miles from the campus core), along with access and infrastructure limitations, suggested that it would be more appropriate for future ancillary facilities.

The principles of compatibility and proximity strongly influenced the consolidation of athletic facilities north of Brizzolara Creek. In addition, the configuration of new student housing to form distinct residential communities contiguous to existing residence halls, with a full range of support services, activities and programs, followed these principles along with the principle of community.
**Legend**

- Existing Agriculture Facilities
- Outdoor Teaching and Learning
- Roadways

**Environmentally Sensitive Areas**

- Biologically Sensitive Areas
- Preserves
- Significant Riparian Areas
- Reservoirs
- Streams
The desire for compatibility and compactness also guided plans for vehicular circulation on campus. Extensions to California Boulevard and Highland Drive permit the removal of regular through traffic on North and South Perimeter roads so as to reinforce a compact campus core and make it more pedestrian and bicycle friendly.

Finding land for parking proved most challenging. The principle of proximity calls for making the campus core readily accessible from parking lots, yet the amount of land required for parking (and/or cost of additional parking structures) at present parking ratios was formidable. Further, the same proximate lands are in demand for outdoor teaching and learning, campus instructional core uses and student residential communities. These considerations required a balanced approach - increasing access via alternative transportation, reducing parking demand, and still providing some additional parking. A remote vehicle storage site with shuttle service remains a potential option to balance parking demands with limited parking space in the instructional core.

**Plan Components - Building and Landscape Design Guidelines**

Several of the plan elements that follow contain principles and recommendations to guide future building and landscape design so as to achieve healthy, productive and comfortable indoor and outdoor environments. The Campus Instructional Core element provides the most direction with respect to design principles such as Sense of Place, Compactness, and Visual Continuity. It also includes a section specifying how a green space plan and a landscape plan should be developed as implementation studies. In addition to establishing aesthetic and user-sensitive design, the Master Plan is concerned with energy efficiency and resource conservation. The Public Facilities and Utilities element covers these characteristics of campus development. Other plan elements that involve development, such as Outdoor Teaching and Learning, Residential Communities, Parking, and Ancillary Activities and Facilities, do not repeat either these aesthetic or sustainability principles. Nevertheless, it is the intention of the Master Plan that they be applied to all campus development, including projects undertaken by campus auxiliaries, the Foundation and Associated Students, Inc. As the building and landscape design guidelines are developed, they will take into account the different features of different parts of campus, particularly, the Campus Instructional Core, agricultural facilities in the extended campus, and residential communities.
NATURAL ENVIRONMENT

Introduction
This element recognizes the land at Cal Poly that remains in a relatively natural condition. Of the 6,000 acres held in San Luis Obispo County, only a small percentage constitutes the developed campus. A larger percentage is devoted to agriculture, much of which is grazing land that adds to the region’s natural beauty. The balance is part of California’s very unique coastal landscape, one of only a handful of Mediterranean climates found in the world.

Background and Issues
Cal Poly’s natural environment may be viewed as several “landscapes,” each with qualities meriting conservation and offering numerous academic assets.

San Luis Obispo Creek Watershed Ranches and Main Campus
Many of the area’s natural resources infiltrate from the surrounding ranches into the Main Campus. These include the Brizzolara and Stenner Creek riparian corridors, the Santa Lucia hillside range and the entrance to Poly Canyon. The Master Plan recognizes these features and responds to the need for an appropriate balance between the urban and natural environments.

Ridges and Foothills
The Santa Lucia range and volcanic morros form the setting of Cal Poly and the city of San Luis Obispo. The eastern edge of the extended campus is built against the foothills of the Santa Lucia range. These features create a dramatic natural setting for the campus with panoramic views. Some of the steep slopes are studded with rare serpentinite rock formations. Steep slopes on these hillsides are subject to erosion and other forms of degradation from grazing and human activity.

Plant and Animal Communities
The vegetated habitats of the campus include oak woodlands, chaparral, coastal scrub, serpentinite grasslands, riparian woodlands and other habitats. Although non-native annual grasses have intruded into much of the area, important ecological study areas remain relatively undisturbed.

Serpentine refers to a rocky geologic formation of a greenish hue that supports a number of rare plant species.

Riparian refers to the vegetation and habitat in and near our creeks.

Please see the description of Existing Conditions in the Draft Environmental Impact Report (Chapter 6) for additional descriptive information about Cal Poly’s environmental setting.
Water Resources
The campus also has numerous reservoirs, many of which function as wildlife habitat as well as irrigation water resources.

Poly Canyon including Peterson Ranch
Poly Canyon provides a direct route up Brizzolara Creek into the relatively undeveloped areas northeast of the campus instructional core. The steep walls and rolling hillsides protect a rich variety of flora and fauna. This area is used extensively by biology students, natural resource management classes, Design Village, and ROTC. The Canyon offers a serene setting for studies using this natural resource and also for those that come for active and passive recreation.

Stenner Canyon
Farther from the core than Poly Canyon, Stenner Canyon on the northwest side of the campus core offers examples of coastal scrub and, eventually, an avenue to the rare serpentine ridge with endemic species not yet degraded by non-native grasses from Europe and Africa. This area is a natural laboratory adjacent to the Los Padres National Forest and is close enough for field study within regular class periods.

Chorro Creek, Walters and Escuela Ranches
Cal Poly’s ranches west of Cuesta College occupy approximately 3,000 acres situated above the Chorro Valley and across from the Hollister Peak. They offer valuable agricultural and biological resources typical of the original California coastal landscape. The ranches are used for various agricultural studies such as vineyards, grazing and dry farming. A 211-acre biological preserve is located north of Highway 1 on Escuela Ranch. Several creeks and drainages traverse the ranches and eventually flow into Chorro creek and on to the Pacific Ocean.

Issues

• Lack of a complete inventory and understanding of Cal Poly’s natural and biological resources

• Inconsistent recognition of natural areas as valuable instructional assets

“Preserve” refers to areas on campus with high biological value that are not appropriate for development, grazing or other activities that would degrade their quality.

1 Issues include items identified by campus and community members during Fall 1998, at public meetings during Winter 1999, during task force discussions in Spring 1999, and at subsequent meetings with campus and community groups in Fall 1999 and Winter 2000, including the Biological Sciences Advisory Committee.
• Degradation of natural areas, especially riparian corridors
• Water quality in creeks
• Erosion on steep slopes, including the vicinity of the Cal Poly “P”
• Intrusion of campus development on some plant communities and wildlife habitats
• Air quality

Principles
Cal Poly’s natural resources are no less a vital component of its academic mission than its classrooms and croplands. Students from nearly every college study, explore, restore and enjoy the environment surrounding our campus. Using these resources wisely, and sustaining them, is a message that sometimes only a university can adequately convey through the generations. The principles that guide Cal Poly in the future include developing ways to better understand, sustain and conserve our natural resources. Implementation of the Master Plan provides Cal Poly with a unique opportunity to maintain and improve its leadership role as a steward of the land.2

Stewardship
In addition to carrying out its primary mission of education and research through academic programs, the University functions as a prestigious and powerful institutional citizen. Within the overall context of its mission, the University will adopt management practices that protect and enhance the natural resources within its boundaries. Cal Poly’s 6,000 acres in San Luis Obispo County constitute a large portion of the Chorro Valley and are recognized by many as one of the region’s most important natural areas, especially given its role as a watershed for the Morro Bay National Estuary. The principle of stewardship includes permanent protection of environmentally sensitive areas as open, undeveloped lands.

Understanding
Cal Poly, as one of the premier educational institutions of the western United States, should offer education, insight and understanding of the natural environment...
our natural environment to the greater community. Various colleges, through study and research, should continue to expand our knowledge of the rare coastal and related ecosystems that exist here and which are threatened in so many areas elsewhere. The natural and biological resources on the campus must be inventoried and studied as to how they can be managed and conserved so that future generations of students can use these relatively undisturbed, natural outdoor laboratories as part of their educational experience at Cal Poly. Please see the Outdoor Teaching and Learning element regarding the educational importance of Cal Poly’s natural environment.

**Conservation and Sustainability**
Managing coastal ecosystems is a valued academic endeavor. San Luis Obispo County receives national attention and funding for protection of its natural resources including prime agricultural lands. Cal Poly should participate in these opportunities through education in the use and protection of our resources that perpetuate their existence.

**Biodiversity**
Cal Poly has a high biodiversity and variety of native biotic communities within walking distance of the Campus Instructional Core. This feature needs to be recognized and addressed in the Master Plan. Typically, these sites are of value or interest because of their particular physical features, wildlife habitat, and/or vegetation which are valuable for education and research in resources management. For example, there are several rare or endangered species and sensitive habitats on the campus that need to be protected for the long-term. Thus, Cal Poly will respect such study areas - e.g., relatively undisturbed native biotic communities, areas of past or current disturbance that need to be restored, areas of managed grazing, or harvest of agricultural crops.

**Viability**
Natural systems, plant communities and wildlife habitats typically require a minimum size - i.e., land area, density, or width - in order to maintain their integrity and ability to support a diversity of species. Riparian corridors require linear continuity as well as breadth. Through the Master Plan, Cal Poly should enhance the viability of natural systems and communities on campus. Further, because non-native plants can intrude across transition zones, ecological study areas require buffers from adjacent land uses.
**Enhancement**
Degraded areas of Cal Poly’s natural resources should be enhanced both as an act of stewardship and as an academic opportunity to conduct research, and implement actions to incorporate appropriate management and enhancement practices.

**Aesthetics**
Cal Poly has many native ecosystems as a backdrop for the campus. Not only are they used by students, but many visitors from all over the world and members of the community visit and appreciate the beauty of Cal Poly and recognize the importance of protecting these open space areas for future generations. Development and redevelopment stemming from this Master Plan will be sensitive to, and take advantage of, the campus’ visual resources.

**Access**
Cal Poly should provide access to its natural resources to enhance recreation and education, but trails and roads should be carefully designed and managed to avoid degradation of natural areas.

**Plan Components**
The Master Plan designates areas of land that are environmentally sensitive. These are generally shown as shaded areas on the land use maps. Some areas overlap with outdoor learning and other designations, and these areas should be coordinated with policies listed in their respective Master Plan elements. (refer to land use maps in the University Land Uses section)

The Master Plan proposes actions for the following environmentally sensitive lands on the 3,000 contiguous acres of the San Luis Obispo Creek Watershed ranches, and the Chorro Creek, Walters and Escuela ranches in San Luis Obispo County.

**Ecological and Biological Study Areas and Preserves**
The College of Science and Mathematics has designated several preserves and study areas for long-term research and protection on both the main campus and at the Escuela Ranch. In addition, class field trips and research activities use other outdoor lands regularly. These areas will need to be protected from activities, including grazing, that may degrade their value as excellent biological and botanical educational resources.
Environmental Consequences

Preservation of ecological and biological study areas will have a beneficial effect on the environment (Class IV).

Protection and Enhancement of Stream Systems

Brizzolara Creek flows through Poly Canyon and along the northern edge of the campus core. The section that flows alongside the feed mill site and other animal science facilities has been degraded. Sections of the creek banks have been reinforced or filled in. Existing facilities close to the creek need to be removed to allow for sufficient setback for creek enhancement and protection of the habitat and riparian-woodland community. Stenner Creek emerges from Stenner Canyon, passes near Cheda Ranch and crosses Highland Avenue where it is joined by Brizzolara Creek. Cal Poly has begun to restore and enhance these riparian corridors along Brizzolara Creek. Seasonal creeks exist on campus lands at the Chorro Creek Watershed ranches. Future development should provide buffers, include enhancement, and ensure there will be no further degradation of riparian areas. (refer to the campus development map in the University Land Uses section)

Environmental Consequences

Creek enhancement will generally have positive effects on the environment, enhancing habitat and aesthetic values. Although enhancement of riparian corridors is designed to result in overall improvements to biologic and hydrologic quality, immediate impacts of excavation, vegetation removal, and other activities may be adverse. Mitigation is recommended to aid in the reduction of impact significance.

Serpentine Protection

County maps as well as conservation organizations show where Cal Poly lands contain rare plant species endemic to serpentinite rock formations. The Nature Conservancy recognizes Cal Poly’s serpentinite endemics as one of California’s most important rare habitats. These areas should be protected and designated as botanical reserves with instruction and conservation as the only allowed uses.
Natural Environment

Water Reservoirs and Other Impoundments

Over the years a number of ponds have been established as water supply and retention and detention facilities for campus agricultural lands. Many of these ponds have developed wetland habitat qualities that support western pond turtles, fish and numerous waterfowl and other bird species. Protection of these qualities and various wildlife species should be incorporated where practical into Cal Poly’s pond maintenance practices. The ponds should also receive an edge buffer treatment from any nearby development.

Environmental Consequences

Serpentine protection will have a beneficial impact on visual resources (rock outcrops), sensitive plants which are associated with serpentine soils, and will protect a unique geologic feature (Class IV).

Environmental Consequences

Required maintenance (other than emergency repairs) for Cal Poly’s ponds can be disruptive to wildlife and wetland values. Maintenance work shall minimize effects on vegetative communities surrounding the edge of the resource. Activities near the ponds should be sensitive to the wildlife that use the waters and nearby vegetation. Regulatory agencies shall be contacted where necessary.

Steep Slopes

The Extended Campus’s eastern edge is built against the foothills of the Santa Lucia range. The City and the County have developed regulations to protect hillside and to reduce damage to structures from steep slopes and poor building conditions. Development costs and slope failure risks are considerably higher when buildings are placed higher up on the hillsides. Hillside views are also degraded as a result of this condition. The Master Plan considers slope limitations in the selection of potential development sites. A special set of management practices need to be developed for the area around the Cal Poly “P” east of campus in order to reduce erosion and protect the fragile slope around this landmark.
**Environmental Consequences**

Limitation of development from steep slopes will protect highly visible and scenic areas around the campus. Protection of these hillsides will also protect native grassland, populations of *Calochortus obispoensis* (a sensitive plant species), and rare plants associated with serpentine soils as well as reducing the likelihood of erosion and sedimentation of riparian areas. The restriction is beneficial (Class IV).

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**Vegetated Habitats**

As part of the implementation of the Master Plan, Cal Poly should maintain an inventory of oak woodlands, chaparral, coastal scrub, serpentine communities, native grasslands and other habitats. Further delineation of campus plant communities will be undertaken as an implementation action. Additional areas should be evaluated as botanical preserves.

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**Environmental Consequences**

A thorough investigation and inventory of sensitive plant species and communities on the property will provide not only Cal Poly, but also the populace at large, with a better understanding of the resources present. This will be beneficial (Class IV).

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**Habitat for Rare and Endangered Species**

Implementation of the Master Plan should include maintaining an inventory of any rare and endangered plants and animals on campus lands and a set of management practices for their protection and to maintain the viability of their habitats.

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**Environmental Consequences**

Inventoriing the habitat of rare and endangered species will prevent adverse effects or modifications of their environment or habitat. Management practices enacted for protection of these species will help to prevent further population loss. This action will be considered beneficial (Class IV).
**Grazing**
Many areas of Cal Poly are rich with natural resources, and are also used for grazing sheep and cattle. These areas should be managed to realize the best practices for grazing while maintaining their ecological values.

**Environmental Consequences**
Protection of biological resources in the grazing land management program will benefit plant and animal species currently impacted by grazing activities (Class IV). Implementation of the proposed policy may also benefit soils if proposed grazing management include measures to limit slope and soil disturbance.

**Trails**
Rural roads and trails provide access to agricultural and natural areas outside the campus core for recreation and study. To protect those assets, trails should be improved, and new trails should be designed and managed to be sensitive to ecological resources. Some areas should be designated as suitable for foot trails only; other areas should permit horseback riding and mountain bikes. Trail standards need to be designed to address security as well as environmental issues – for example, stiles can provide access where appropriate over fences or locked gates. The County of San Luis Obispo has a Trails Plan (1991) which identifies portions of Cal Poly property as suitable for expansion of the trails system. The implementation of the Master Plan will include consultation with the County regarding placement of these trails on site.

**Environmental Consequences**
Trail development can create modifications to drainage patterns, inducing erosion to hillsides, which increases sediment loading in surface waters. The plan component is explicit in its directive to site trails in an ecologically sensitive manner; impacts are less than significant (Class III).

**Vehicular Access**
Poly Canyon Road and other rural roads provide vehicular access to agricultural lands, Design Village, and other sites away from the campus instructional core. Vehicular access on these roads, including Poly Canyon Road, should be limited to campus service, maintenance and
emergency vehicles. Rural road maintenance should be sensitive to the natural environment - particularly erosion and water quality at stream crossings.

**Environmental Consequences**

Environmentally sensitive maintenance of roads will result in beneficial impacts to riparian areas and vegetation. Proper maintenance may also reduce soils erosion and consequently, sedimentation of riparian areas. These impacts are beneficial (Class IV).

**Extended Campus**

The Extended Campus’s natural resources include habitats along its edge, the Brizzolara Creek riparian corridor, and Smith, Shepard and other nearby reservoirs. These areas will be enhanced and buffered during redevelopment of the campus core.

**Environmental Consequences**

Enhancement of visible natural resources will have a beneficial impact on aesthetics. Enhancement of modified habitats will have a beneficial impact on plant and animal species and will suppress soil erosion and reduce the potential for landslides. Enhancement of degraded reservoirs and riparian corridors will benefit hydrologic processes and water quality where those functions and qualities are impaired. These impacts are considered beneficial (Class IV).

**Land Management**

Implementation of the Master Plan will include the development of a set of "best management practices" or management measures to protect and restore Cal Poly's natural environment. Details will be designed to fit individual circumstances. For example, rather than establish a set breadth as buffers for ponds and riparian corridors, management practices will be determined by such features as steepness of banks and extent of vegetation.
OUTDOOR TEACHING AND LEARNING

Introduction

Cal Poly recognizes that student learning occurs throughout the campus. With Cal Poly’s polytechnic programs and applied, “learn-by-doing” approach to education, a significant amount of teaching and learning occurs outside traditional classrooms and laboratories. For example, the College of Agriculture operates a working farm with a wide range of fields, animal units, and research centers to support its programs. In addition, students and faculty in the College of Science and Mathematics study different geologic, biological, and botanical features of the campus. Design Village offers experimental design and construction opportunities for the College of Architecture and Environmental Design. The College of Engineering uses outdoor facilities for such programs as transportation engineering. Specific courses in these and other colleges, including Liberal Arts, are frequently designed to focus on different aspects of campus lands. Finally, faculty in all colleges may assign field trips and student projects that take advantage of the campus setting.

Background and Issues

The campus devotes most of its land to its “living laboratories.” Further, the campus is involved in a number of research stations and projects away from the main campus. The following table depicts agricultural use of Cal Poly Lands in San Luis Obispo County:

<table>
<thead>
<tr>
<th>Agricultural Activity</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigated Crops</td>
<td></td>
</tr>
<tr>
<td>Vegetable, ornamentals</td>
<td>65</td>
</tr>
<tr>
<td>Orchard, vineyards</td>
<td>245</td>
</tr>
<tr>
<td>Grain</td>
<td>35</td>
</tr>
<tr>
<td>Alfalfa</td>
<td>10</td>
</tr>
<tr>
<td>Permanent pasture</td>
<td>70</td>
</tr>
<tr>
<td>Dryland Crops</td>
<td></td>
</tr>
<tr>
<td>Hayland</td>
<td>135</td>
</tr>
<tr>
<td>Seeded pasture</td>
<td>131</td>
</tr>
<tr>
<td>Rangeland</td>
<td>4,107</td>
</tr>
<tr>
<td>Farmsteads, Instructional and Research Units</td>
<td>100</td>
</tr>
<tr>
<td>Sub-total</td>
<td>4,898</td>
</tr>
</tbody>
</table>

Table 5.1
Outdoor teaching and learning lands consist of the following (discussed in further detail below):

- The campus farm, which includes agricultural facilities in the Extended Campus surrounding the campus core, the Cheda, Peterson, and Serrano ranches in the San Luis Obispo Creek watershed, and the Chorro Creek, Walters, and Escuela ranches in the Chorro Creek watershed in San Luis Obispo County
- Ecological and biological study areas and preserves in the Extended Campus, at Peterson Ranch and at Escuela Ranch
- Discipline-specific outdoor facilities such as Design Village at the head of Poly Canyon
- Campus core
- Swanton Pacific Ranch (to be addressed in a subsequent document)
- Other off-campus research stations and projects

**Campus Farm (in the Extended Campus)**
The College of Agriculture (CAGR) actively manages the following lands and facilities as production units for regular field laboratory instruction, research and student enterprise projects.

- Crop lands - generally on prime agricultural soils
- Orchards and vineyards - designated as Unique Agricultural Lands generally on prime and secondary agricultural soils
- Grasslands/pastures/forage areas - generally on secondary agricultural soils designated as Farmlands of Local Importance and used for grazing, forage crop production and as wildlife habitat
- Animal units and pens - e.g., Dairy Instructional Unit, Horse Unit, Swine Unit, Poultry Unit, Beef Unit

Prime agricultural soils are usually the most valuable soils for farming.

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1. Off-campus research stations occupy a variety of locations, and may change from time to time depending upon the nature of specific applied research projects. Some examples at the time of this writing include the following: Chumash Creek watershed project in coordination with the Morro Bay Estuary Plan, Walters Creek watershed project in coordination with the Morro Bay Estuary Plan, Carrizo Plain and Guadalupe Dunes. The Master Plan does not address these arrangements as they are managed individually by the disciplines or centers directly involved.
• Other instructional units - e.g., Crop Science, Environmental Horticulture
• Leaning Pine Arboretum
• Research units - e.g., Dairy Products Technology Center; Irrigation Training and Research Center
• Special CAGR teaching and research areas and projects: e.g., tree farm; logging sports complex; survey field; farm tractor and equipment safety demonstration and practice field; controlled traffic farming system field; Merriam irrigation practices field; student experimental farm and composting facility; weed research field
• Special CAGR enterprise project areas not included above: vegetable and agronomic crop fields.
• Water supply, delivery and treatment systems, facilities and ponds;
nutrient and waste management. These facilities are not only necessary to support agricultural operations, but they are also subjects of research and analysis themselves—e.g., by Bioresource and Agricultural Engineering, Natural Resources Management and Biological Sciences students and faculty. Examples include the methane recovery lagoon.

- Support facilities, sheds, equipment, etc. - Production agriculture requires a range of outbuildings and equipment to support safe and efficient production. Many of these facilities are also central to instruction for Bioresource and Agricultural Engineering students and faculty. Examples include the Agricultural Safety Institute.

- Note: Students and faculty in CAGR departments without assigned fields or units, such as Agribusiness, Agricultural Education and Communication, Food Science and Nutrition and Soil Science use the other lands and production facilities as part of their curriculum. Activities involving soil research, surveying, global positioning systems, geographic information systems, and various field inventory exercises also use a variety of agricultural lands.

On the campus ranches in both watersheds in San Luis Obispo County, outdoor teaching and learning lands related to agriculture currently include the following:

- Grasslands/pastures/forage areas—generally on Class II soils, some designated as Farmlands of Local Importance, and used for grazing, forage crop production and as wildlife habitat on all six campus ranches in both watersheds
- Sheep unit - Cheda Ranch
- Crop lands - Chorro Creek Ranch
- Vineyards - Chorro Creek Ranch

Ecological and Biological Study Areas and Preserves
The College of Science and Mathematics manages several preserves and study areas for long-term research and protection on both the main campus and at the ranches in both the San Luis Obispo Creek and Chorro Creek watersheds. In addition, class field trips and research activities use other outdoor lands regularly (refer to land use maps in the University Land Uses section).

- Botanical Garden east of the head of Poly Canyon, partly in Peterson Ranch

The sheep unit and sheep operations occupy approximately 144 acres, or about one-third of Cheda Ranch, including some of the area known as Goldtree.
- Ecological Preserve on the north side of Brizzolara Creek above the entrance to Poly Canyon in the Extended Campus
- Ecological Preserve on the Escuela Ranch (211 acres)
- Riparian corridors, ponds, grasslands, woodlands, and serpentine slopes represent additional areas of interest to faculty and students in the sciences. Thus, scientific study is an overlapping activity in many environmentally sensitive areas and on some agricultural lands (especially rangelands). Further, faculty and students in other colleges, such as Liberal Arts take advantage of these areas to connect literature and culture with nature, or for nature sketching and photography.
**Discipline-Specific Outdoor Facilities**

**Design Village**
The College of Architecture and Environmental Design has sponsored experimental building in the area west of the head of Poly Canyon and is responsible for maintaining structures in this area known as Design Village at the boundary between the Extended Campus and Peterson Ranch.

**Other Outdoor Teaching and Learning Facilities**
Examples of other activities that require outdoor space include the following: College of Engineering’s smart highway pavement testing area; and student organizations and clubs: e.g., rodeo.

**Campus Instructional Core**
The Campus Instructional Core accommodates some outdoor teaching and learning activities that do not require large areas of land. Examples include a diversity of plant specimens, plant communities and plant arrangements of interest to such fields as botany, landscape architecture, and environmental and ornamental horticulture. In addition, the campus core offers subject matter for art, design, photography, and environmental design classes.

**Issues**
- Pressure to expand instructional core, sports and recreation activities and student housing into agricultural lands
- Environmental degradation of some areas, in part due to past agricultural practices and some recreational uses (e.g., mountain bikes)
- Need for more sustainable approach to land and resource management
- Overlapping outdoor teaching and learning uses in some areas, leading to tensions over access and management practices, including conversion of one broad agricultural use to another
- Ambiguous boundaries or limits for some activities, such as grazing, Design Village, etc.
- Lack of clarity regarding responsibility for lands beyond those clearly defined as the campus farm

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2 Issues include items identified by campus and community members during Fall 1998, at public meetings during Winter 1999, during task force discussions in Spring 1999, and at subsequent meetings with campus and community groups in Fall 1999 and Winter 2000.
Principles

The Outdoor Teaching and Learning element of the Master Plan recognizes the centrality of outdoor “living laboratories” to Cal Poly’s mission and “learn-by-doing” approach to education. Thus, in addition to traditional indoor facilities such as classrooms, teaching laboratories, computer labs, and libraries, the Master Plan identifies, protects and clarifies responsibility for outdoor lands and facilities that contribute to student learning, both within and outside the campus core.

Each college and program should address its outdoor teaching and learning needs in its strategic and academic planning.

Nine principles guide the location of outdoor teaching and learning lands and facilities: foresight, suitability, critical size, investment, preservation, continuity, accessibility, visibility, and integration.¹

Foresight

In order to provide “state-of-the-art” learning opportunities, the campus must not simply sustain lands and facilities for outdoor teaching and learning, but more importantly, the campus must envision how these lands and facilities can meet emerging academic program needs. For example, campus agricultural lands can be used to experiment with multi-purpose facilities and exemplify applications of new technologies such as global positioning systems, sustainable yield timber harvesting, etc.

Suitability

Many outdoor teaching and learning activities depend on particular physical or environmental features, such as soil type, drainage, exposure, wildlife habitat or plant community. For example, prime soils are a critical resource for agriculture.

Critical Size

Many Outdoor Teaching and Learning activities, particularly agriculture, require a minimum size in order to operate efficiently and effectively. This size is a function of teaching needs as well as staffing requirements, resource management and land features. Thus, the amount of land

¹ The Master Plan team synthesized this list of principles from meetings with the President and senior campus executives, from meetings with interested colleges and units - particularly, the College of Agriculture Land Use Committee and the Biological Sciences Advisory Committee - and from recommendations provided by the campus/community Land Use and other task forces during Spring 1999. The Natural Environment Task Force pointed out the centrality of outdoor teaching and learning to all colleges at Cal Poly.
Outdoor teaching and learning activities require specific resources and infrastructure to support them. The quality of these resources is determined by factors such as the scale of operation, the size of the identified unit, and the economic viability of the activities. For example, the size of an agricultural operation influences how well students can learn about managing resources to produce better habitat, cleaner water, and healthier food. Smaller operations may not be able to demonstrate the complexities and interactions of various crop or livestock production factors effectively.

**Investment**

Some outdoor teaching and learning activities involve significant past investments in plants, soil preparation, facilities, equipment, and supporting infrastructure. The Master Plan recognizes this capital investment and acknowledges the need for land expansion to continue research projects.

**Protection and Management**

Outdoor teaching and learning activities rely on the continuous use of a site for research and experimentation. These sites are often valuable or interesting for their physical features or vegetation. The Master Plan respects such study areas, such as relatively undisturbed biotic communities and areas undergoing restoration or managed grazing or harvest.

**Continuity**

When the Master Plan calls for moving an outdoor teaching activity, the principle of continuity ensures that the site and facilities are identified and developed first to minimize disruption. Biological or geological resource study areas that need restoration cannot be moved and must be protected and managed properly to ensure sustainability.

**Accessibility**

Many courses utilize outdoor teaching and learning lands and facilities, and these activities must be accessible to students and faculty.
within a normal laboratory schedule. In some instances, transportation for students (or animals) may be substituted for proximity, so long as such a service provides for access within normal laboratory teaching schedules.

**Visibility**

The centrality of outdoor teaching and learning also calls for these lands and facilities to be a highly visible, even tangible, part of the main campus image - not just on outlying lands.

**Integration**

Outdoor teaching and learning activities that do not require extensive amounts of land should be integrated within the campus core as well as in outlying areas. For example, landscaped areas around buildings can also serve as study areas for different types of plants. All campus users should have the opportunity to experience outdoor teaching and learning lands and facilities.

**Plan Components**

The Master Plan designates a range of outdoor teaching and learning lands and facilities. Some areas overlap with environmental designations and are subject to the policies in the Natural Environment element of the Master Plan. Others involve multiple users, and thus must be managed to accommodate students and faculty from more than one discipline or college. (refer to maps in the University Land Uses section)

The Master Plan reinforces outdoor teaching and learning lands and facilities on the main campus and campus ranches in San Luis Obispo County by the following programs:

Outdoor Teaching and Learning includes agricultural facilities as well as fields, grazing lands and study areas used by multiple colleges. Thus, some of these lands are “developed” in the sense that they are fenced, graded, plowed, and/or irrigated. In addition, both agricultural lands and Design Village contain structures - and some of these may be relocated or replaced as part of the Master Plan. The Development Suitability map (Exhibit 4.11) shows areas within the main campus that are appropriate for agricultural units and accessory structures. The ranches in both the San Luis Obispo Creek and Chorro Creek watersheds may also include agricultural and accessory structures to support applied research and educational uses.
Preservation and Enhancement of Campus Farm and Ranches

The Master Plan calls for the continuation of College of Agriculture outdoor teaching and learning uses, as shown on the land use maps for the Extended Campus and campus ranches. However, some adjustments in these lands are necessary to balance other campus needs. These changes are discussed below as part of the Farm Shop relocation and Animal Science facility redevelopment projects.

• Prime agricultural soils (class I) will be retained in agricultural use.

• The land use maps in the University Land Uses section clearly define the boundaries of (a) the main campus working farm, and (b) grazing lands on the campus ranches. The College of Agriculture has primary responsibility for the management of these lands and facilities.

• The road and fencing system should be more clearly defined and provisions made for maintenance.

• Where agricultural uses occur in environmentally sensitive areas, they should be managed to protect or enhance environmental quality, sustainability and productivity of these sensitive areas.

• Please refer to Chapter 7 for a discussion of procedures and responsibilities with respect to any proposed changes or conversions of one broad agricultural use to another (e.g., from grasslands to crops).

• Farm Shop relocation to the old Poultry Unit will be covered in more detail in conjunction with plans to relocate the campus corporation yards. (See Public Facilities and Utilities element.)

Environmental Consequences

The Master Plan specifically protects prime agricultural soils from further development, and specifies inclusion of ecological value in the scope of the agricultural program. Impacts are beneficial (Class IV). Cal Poly has prepared a Water Quality Management Plan that addresses the water quality issues associated with agriculture.

Animal Science Facility Redevelopment

The Master Plan calls for relocation and redevelopment of Animal Science facilities in order to provide more “state-of-the-art” facilities for that department, to allow for environmental enhancement in the area around Brizzolara Creek and to provide sites for additional student housing.

A fundamental premise is that agricultural lands and other outdoor Teaching and Learning lands are not undesignated space available for future development. Rather, they are to be protected as a distinct land use that supports the academic mission of the University.
The Bull Test location was chosen over another site on Walters Ranch which would have been prone to flooding and water quality impacts to Chorro Creek.

**Bull Test**
The current bull test area will be relocated to a 30-acre site at Chorro Creek Ranch.

**Environmental Consequences**
The proposed site for the Bull Test is proximate to Chorro Creek, a major tributary to the Morro Bay National Estuary. Development of the facility will include BMPs designed to manage runoff and prevent cattle intrusion into the creek. Biological impacts are less than significant because of mitigation incorporated (Class II). Visual impacts (e.g., lighting) are considered less than significant (Class III).

**Feedlot**
The existing facility will be decommissioned. Its functions will be incorporated into a reconfigured Beef Cattle Evaluation Center.

**Environmental Consequences**
The feedlot is currently located adjacent to Brizzolara Creek; movement to the northwest will be a beneficial impact (Class IV).

**New Agriculture Pavilion**
A multi-purpose agriculture pavilion within walking distance of the campus core on the site currently occupied by the old Beef Unit, Livestock Pavilion and Herdsman Hall will accommodate lost access due to relocating the bull test to Chorro Creek Ranch and will improve access from other animal units on the main campus. This facility will replace the existing old Beef Unit, Beef Pavilion, Herdsman Hall and abattoir functions.

**Environmental Consequences**
Temporary noise and air quality impacts associated with the redevelopment will be significant, but mitigable (Class II). Other impacts are considered less than significant (Class III).

**Harvest/Post-Harvest Facility**
The abattoir will be replaced as part of the Agriculture Pavilion project.
Outdoor Teaching and Learning

Feed Mill
This facility should be relocated and redesigned for future needs. (Sites under consideration on the main campus include the Old Poultry Unit and a site proximate to the Dairy Unit feed storage area.)

<table>
<thead>
<tr>
<th>Environmental Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Feed Mill may be visible from Highway 1 in its new location, but its apparent size will be diminished by the Sports Complex. Reflective materials should be avoided. Impacts are less than significant (Class III). Movement of the Feed Mill away from Brizzolara Creek will remove pollution risks.</td>
</tr>
</tbody>
</table>

Horseshoeing Facility
A scaled down facility with a small arena-type classroom to serve the educational and practical needs of the equine activity will be located on the existing Horse Unit.

Preservation of Ecological and Biological Study Areas and Preserves
To support long-term research as well as field trips and other nature study activities, the Master Plan identifies and protects ecological study areas on both the main campus and campus ranches in San Luis Obispo County.

- **Designated Preserves and Study Areas** - Areas within specified boundaries on the land use maps should be fully protected from any human activity except for hiking trails. Motorized vehicles, mountain bikes, horseback riding and grazing are prohibited in these areas. (See Natural Environment element.) Please refer to Chapter 7 for a discussion of policies with respect to removing rocks, vegetation or animals for scientific study and procedures for reviewing any changes proposed in these areas, including trail improvements.

- **Botanical Garden** - Please refer to Chapter 7 for a discussion of policies and procedures for management of the Botanical Garden to the east of the head of Poly Canyon.

- Scientific study is an overlapping activity in many environmentally sensitive areas (such as riparian corridors, ponds, grasslands, woodlands, and serpentine slopes), and it should be conducted consistent with the policies and principles in the Natural Environment element of the Master Plan.
• Scientific study is an overlapping activity on some agricultural lands (e.g., grasslands that serve as wildlife habitat). Thus, the management of those lands will recognize ongoing field research by faculty and students, particularly in the College of Agriculture and the College of Science and Mathematics. Please refer to Chapter 7 for a discussion of procedures and responsibilities for managing mixed use areas.

Environmental Consequences

The identification of ecological preserves will have a positive effect on the environment (Class IV).

Creek Enhancement Projects

Brizzolara Creek Enhancement Project

Brizzolara Creek flows through Poly Canyon and along the northern edge of the campus core. The section that flows alongside the feed mill site and other animal science facilities has been degraded. Sections of the creek banks have been reinforced or filled in. Existing facilities close to the creek need to be removed to allow for sufficient setback for enhancement and protection of the creek and its associated habitat. The area near the feed mill has been designated for this Enhancement Project. This will include removal of buildings and other structures between the entrance to Poly Canyon and Via Carta. Creek banks will be improved for the benefit of fish and other wildlife. An enhancement project program will be developed as an implementation action.

The draft plan had programmed a 540 bed housing project in this area ~ the creek enhancement project has superseded that proposal.

The boundaries, stream set backs and site plan for the Enhancement area are being refined in consultation with the Biological Sciences Advisory Committee and Landscape Advisory Committee.

See Appendix F after Chapter 7 for “Goals and Guiding Principles for the Cal Poly Creek Management and Enhancement Plan.”
Stenner Creek
Stenner Creek emerges from Stenner Canyon, passes near Cheda Ranch and crosses Highland Avenue where it is joined by Brizzolara Creek. Future activities should provide buffers, include enhancement, and ensure there will be no further degradation of this area.

“Guiding Principles and Goals for the Cal Poly Creek Management and Enhancement Plan” are located in Appendix F. The principles and goals will apply to all creeks on Cal Poly lands, including Stenner Creek. In addition, Cal Poly has partnered with the Land Conservancy of San Luis Obispo County. The Land Conservancy has undertaken several projects on Stenner Creek to reduce erosion and improve fisheries habitat, especially for the endangered steelhead. This enhancement work will continue with other reaches of the creek.

Environmental Consequences
Protection, enhancement and buffering of riparian corridors will have a beneficial impact on the visual quality of creekside areas, and will eventually benefit plants and animals dependent on such resources. The enhancement and protection may result in an overall decrease in erosion and improvement in hydrologic processes. The policy will have significant short-term impacts to animal and plant species, however, as well as increasing erosion potential. Mitigation is recommended to reduce impacts.

Design Village
The College of Architecture and Environmental Design is responsible for maintaining structures in the area known as Design Village.

- As much of the Design Village area is environmentally sensitive (particularly with respect to erosion), future development in Design Village should be designed and managed to protect or enhance environmental quality (including water quality).
- Future development should adhere to the environmental sensitivity principles and guidelines contained in the Master Plan and its implementation guidelines.
- The natural and biological resources inventory of the campus should include detailed analysis of the Design Village area in order to identify any rare and endangered plant species associated with the adjacent serpentine rock formations.
Please refer to Chapter 7 for a discussion of procedures and responsibilities for managing the Design Village area.

**Environmental Consequences**

The Design Village is located in a biologically and culturally sensitive area. Mitigation will help to reduce impacts from further development to a less than significant level (Class III).

**Other Discipline-Specific Outdoor Teaching and Learning Facilities**

The San Luis Obispo Creek Watershed land use map designates areas for outdoor teaching and learning, including: College of Engineering (smart highway pavement test track); rodeo arena; and other club or organization activities.

**Campus Core**

The Campus Instructional Core can accommodate some outdoor teaching and learning activities that do not require large areas of land. (See Campus Instructional Core element.)

- Landscape guidelines should address planting to provide for a diversity of specimens, plant communities and arrangements of interest to such fields as botany, landscape architecture, environmental and ornamental horticulture, and the general campus population.

- Exhibit and demonstration areas in the campus core should be established to represent Cal Poly’s teaching, learning and research activities on a regular basis, rather than only during special events such as Open House.

**Environmental Consequences**

Development and redevelopment of small landscaped areas within the campus core will not have a significant effect on the environment.
CAMPUS INSTRUCTIONAL CORE

Introduction
The Campus Instructional Core is bounded by Slack Street on the south, Union Pacific Railroad on the west, Highland Drive on the north and Perimeter Road and Grand Avenue on the east. The instructional core, along with the surrounding outdoor teaching and learning facilities, is the heart of the University and contains its primary institutional and support service facilities, but not the existing campus student residence halls.

Background and Issues
The campus core has a range of building types, sizes and ages, varying from small wood frame cottages and former dormitories to recent reinforced concrete structures. (refer to the building age map in the Existing Conditions section) Several areas and individual buildings within the core are functionally obsolete. These include the existing corporation yard, Building 52 area, southwest corner including the Air Conditioning building, the northwest area including the Modoc building and the parking lot west of Kennedy Library. (refer to the campus redevelopment map in this section) Currently, the campus is connected with a web of pedestrian walkways and random gathering spaces. Vehicle and pedestrian conflicts occur in many locations.

Issues
• Lack of hierarchy among urban spaces
• Lack of a clearly defined system of pedestrian thoroughfares, bikeways and wayfinding
• Limited campus green space
• Lack of a design theme that integrates the built environment with the natural environment
• Sprawling one-story buildings in the center of campus
• Underutilized land in the Science Building (52) area and corporation yards

1 Issues include items identified by campus and community members during Fall 1998, at public meetings during Winter 1999, during task force discussions in Spring 1999, and at subsequent meetings with campus and community groups in Fall 1999 and Winter 2000.
• Outdated instructional spaces and laboratory spaces
• Lack of flexibility in classroom technology and spatial arrangements
• Lack of continuity in architectural styles, building materials, scale, massing or orientation.
• Lack of architectural design that exemplifies energy efficiency and resource conservation for teaching, research and operational efficiency
• Inconsistent use of materials in paving, urban furnishings, signs, graphics, lighting etc.
• Lack of an organized and cohesive campus landscape that supports the campus’ urban environment and teaching mission
• Poor connection between the campus core and adjacent residential and parking areas
• Building designs generally lacking in human orientation and connection to comfortable outdoor spaces
• Inconsistent and confusing building signage and references

Principles
In an effort to maintain a compact instructional core and to avoid unnecessary conversion of surrounding agricultural and natural lands to urban uses, a predominant goal of the Master Plan is to reorganize and intensify the built environment within the existing campus core. A careful analysis of existing facilities and selective redevelopment of marginal resources make intensification of the core area possible. Redevelopment areas provide the opportunity to create a net gain of both instructional, support and green space. Redevelopment provides significant opportunities to modernize facilities and create an organized system of pedestrian ways and urban spaces. Historically lacking a consistent urban design treatment, the campus should benefit from a concerted effort to identify a hierarchy of gathering spaces and landscapes.²

Student Centered and Learner Friendly
A student-centered and learner-directed philosophy is at the core of the

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² The Master Plan team synthesized this list of principles from meetings with the President and senior campus executives and from recommendations provided by the campus/community Built Environment, Circulation and other task forces during Spring 1999. The Landscape Advisory Committee also recommended a set of principles that apply to the campus core.
University’s academic mission, and it embodies itself in the University’s culture, intellectual diversity, teaching resources and social opportunities. The campus physical design plays a vital role in achieving this mission. The Master Plan seizes this opportunity to evaluate and reform the campus physical framework to create an environment that should meet this objective. Design of the campus core should enable learning and foster intellectual inquiry so it should be a delightful place to study, work and visit. Active learning happens everywhere.

**Flexibility**
Learning spaces should be kept as flexible as possible to ensure viability long into the future. It is critical to ensure that investments made in academic space can respond functionally to changing student needs, technology and instructional methods. New facilities proposed by the Master Plan need to be designed for diverse user groups, both in composition and size, to maintain this flexibility. A variety of learning spaces should be available to support different types of interactions, i.e. private (individual) study, small groups, large groups, formal and informal meetings.

**Sense of Place**
Cal Poly is blessed by its unique natural setting, community surroundings and climate. The Master Plan proposes to capitalize on this unique “sense of place” by providing direction for enhancing the physical environment of campus. Campus planning, including the placement and massing of buildings, circulation paths, entries and landscaping should reflect and enhance connections to the surrounding landscape. Creating an organized series of campus green spaces, a clear system of pathways, a cohesive urban design treatment, and a variety of University facilities provides an environment where all forms of learning and living experiences can enrich student, faculty and staff life. A mix of gathering places should encourage conversation and interaction. Campus design should enable people to know where they are, wherever they are on the campus and enable them to find any destination with ease. The campus should also offer a variety of climate-adapted indoor and outdoor spaces.

**Compactness**
Spatial efficiency and accessibility are principles that emphasize compactness within the instructional core. This quality enables facilities for additional enrollment and support structures to be placed within the existing campus core and within a 10-minute walking distance of most core destinations. Some areas of campus offer “infill” opportunities for
the addition of a building or a new wing on an existing building to expand instructional capacity and contribute to a compact campus core.

Redevelopment
Making the best use of the University’s resources is important for many reasons. It is especially significant for promoting a compact instructional core and for creating a campus “sense of place” through urban design. While redevelopment of existing facilities within the campus core enables preservation of adjacent lands, it also provides opportunities to create a dynamic mix of educational, social and service spaces. Replacing existing one-story buildings with new multiple-story buildings can increase open space in the core and improve the quality of outdoor spaces and pedestrian and bike circulation.

Visual continuity
Campus buildings should incorporate the best design elements regarding massing, human scale, materials, articulation, architectural interest, and a connection with surrounding urban spaces. Outdoor spaces should have a sense of boundary and “sense of space” that help to define them as specific campus areas. Landscaping should tie these spaces together through a unifying visual design. Common design themes should connect all areas of the campus to provide a sense of continuity between entrances and the heart of the campus. The overall design of campus lighting standards, trash and recycling receptacles, street and directional signs, continuity of paved surface materials, plant materials, benches, seating, etc. should all contribute to and reinforce this continuity. At the same time, campus design should recognize the distinct character of different sections of campus, such as the early California architecture in the southwest corner of campus. Landmarks and place-making elements that identify special campus locations and clarify directions should be created. Design of the built environment (interior and exterior) should take full advantage of the Central Coast’s Mediterranean climate for health, environmental, energy efficiency, and aesthetic reasons.

Circulation
Gateway entrances to Cal Poly should reflect its mission as an institution of higher learning. Campus pathways should provide an efficient and effective means of pedestrian circulation and orientation, whether people arrive by car, foot, bike or wheelchair. (refer to Circulation element, too)
Multidisciplinary Districts
The Master Plan creates opportunities for districts that consolidate connected disciplines rather than college-based districts per se. Each district should include instructional facilities for a group of related disciplines, general-purpose classrooms, student and faculty research space, offices, and support functions. Campus buildings and spaces should be designed appropriately with regard to their respective district, and also connect with adjacent districts. For example, buildings may need multiple fronts and entrances. Landscape design should reinforce the identity of each district as well as tie the campus together visually.

Integration of Support Activities
The campus core should provide a variety of support service centers where informal learning, interaction and socialization can occur as well as formal instruction. New buildings should integrate these activities within a single structure.

Social Environment
As Cal Poly’s residential community grows, the campus should offer entertainment and social facilities to support 24-hour activities. Residential villages should contain centers that provide needed residential services including groceries, housekeeping and personal services. It is critical that Cal Poly provide innovative, intriguing, dynamic and exciting campus spaces to meet future student needs.

Plan Components
Campus Centers
As the campus continues to evolve as an institution of higher learning, the range of services and activities made available to the campus population must be expanded to support changing needs. The unique physical spaces where these services and activities will be located need to be planned carefully. A primary goal of the Master Plan is to create a primary center on the campus that offers a diverse mix of support and social services. This center should represent the very heart of the campus where students, staff, faculty and visitors are drawn to experience the essence of Cal Poly’s University culture. The Master Plan also recognizes the need for other activity centers on the campus that provide support services and functions associated with a particular area on the campus. For example the northwest center may contain a bookstore and supply outlet oriented primarily to the students and faculty in Architecture and Environmental Design, Engineering, and Art and Design. These satellite activity centers should be focused in their scope and function so as not to
dilute the importance and attractiveness of the primary campus center. The location, primary functions and list of allowed uses for each of these four activity centers are discussed below.

**Primary Campus Activity Center**

The primary campus activity center will be located as shown on the campus centers map in this element. This student-focused area includes the University Student Union, food serving facilities, Mott Gym and the Student Recreation Center. The larger activity center extends to encompass the Administration building (1) to the north, the Performing Arts Center to the east and the Health Center (27) to the south. The functions of this space will include a variety of day and evening services and activities designed in an attractive outdoor setting capturing the unique campus environment. The following table identifies the types of activities and uses appropriate in this area.

**Uses**

- Student Government
- Student Clubs
- University Central Administration
- Foundation Services
- Student Services (registrar, cashier)
- University Union
- Meeting Rooms
- Cyber Cafe (on-demand authenticated web access)
- Outdoor Recreational Equipment and Supplies, Rental and Repair
- Bicycle Rental and Repair
- Performing Arts
- Indoor Recreation (Rec. Center)
- Personal Services (travel, hair salons, nails, dry cleaning, video etc.)
- Banking
- Postal Services
- Prepared Food and Beverages
- Franchise Food Outlets
- General Retail (books, music, technology, clothes, copying)
- Film Theater
- Informal Study Areas & Technology Access
- Outdoor Gathering Spaces (greens, courtyards, plazas)

**Northwest Satellite Center**

The northwest satellite center will be located as shown on the campus centers map in this element. It is generally bounded by Kennedy Library (35) on the south, the Advanced Technology Laboratory building to
the west, Highland Drive on the north, and the Agricultural Sciences building (11) to the east. This center is just across Brizzolara Creek from the new sports complex and major parking lots, so it is well-positioned to provide services and functions that will be needed in this area of campus. Uses may be located in one or more buildings and may contain a mix of the following: expanded library space including media labs, satellite bookstore with a focus on the colleges of Architecture and Environmental Design, Engineering and the department of Applied Art and Design; limited food services such as a café and vending; informal study areas and technology access, and outdoor gathering and study spaces in the form of greens, courtyards and plazas to encourage interaction and to link this area together. This satellite will be linked to the new North Perimeter Pedestrian Way and to the Dexter Green providing an important connection to other centers on campus. The following table identifies the types of activities and uses appropriate in this area.

**Uses**

- **Kennedy Library Expansion** (includes media labs)
- **Satellite Bookstore** (limited to supplies demanded by surrounding colleges)
- **Cyber Cafe** (on-demand authenticated web access)
- **Café, Specialty Foods and Food Vending Services**
- **Informal Study Areas and Technology Access**
- **Outdoor Gathering Spaces**

**Northeast Satellite Center**

The northeast satellite area will be located as shown on the campus centers map in this element. It is generally bounded by the extension of Highland Drive to the north and east, North Perimeter Pedestrian Way to the south, the Agricultural Engineering building (8) to the west. This satellite center will be located in one of the largest redevelopment areas on the campus and will be directly between the new student housing areas north of Brizzolara Creek and the Campus Instructional Core. The Master Plan specifies a large green area surrounded by numerous buildings with strong connections to the “central district,” the northwest center and the North Perimeter Pedestrian Way. Thus this center should contain services and functions designed primarily to serve the campus residential population such as the campus market with groceries, home supplies and a small café and food vending services. The following table identifies the types of activities and uses appropriate in this area.

**Uses**

- **Campus Market** (includes retail foods, school supplies, home supplies, convenience parking)
Café, Specialty Foods and Food Vending Services  
Informal Study Areas and Technology Access  
Cyber Cafe (on-demand authenticated web access)  
Outdoor Gathering Spaces  
Audio/Video Rentals  
ATM  
Locker Rental (bicycle-size and temporary small lockers)

Residential Centers

The Master Plan further specifies residential centers be located within new student housing neighborhoods. Residential centers will generally be located as shown on the campus centers map in this element. The purpose of the residential centers is to provide social gathering spaces and support services directly relating to on-campus housing. The centers will be located in each new student housing complex and offer recreation amenities, formal and informal gathering space, study areas and lounges, and services such as self-service laundry. Residential centers should be designed to create desirable outdoor spaces with convenient access to the housing neighborhood it is intended to serve. The following table identifies the types of activities and uses appropriate in these areas.

Uses

Self-Serve Laundry  
Food Vending Services  
Mail Center  
Common Gathering Space  (indoor and outdoor)  
Informal Recreation  (indoor and outdoor)  
Informal Study Areas and Technology Access  
Computer Lab/Cyber Cafe (on-demand authenticated web access)

Specific Redevelopment Areas

The Master Plan reorganizes existing spaces within the campus core so that new facilities can offer an increase in academic and support space that respects Cal Poly’s “sense of place.” The Plan includes a series of new and enhanced urban spaces linked to the redevelopment areas and a system of pedestrian thoroughfares connecting these spaces. These urban spaces take advantage of Cal Poly’s unique setting and spectacular views from the campus to the surrounding hills. The Centennial Green, located in the Science building (52) area adjacent to the University Union, should be a key central space within the instructional core. It should not only function as the geographic and physical center of campus, but it should serve, along with the student union, as the social
heart of the campus and as a central student gathering space. Three other primary urban spaces in other redevelopment areas should work together with the Centennial Green to create a structure of interconnected districts and open spaces on the campus.

**Centennial Green Area**

The Centennial Green area offers a unique opportunity to capture Cal Poly’s unique “sense of place” and to create a central University focal point in the area presently occupied by Building 52. Its close proximity to the University Union, El Corral Bookstore, the Administration building, the recreation center and the PAC provides the opportunity to unite these uses and provide additional social and academic functions in a dynamic mixed-use environment (see campus centers discussion). The Green should provide a wonderful setting for new buildings and activities that are linked together around a series of new outdoor plazas and green spaces. The conversion of Perimeter Road to a broad pedestrian mall should also aid in connecting the campus’s cultural and recreational

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**Environmental Consequences**

The instructional core is a developed, urban environment, and many of the natural resource impacts from new development are not applicable (e.g., biology). Construction activities in any of the redevelopment areas will disrupt pedestrian and vehicular flows, and produce noise and dust that could be a nuisance to students, faculty and staff, as well as nearby neighborhoods. Mitigation will reduce these impacts. Construction in areas near Brizzolara Creek could result in erosion and sedimentation. Implementation of Best Management Policies (BMPs) would reduce the significance of these impacts. A detailed discussion of construction-related impacts and mitigation measures is at the end of Chapter 6.

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**Table 5.2**

<table>
<thead>
<tr>
<th>Enrolliment-Based Facility Requirements*</th>
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<tr>
<td>Instructional Space</td>
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<td>Faculty Offices</td>
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<tr>
<td>General Administration</td>
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<td>Total Net Gain in Facility Capacity</td>
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NOTES:
* SF calculated for 2500 FTES based on CSU ASF/FTE model.
functions with this new student friendly and learning-centered core. The principal features of this new central space include:

- Redeveloping the Science building (52) from single-story facilities to multi-story facilities.
- Redeveloping the Engineering East building (20) west of Via Carta from a single-story facility to multi-story buildings with the second floor oriented toward Via Carta for enhanced pedestrian access.
- Redesigning the building 52 area to provide a large, central green space (the Centennial Green) that takes advantage of the wonderful scenic views of the surrounding morros. A series of new multi-story buildings should front onto the Centennial Green and provide additional space for instructional and support uses, including technology-enhanced learning and student services.
- Connecting the campus pedestrian pathway system to the Centennial Green while integrating the following facilities and their surrounding spaces: the Student Union (65), the Administration Building (01), El Corral Bookstore (65), Fisher Science Building (33), Science North (53), Faculty Offices East (25), and Erhart Agriculture (10).
- Incorporating a mix of new facilities that provide food, retail and student services. These facilities should be ground floor, urban-oriented locations with instructional, administrative and office spaces on upper floors.
- Within this area the Master Plan anticipates a potential net gain of approximately 220,000 square feet of new building space.
Northeast Area

This campus area currently accommodates the corporation yards and facilities which will be relocated outside the campus core to the old poultry unit. Other facilities currently supporting the College of Engineering will be included in the new Engineering Building in the northwest corner. Some of the existing uses in this area will remain in the same location, such as the Foundation Building (15), and others should be replaced and incorporated within the new layout. The latter uses include the agricultural facilities and the public safety facility. The principal elements of this new space include:

- Agriculture instructional complex to replace present Bio-resource (08) and Agricultural Engineering Building (08) to maintain a connection with agriculture instructional facilities in Erhart Agriculture (10) and Agricultural Sciences (11). Site design for new agricultural facilities will accommodate delivery of materials and equipment for student labs, including access by large trucks.

- New multi-story instructional facilities, student services, faculty offices and administrative spaces located in a series of buildings oriented towards a central green.

- A strong orientation to Highland Drive and the new north Perimeter Road pedestrian way

- A small amount of service, visitor and public parking incorporated into the design.

- A wide landscaped linear green with a broad pedestrian sidewalk along the Highland Drive frontage.

- The location for a transit stop adjacent to this area

- A new at-grade and/or grade separated pedestrian crossing connecting this area to the new eastern residential area.

- Within this area the Master Plan anticipates a potential net gain of approximately 225,000 square feet of new building space.

Environmental Consequences

Redevelopment of this area will improve visual quality in the campus core, and may reduce the number of off-campus vehicle trips by offering more on-campus services. These impacts are considered beneficial (Class IV).
Northwest Area

Situated adjacent to Kennedy Library, this area offers opportunities to serve students and faculty alike by providing a mix of instructional activities, expanded library facilities, student services, offices and satellite retail and food services. This area is proximate to the new sports complex, the agricultural facilities north of the core, the existing and new campus parking, and the expanded residential village along Brizzolara Creek. As a result, it becomes key to creating a satellite center in this area. The northwest area should include new engineering facilities adjacent to Highland Drive and should link a new University green space to the North Perimeter Road pedestrian way and Kennedy Library. The principal elements of this new space include:

Environmental Consequences

New structures and landscaping will be an improvement in this area, which currently houses maintenance and operations facilities. Development of improved pedestrian walkways and crossings at Highland Drive will improve circulation while reducing conflicts with vehicles. These impacts are considered beneficial (Class IV).
• An effective connection between the Engineering facilities, the North Perimeter pedestrian way and the new green spaces.

• The replacement of the Modoc faculty offices building (119) with a new instructional facility.

• The presentation of a stately, high quality image to pedestrians and motorists traveling along Highland Drive as this location should continue to serve as a primary campus entrance.

• A small amount of service, visitor and public parking incorporated into the design.

• A wide, landscaped linear green with a broad pedestrian sidewalk occupying the frontage along Highland Drive.

• A transit stop located adjacent to this area.

• A new at-grade pedestrian crossing linking this area to the Brizzolara Creek path and recreation sports field to the north.

• Within this area the Master Plan anticipates a potential net gain of approximately 260,000 square feet of new building space.

Diagrammatic Illustration of the Northwest Area
Southwest Area

The Southwest area of campus has a rich history. Crandall Gym, the Business building, the Powerhouse, Mustang Stadium, and other structures formed the early Cal Poly campus. Heron, Jesperson, and Chase halls were built as dormitories (refer to Existing Conditions section for age of structures). California Boulevard was once the primary gateway and access to the campus. Today, much instructional space and campus activity has moved away from this area, rendering it somewhat unconnected to the campus. The Master Plan proposes to redevelop this area with new uses that are architecturally consistent with the historic character. When California Boulevard is extended to Highland Drive this area should once again become a major entrance to the university.

A new student housing complex is proposed for this area to help balance the location of new residential communities and to help reinvigorate this portion of campus with additional student life activities. The Master Plan shows Mustang Stadium remaining in its present location; however, should the stadium be relocated in the future, this area will be available for recreation facilities.

Environmental Consequences

The intersection of Highland Drive with the proposed extension of California Boulevard is discussed further under the Circulation Element. The Modoc Building is more than 50 years old. An assessment of the building’s historical significance prior to demolition is warranted.
The principal elements of this new redeveloped area include:

- A new 700-800-space parking structure near the corner of Campus Way and California Blvd.

- The redesign of campus vehicular access in the Campus Way area, including a major public transit stop or hub and closure of South Perimeter Road to regular traffic.

- A new residential complex for upper-division students adjacent to the parking structure and an expanded Campus Child Care Center.
• Redevelopment of the Air Conditioning Building for new instructional space.

• Renovation of Crandall Gym for possible additional instructional space and/or recreation and support services.

• A new Alumni Center and University Retreat situated near the current President’s Residence (51).

Environmental Consequences
The redevelopment of the President’s Residence will intensify uses in the southwest portion of campus. The project will result in increased traffic, noise and lighting in the area. The President’s Residence also may be eligible for listing on the NRHP and will require analysis prior to redevelopment.

• Within this area the Master Plan anticipates a potential net gain of approximately 50,000 square feet of new instructional building space.

North Perimeter Pedestrian Way
North Perimeter Drive should become a human-scale pedestrian way as vehicle traffic is removed from the core and shifted to Highland Drive. This area should serve as one of the primary pedestrian circulation routes linking the Kennedy Library/Northwest redevelopment area with the Northeast redevelopment area and also the expanded campus residential community adjacent to Poly Canyon. The way should be re-paved with a more pedestrian-friendly surface (as described in the Circulation element under the Pedestrian System section) and planted with trees to form a landscaped area complete with selected urban furnishings. Service and emergency vehicles and vehicles for the disabled should have access along this route. The way should form a “spine” connected to a series of pedestrian plazas accessing various campus destinations.
South Perimeter Pedestrian Way

Similar to North Perimeter Drive, South Perimeter Drive should also become a broad pedestrian way when regular vehicular traffic is eliminated. This new pedestrian way should provide a key opportunity to link together the Cal Poly Theatre, Performing Arts Center and Recreation Center/Mott Gym with the University Union and campus core. At the eastern end of the new pedestrian way, where Highland Boulevard and Grand Avenue should connect, a new grade-separated crossing should connect the residence halls south and east of the core with the new Centennial Green and other core destinations. This way should also be re-paved with a more pedestrian-friendly surface (as described in the Circulation element under the pedestrian system section) and planted with trees to form a landscaped area complete with selected urban furnishings. Service and emergency vehicles and vehicles for the disabled should have access along this route. In addition, it should be open for egress from the Grand Avenue Parking Structure after events at the Performing Arts Center. The pedestrian way should form another “spine” which is also connected to a series of pedestrian paths accessing various campus destinations.

A number of comments on the Preliminary Draft raised concerns about access to activities on the south side of campus if South Perimeter Road is closed. The analysis for the DEIR shows that traffic circulation can be handled by opening California Boulevard to Highland Drive and by providing more parking at the southwest corner of campus. For users of buildings along South Perimeter, the campus will maintain service and emergency access. Egress from the Grand Avenue parking structure will also be provided for major events as provided in the plan for this parking structure.
Legend

- Brizzolara Creek Corridor
- Principal Campus Greens
- Principal Campus Plazas/Courtyards
- Primary Roadways
- Primary Pedestrian Ways
In addition to specific redevelopment areas described above, the Master Plan promotes strategic infill redevelopment within the instructional core. While the principal redevelopment areas provide opportunities to replace larger areas of campus with new facilities and urban spaces, smaller building additions and remodels can be accommodated in many areas. Selective infill presents unique opportunities to create renewed campus spaces in support of campus redevelopment and urban design goals.

**Campus Green Space Plan**

The Master Plan update attempts to create a clearly defined and beautiful urban open space system. Given the nature of past campus development, and absence of architecture design guidelines, most improvements and buildings lack a cohesive design. It is critical that the broad mix...
of building styles, types and forms be united with a strong urban fabric consisting of pedestrian thoroughfares, urban open spaces, consistent use of urban furnishings, graphics, signs and landscaping. Using a system of urban spaces, the Master Plan proposes a hierarchy of plazas and gathering spaces with both formal and informal functions. In support of many planning principles, the arrangement of campus open space should provide a fertile landscape for enhanced learning and interaction in a variety of settings. The principal features of the campus urban open space plan include the following:

- Establishing a series of campus green spaces at the following key locations: Centennial Green, Dexter Green, California Boulevard Green and new courtyards in the northwest and northeast redevelopment areas
- Linking these key open spaces with a clearly defined pedestrian and bikeway system (refer to the Circulation element)
- Providing a rich campus landscape that unites the various architectural styles in a cohesive manner
- Identifying strategically located campus structures that serve as campus landmarks and represent places of importance

**Campus Landscape Plan**
Campus landscape design, development and maintenance are integral to the University’s educational mission. In addition to enriching the campus’s aesthetic beauty, the landscape plan also provides a cohesive treatment of exterior space and a living laboratory for study. Continued development and redevelopment of the campus landscape should incorporate the following features:

- Creating and maintaining a living, educational landscape for teaching and learning
- Capture and enhance Cal Poly’s unique “sense of place”
- Exhibit best practices of resource management and environmental stewardship and sustainability

The Master Plan proposes to develop a campus landscape plan as an implementation action. The landscape plan should advance the vision for the campus landscape. It should also provide guidance and standards that ensure that each project should contribute to the common vision.
for development of the campus landscape. The proposed landscape plan should address the following elements:

Memorials

Memorials should be planned as a part of the campus landscape. To the highest degree possible, the memorials program should create outdoor spaces that include seating, walls, benches, walkways, lighting and special paving. The memorials program should encourage the establishment of tree groves rather than individual tree plantings.

Safety

The landscape plan should address safety insofar as planting groupings might inhibit visibility or security lighting.

Planting

The campus landscape plan should incorporate compatible planting and landscape components including a diversity of plant species with Mediterranean and California species predominant. Acceptable plant lists should be developed to assist project designers in creating continuity within the campus landscape. Plantings should be based on appropriate plant communities and should be composed of compatible plant groups for energy and water conservation. In addition, plantings within the campus core contribute to the University’s educational mission (see Outdoor Teaching and Learning element).

Grading and Drainage

Best management practices should be developed in the landscape plan and for the campus built environment to guide grading and drainage. Topics to address include: protecting native plantings and waterways, minimizing erosion, preventing siltation, ensuring proper re-vegetation, and establishing natural methods to drain and filter run-off water.

Hardscape/Paving

The landscape plan should address the following specifics for paving materials:

- Provide continuity with regard to paving materials and patterns.
- Improve paved surfaces with regard to safety, aesthetics and functional capacity.
- Replace asphalt paving in the instructional core.
• Increase the amount of green space in the instructional core
• Create a cohesive palette of urban furnishings, including signs, benches, trash receptacles, lighting, walls, fences, kiosks, bike racks and storage

Outdoor Art
The landscape plan should include guidelines for public art, including permanent displays as well as short-term student work.

Outdoor Exhibit Areas
The landscape plan needs to establish areas and standards for exhibits year-round, rather than only during special events like Open House.

Maintenance
The landscape plan should include a comprehensive campus landscape maintenance program that takes into account the following issues:
• Long-term costs including manpower, operations and energy use
• Tree maintenance
• Identification of priority landscapes and campus spaces where extra attention and funds are focused
• Clear communication between campus advisory bodies and maintenance staff

Water
The campus landscape plan should include the standards for water conservation.

Environmental Consequences
Unified landscaping should improve visual quality, protection of water quality, etc. (Class IV).

Energy
The campus landscape plan should consider the impact of vegetation on building energy efficiency and the creation of comfortable outdoor space.
Residential Communities

Introduction

As a result of its statewide educational mission, Cal Poly accepts over three-fourths of its undergraduate students from outside California’s Central Coast. As a result, most students who choose to attend Cal Poly require housing. Presently, about 17 percent of the students live in campus residence halls and nearly 40 percent live in student-oriented apartments and fraternity houses within a mile of campus. Thus, the University assumes a residential character with about 55 percent of its students living on or near campus.

The other 45 percent of Cal Poly’s students, including married and graduate students, either find housing elsewhere in the City of San Luis Obispo or other communities in the County. (Currently, over one-fourth of Cal Poly’s students live more than 2.5 miles from campus.)

The University recruits most support staff from San Luis Obispo and Santa Barbara counties. In contrast, most new faculty and administrators come from outside the immediate area. However, when faculty retire, they typically remain in the San Luis Obispo area.

Background and Issues

The San Luis Obispo area has the dubious distinction of being one of the least affordable housing markets in the United States. The 1999 Regional Profile published by the San Luis Obispo Council of Governments showed a median selling price in 1999 of $184,300 in the county and $231,500 in the City of San Luis Obispo for single-family homes. The Profile also revealed that 6.5 percent of the housing units in the City of San Luis Obispo are considered over crowded. The 2000 San Luis Obispo County Economic Outlook showed a vacancy rate of only 0.3 percent for rental apartments in the City of San Luis Obispo in September 1999.

Thus, there is a shortage of suitable housing in the community and it seems to be getting worse. Cal Poly faculty and staff hear stories about students engaged in bidding wars for available apartments and students crowded into off-campus homes and apartments. Companies looking to San Luis Obispo as a possible location indicate concerns about the lack of affordable housing in our area. Cal Poly recognizes that housing impacts are a major community concern related to enrollment growth.

With the increasing demand for higher education in California, Cal Poly is expected to remain predominately undergraduate - with about 90 percent of its students continuing to be young, full-time undergraduates. (The Fall 1999 average undergraduate age is 21.3 years.)

New discussion - additional background information on housing in the San Luis Obispo area has been provided.
While Cal Poly’s student population makes a very real impact on San Luis Obispo County, it is not the only factor contributing to the local housing shortage. Cal Poly’s enrollment in Fall 2000 is about 900 students below in Fall 1990, when it reached 17,758 students. During the 1990’s Cal Poly deliberately cut enrollment when State funding was reduced. Since then enrollment has been slowly building back, but Cal Poly’s growth rate has been slower than that of the City of San Luis Obispo. Cuesta College’s Student Characteristics and Enrollment Trends report for Fall 2000 shows that the community college’s enrollment has increased by about 5 percent annually in recent years. Further, over 40 percent of the new students attending Cuesta’s San Luis Obispo campus come from outside the County, and about 45 percent of all students at the San Luis Obispo campus live in the City of San Luis Obispo. Thus, families and households not associated with Cal Poly represent an increasing share of the local housing market.

To exacerbate the housing situation, during the past decade housing supply has not kept pace with demand, particularly for rental housing. The 1999 Regional Profile published by the San Luis Obispo Council of Governments indicates that multi-family units represented only 5 percent of the new housing authorized for construction in 1997 in San Luis Obispo County (as compared with about 20 percent in Monterey County and 40 percent in Santa Barbara County). Some residential complexes formerly rented to students have been converted for other appropriate purposes, such as housing for senior citizens. Further, the City of San Luis Obispo’s General Plan does not designate significant amounts of land for multi-family housing; and market studies have shown little near-term development potential in the area close to campus.

The present main campus residential community consists of a series of residence halls banding the lower slope of the campus’s eastern hills. The residential complexes include full infrastructure to support computing, modest recreation facilities and Vista Grande Cafe, one of the several dining facilities where students may use their meal cards. The campus provides additional food service within the campus core which include the Avenue, Back Stage Pizza, the Lighthouse, the Sandwich Factory, the Campus Market near the Library and various vending machines. The South Mountain residence halls are organized as living-learning communities around student majors or disciplines. Sierra Madre and Yosemite are the “First Year Connection” halls designed to provide incoming students with information, resources and support needed to be successful at Cal Poly. The North Mountain Halls house

<table>
<thead>
<tr>
<th>Existing Residence Halls</th>
<th>Beds</th>
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<td>North Mountain</td>
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</tr>
<tr>
<td>CAGR units &amp; Design Village</td>
<td>55</td>
</tr>
<tr>
<td>Total current student housing on campus</td>
<td>2838</td>
</tr>
<tr>
<td>Apartment-style addition being designed</td>
<td>800</td>
</tr>
<tr>
<td><strong>Total by 2002</strong></td>
<td><strong>3638</strong></td>
</tr>
</tbody>
</table>

**Table 5.3**
the returning student program. The present residence halls accommodate nearly 17% of Cal Poly’s students. (refer to the residential communities map in this element)

In addition, approximately 55 students live in small agricultural housing units or buildings in Design Village. These students provide direct supervision and security for animals and facilities in partial exchange for their housing.

All present residence halls except for the North Mountain Halls are traditional corridor-oriented dormitories, and residents are required to participate in one of several campus meal plans. With changing student housing markets, the campus is developing an additional 800-bed complex that will offer apartment-style units with food preparation facilities.

The campus presently provides no faculty or staff housing except for the President’s residence and eight apartments within the residence halls for professional Resident Director staff.

### Issues

Housing issues can be grouped with respect to their location and occupants:

<table>
<thead>
<tr>
<th>Residential location</th>
<th>1997</th>
<th>1999</th>
<th>1997</th>
<th>1999</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Luis Obispo &amp; Cal Poly</td>
<td>45.8%</td>
<td>39.7%</td>
<td>88.4%</td>
<td>88.4%</td>
</tr>
<tr>
<td>North County</td>
<td>17.5%</td>
<td>19.0%</td>
<td>1.4%</td>
<td>2.4%</td>
</tr>
<tr>
<td>North Coast</td>
<td>16.0%</td>
<td>17.3%</td>
<td>4.0%</td>
<td>4.8%</td>
</tr>
<tr>
<td>South County &amp; Santa Maria</td>
<td>19.4%</td>
<td>22.3%</td>
<td>5.0%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Sub-total outside SLO</td>
<td>52.9%</td>
<td>58.6%</td>
<td>10.4%</td>
<td>11.0%</td>
</tr>
<tr>
<td>Sub-total all</td>
<td>98.7%</td>
<td>98.6%</td>
<td>98.8%</td>
<td>99.4%</td>
</tr>
</tbody>
</table>


Note: Analysis of student addresses for Fall 1999 shows that of those with known residential addresses, about 17% live on campus, 67% in San Luis Obispo, and 15% elsewhere in the Central Coast.

**TABLE 5.4**

1 Issues include items identified by campus and community members during Fall 1998, at public meetings during Winter 1999, during task force discussions in Spring 1999, and at subsequent meetings with campus and community groups in Fall 1999 and Winter 2000.
On-campus student housing
  • Mainly corridor-style design and required meal plan limit student options.
  • Present demand exceeds capacity - a typical waiting list during the summer has 400-600 students seeking to live on campus.

Off-campus student housing
  • Low vacancy rate in rental housing market
  • Variable quality and affordability in rental housing market
  • Competition for housing with students who attend Cuesta College
  • Competition for housing with families and non-student households in San Luis Obispo
  • Neighborhood concerns regarding student behavior including social functions and property maintenance
  • Access to campus
  • Location of fraternities and sororities

Faculty and staff housing
  • High costs in sales and rental market
  • Commuting distance to campus

**Principles**

San Luis Obispo County and its incorporated cities offer only a limited housing market for students, faculty and staff. Thus, the Master Plan allocates areas for housing additional members of the campus community. Cal Poly’s primary responsibility with respect to housing is to enhance student learning.

Seven principles guide the Residential Communities element of the Master Plan: student learning, housing type, support services, accessibility, affordable quality, feasibility, and community impact.²

² The Master Plan team synthesized this list of principles from meetings with the President and senior campus executives, from student and faculty-staff housing studies, and from recommendations provided by the campus/community Housing, Neighborhood and other task forces during Spring 1999.
**Student Learning**

A central reason for Cal Poly to consider providing more student housing is the opportunity to create residential environments that support learning, including study space, internet infrastructure and learning support within residential complexes. Such environments are particularly important to undergraduate students living away from home for the first time. Thus, the Master Plan also includes a policy requiring new freshmen to live on campus so as to be able to take advantage of this residential opportunity.

**Housing Types**

Traditional corridor-style student dormitories are no longer sufficient to meet all student housing needs. While freshmen may continue to prefer this form of accommodation, market analysis shows that upper-division students prefer the greater privacy and flexibility associated with apartment-style living. Furthermore, some students prefer living with others in the same discipline. Thus, the Master Plan includes a range of student housing types including traditional dormitories, discipline-based living and learning facilities, apartment complexes and married student housing. Cal Poly expects that some students will continue to select fraternity housing, and that many students will prefer making their own off-campus housing arrangements. In addition, the Master Plan allocates areas for detached or attached single-family housing as well as rental units for faculty and staff.

**Support Services**

To ensure that students living on campus have access to a full range of support services, the proposed residential communities include space for such activities in or proximate to future housing complexes. Examples include personal services, retail food, meeting rooms, recreation and entertainment. The range of services will be geared to each housing type. For example, child care is important to some married students, faculty and staff, but not relevant to most undergraduates. (See the Support Services element of the Master Plan for more detail.)

**Accessibility**

Cal Poly anticipates that future students will enhance their learning through use of emerging “virtual” means such as Web-based instruction, research and administrative procedures. Thus, student housing must be electronically accessible. At the same time, however, the University expects face-to-face interactions to continue to dominate both curricular and co-curricular learning. Some of this will be intentional - organized seminars, labs, organizational meetings and team activities. Some will
be serendipitous - the unplanned conversation at the bookstore, food court, library, or on one of the campus greens. Thus, student residential communities must enable students to be accessible to one another as well as to campus instructional facilities. This includes barrier-free ADA access to all new student residential units. Faculty and staff housing should not only be compatible with adjacent single-family residential neighborhoods, but it should also benefit from the same amenities.

Affordable Quality
Student learning can be inhibited when students live in over-crowded and/or sub-standard housing conditions. Sometimes this occurs as a result of the tight local housing market: as demand increases, landlords increase rents and some students end up living in less than desirable spaces. By providing more on-campus housing, Cal Poly intends to ease these market conditions. The University will continue to provide housing assistance services for students, faculty and staff to enter knowledgeably and responsibly into the rental (or purchase) markets.

Feasibility
Because housing is not funded by the State, any housing provided by the University must be self-supporting. Thus, the University must be able to finance student, faculty or staff housing through mechanisms that will return sufficient rents to offset capital and operating costs. To implement the Master Plan, Cal Poly is exploring a variety of such means, including partnerships, to balance costs and risks with the potential benefits of providing on-campus housing.

External Community Impact
The campus recognizes its impact on the San Luis Obispo community with respect to the housing market and traffic circulation. Additional housing on campus should mitigate immediate impacts on the local housing market for students, faculty and staff. At the same time, new on-campus housing communities will draw on both local services and resources and also contribute to the local economy and tax base.

Plan Components
The Residential Communities element of the Master Plan focuses on providing additional undergraduate student housing on campus in a variety of housing types. In addition, the Plan addresses married students, faculty and staff, and off-campus housing programs.
Residential Communities

New Residential Communities
- H-1: Apartment Style Residences - 720 Beds
- H-2: Apartment Style Residences - 540 Beds
- H-3: Apartment Style Residences - 360 Beds
- H-4: North Mountain Housing Redevelopment
  Apartment Style Residences - 420 Beds (120 beds net)
- H-5: Dormitory Style Residences - 512 Beds
- H-6: Apartment Style Residences - 136 Beds
- H-7: Apartment Style Residences - 612 Beds
- H-8,9: Off-Campus Housing - Faculty and Staff

Existing Residential Communities
- H-A: New Housing - Underway
- H-B: South Mountain (Red Brick) Residence Halls
- H-C: Sierra Madre Hall
- H-D: Yosemite Hall

Note: Apartment Style Residences will accommodate returning students
Housing Market Analysis
Cal Poly has sponsored two recent studies of the housing market as it affects students, faculty and staff. In 1998, the Division of Student Affairs retained Gordon Chong and Partners and the Sedway Group to analyze the student housing market and explore the potential for new student housing on campus. The findings from this study contributed to the University’s decision to build apartment-style units to house an additional 800 students on campus. The Cal Poly Foundation contracted with Anderson Strickler, LLC, to investigate the need and potential for University-sponsored housing for faculty and staff. Their 2000 Employee Housing Study found that housing cost is a significant factor in faculty recruitment and retention. Their report is guiding the development of faculty and staff housing on two sites west of Highway 1, as identified in the Master Plan.

Cal Poly will review and revise these market studies to inform each phase of Master Plan housing development and enrollment growth. Relevant comparative data includes vacancy rates, rents, land available for housing, financing options, and the nature and importance of amenities. Studies will also address student housing preferences and challenges in locating suitable off-campus housing.

Commitment to Student Housing on Campus
The Master Plan takes the local housing situation into account and proposes measures that will help alleviate a portion of it. The Guiding Framework of the Master Plan calls for adding student housing to accommodate all new enrollment growth. The campus will be breaking ground in Spring 2001 to build apartment-style housing for 800 students. This facility is scheduled to be ready for occupancy in Fall 2002. The next phase calls for housing from 1150 to 1300 additional students by 2004 or 2005. In sum, Cal Poly expects to add 1950 to 2100 student beds in the next five years, but only about 1250 additional students during that same time period. Over the next two decades Cal Poly will increase the proportion of students who live on campus from about 17 percent today to over 30 percent in the future.

Further, Cal Poly will monitor the local market closely, and, if continuing students are not able to find suitable housing, the campus will develop a strategy to house a larger proportion of the University’s students in the future. Strategies may involve working with off-campus partners to identify suitable housing locations and provide financing. Cal Poly and Cuesta College are also exploring ways to cooperate in assuring appropriate housing for their students. Finally, Cal Poly will
participate with non-profit organizations in seeking broader solutions to community housing needs.

**Undergraduate Student Residential Communities on Campus**

The Master Plan identifies areas on campus to house all new undergraduate enrollment growth. By expanding its on-campus residential capacity by 3,000 to 6,600 beds, the University would be able to house about one-third of its future undergraduate students. The Master Plan contemplates a series of residential complexes stretching north from the present residence halls along the lower slopes of the hills east and north of the campus and along Brizzolara Creek. This layout places students in a unique setting between the surrounding natural environment and the more urbanized academic core. This arrangement retains a buffer between undergraduate student residences and surrounding neighborhoods in San Luis Obispo.

### Proposed Student Residential Communities

<table>
<thead>
<tr>
<th>Area</th>
<th>Housing type/density</th>
<th>Total beds</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – North of Brizzolara Creek</td>
<td>Apartment-style, 130 beds/Acre, 2-story</td>
<td>720</td>
<td></td>
</tr>
<tr>
<td>2 – North of Brizzolara Creek</td>
<td>Apartment-style, 130 beds/Acre, 2-story</td>
<td>540</td>
<td></td>
</tr>
<tr>
<td>3 – North of Brizzolara Creek</td>
<td>Apartment-style, 130 beds/Acre, 2-story</td>
<td>360</td>
<td></td>
</tr>
<tr>
<td>4 – North Mountain redevelopment</td>
<td>Apartment-style, 130 beds/Acre, 2-story</td>
<td>120</td>
<td>Net gain (Total beds = 420)</td>
</tr>
<tr>
<td>5 – East of lot R1</td>
<td>Corridor-style</td>
<td>512</td>
<td></td>
</tr>
<tr>
<td>6 – Grand Ave and Slack Street</td>
<td>Apartment-style, 130 beds/Acre</td>
<td>136</td>
<td></td>
</tr>
<tr>
<td>7 – Southwest corner</td>
<td>Apartment-style, 130 beds/Acre</td>
<td>612</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>3,000</strong></td>
<td></td>
</tr>
</tbody>
</table>

**H-1, H-2 and H-3**

The primary area for a new apartment-style student residential community is in the Drumm Reservoir area near Brizzolara Creek. Site studies suggest a potential for more than 1,600 beds in three complexes on the north side of Brizzolara Creek. The Master Plan calls for the design of these residential complexes to take advantage of, and be sensitive to, the natural setting. Thus, units would be clustered in small, 2-4 story groups with views and connecting open space. Active recreation facilities will be set back from Brizzolara Creek. The Brizzolara Creek area will be enhanced to achieve a more natural condition and improve water quality. Housing units, walkways, etc. will be set back from the creek, and drainage will be designed to enhance water quality. (Detailed management practices to protect and enhance Brizzolara Creek will be included in the implementation of the Master Plan.)

A 540 bed project shown in the Preliminary Draft of the Master Plan was removed from the south side of Brizzolara Creek to allow for a riparian enhancement program as shown in the Outdoor Teaching and Learning element.

In addition, this residential community will be designed with buffers along the northern slope and along the western edge near the Environmental Horticultural Sciences unit and Leaning Pine Arboretum.
Environmental Consequences

The project would alter the existing landscape and will introduce additional sources of light and glare from parking lot lighting and residential exterior lighting. The project site borders populations of *Calochortus obispoensis* (CNPS List 1B) and areas of wetland vegetation, which may be adversely affected. Impacts are significant, but mitigable (Class II). Impacts to grassland foraging habitat, wildlife movement corridors, and other sensitive habitats are less than significant. Impacts to agricultural land are also less than significant; the site has only supported grazing. A pre-construction Phase I archaeological survey will reduce impacts to unknown cultural resources, and Title 24 compliance will reduce the risk of seismic and geologic hazard. Traffic noise is addressed in the Circulation Element, and is expected to be less than significant (Class III).

H-4

As phasing and financing permit, some of the present residence halls (e.g., North Mountain) may be replaced or remodeled to offer additional on-campus housing choices for students.
Some additional housing could be constructed on the parking lots above (east of) the present residence halls. This complex could be corridor-style to accommodate a larger freshmen class that would be admitted annually as enrollment increases. The Master Plan calls for requiring all new freshmen to live on campus in order to benefit from the residential communities’ supportive learning environment.

The area just south of Yosemite Hall is proposed for upper division or married student housing.
The design of housing in the southwest corner will reflect early California architecture in order to enhance the historic qualities of the area. Detailed studies will address the configuration of new buildings in this area.

Environmental Consequences

This area is currently undeveloped and is bisected by a vegetated drainage. Development would require careful design to protect natural features. The project should be sited to avoid the northern drainage swale, although an Army Corps Section 404 permit may be attainable. Design studies will address visual, light and noise impacts. Lighting should be directed away from residences to the south. Title 24 compliance and a pre-construction Phase I archaeological survey will reduce impacts associated with geology, seismicity, and cultural resources.

H-7

The southwest corner of campus offers a separate site for approximately 612 beds. Separate from other student housing, this community could be designed to meet needs of specific learning communities or other groups.

Diagrammatic Illustration of Southwest Residential Community
Designing new on-campus housing in the form of residential communities or villages will reinforce the integration of learning throughout student life. Thus, new residential complexes will include infrastructure for computing, group study and learning centers, as well as space within individual units for private study. In addition, the University recognizes that a residential population of 6,600 undergraduates will require a range of social and entertainment opportunities. (see the Support Services element for additional details about services)

**Married Student Residential Community on Campus**

Sites under consideration for possible married student housing include the area south of Yosemite Hall and the southwest corner of campus.
**Facility and Staff Residential Community or Housing Program**

The Cal Poly Foundation has been investigating the feasibility of offering a housing program for faculty and staff. Options under consideration include the construction of housing (for rent and/or sale with a ground lease from the University) on the properties to the west of Santa Rosa Street (Highway 1). Development of both sites should include support facilities and services, such as child care and recreation space, as appropriate to the site and mix of residents.

Other options include housing assistance and financing programs that would not involve construction on Cal Poly lands.

**H-8**

H-8 consists of about three undeveloped acres owned by the University at the northwest corner of Highland Drive and State Highway 1. Residential neighborhoods are located to the south and west. Housing types would be compatible with surrounding residential neighborhoods.

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**Environmental Consequences**

Development of H-8 would be visible from the State Highway and a main entrance to the City. Development will be limited to the lower portions of the site, which will reduce visibility and increase screening options. The University will work closely with the City to develop design guidelines for this development. The number of housing units proposed at this site is not yet known; however, the site is less than four acres. The project is unlikely to be large enough to exceed APCD thresholds. Future air quality studies should be performed when details are available.

This site supports mostly non-native weedy vegetation; so biological impacts associated with this site would be less than significant. A pre-construction Phase I archaeological survey will reduce impacts to unknown cultural resources and Title 24 compliance will reduce geologic and seismic risks.

By 2005, noise levels at the site will exceed 60 dBA. Noise at the proposed site would be diminished because of the grade separation between the roadway and the developable portion of the site. This grade differential could reduce noise at the site by as much as 5 dB. Interior and exterior mitigation measures are available to reduce the noise level to less than significant levels. Impacts to public services and roadways cannot yet be quantified.
**H-9**

The southern portion of this site is currently leased to the California Department of Forestry (CDF) for use as a fire station. The proposed housing development would be located north of and adjacent to these facilities. The CDF is currently (summer 2000) proposing improvements to their development. H-9 consists of about 15 acres of developable area. Housing types would be compatible with surrounding residential neighborhoods.

Impacts from the CDF proposal were analyzed in a Mitigated Negative Declaration (MND). The MND is hereby incorporated by reference.

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**Environmental Consequences**

The property owned by Cal Poly that currently houses the CDF facility is located at the northern edge of the city’s developed core. Development here would be an extension of the city’s urban area and protrude further into the heretofore undeveloped areas of the county. Careful design and landscaping would be in order, as this would become the northern entrance to the City of San Luis Obispo. Air quality impacts should be quantified once more details are available. A pre-construction Phase I archaeological survey will reduce impacts to unknown cultural resources.

Preliminary soils studies for the CDF facility show that the area soils are subject to erosion, expansion, slippage and generally slow permeability. Compliance with Title 24 standards will reduce impacts to a less than significant level (Class III).

The County Noise Element (1992) projects that by 2005, noise sensitive development with 644 feet of the centerline of the roadway north of Highland Drive will experience noise exceeding the 60 dB outdoor threshold. The University should specify design measures to achieve interior noise standards.

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**Off-Campus Student Housing Programs**

Cal Poly will strengthen the assistance it provides to students seeking housing in the neighborhood rental market and increase the visibility of these services through the worldwide web and other forms of publication. This material includes information about renters’ rights and responsibilities. Consistent with the policy of the California State Uni-
versity system, Cal Poly expects that fraternities and sororities will remain off campus.

To assist students living off-campus, Cal Poly should work with the management of large nearby neighborhood complexes that house many students, such as the seven off-campus association communities, to assure continuing availability to Cal Poly students, to enhance Internet access, and to increase alternative transportation options.
Recreation, Athletics and Physical Education

Introduction

Recreational and athletic facilities are important to support the needs of the student population but also the instructional programs involved with physical education and intercollegiate sports. In some instances, design standards differ for intercollegiate athletic facilities. However, intramural recreation, physical education, and athletics can share many multipurpose outdoor fields and indoor facilities.

Background and Issues

Outdoor Fields

Current turf field space includes the practice soccer field south of the recreation center, the fields in the track area and softball practice fields west of the Cal Poly Foundation Warehouse.

Over the past two decades Cal Poly has converted recreational field space to indoor recreation facilities and instructional uses as the campus has grown. As a result, the campus had a deficit of field space for all programs, which has been addressed through construction of the new sports complex north of Brizzolara Creek.

The Sports Complex, which opened in Fall 2000, includes the following facilities:

- One (1) Baseball Stadium with practice infield, with a current seating capacity of 768 and potential expansion to 2500 seats
- Six (6) Recreation soccer/football fields
- Three (3) Recreation softball fields
- One (1) Softball stadium with practice infield with a current seating capacity of 426 with potential expansion to 1,000 seats
- Four (4) outdoor basketball courts
- One (1) restroom facility

Other outdoor facilities include the following:

- Recreation: basketball courts, outdoor swimming pool

The Heery Sports Facilities Master Plan was prepared in 1996 as the basis for the development of the Sports Complex north of Brizzolara Creek. The Heery Plan included a range of recommendations. Cal Poly did not adopt the entire plan but rather used it as the basis for the Sports Complex. The campus Master Plan also referred to the Heery analysis but supercedes the Heery Plan.
Physical Plan Elements

Recreation, Athletics and Physical Education

- Athletics: Mott pool
- Joint use: tennis courts, track

Indoor Recreation
Presently, the Recreation Sports Center is the primary indoor facility for general student recreation. It houses a gymnasium for basketball, volleyball and other uses, racquetball courts, weight rooms, dance and exercise rooms, and its locker rooms serve the outdoor pool as well. The Rec Sports Center also provides space for some physical education courses. Crandall Gym and the Natatorium are used primarily for physical education courses.

Mott Gym accommodates indoor intercollegiate athletic activities, including basketball, weight-training rooms, and offices for coaching staff.

The University Union offers bowling and a game room.

Issues
- Inadequate amount of turf field space for recreation and athletics (addressed by the new Sports Complex)
- Inadequate amount of seating in Mott Gym and lack of adequate restroom, press facilities and concession space
- Inadequate amount of outdoor court space in tennis and basketball
- Poor proximity to on-campus residents
- Lack of sports maintenance support facilities adjacent to field areas.
- Difficulty running tournaments with some existing facilities
- Inadequate seating at the track and field, lack of restrooms, concession space and press facilities

Principles
New recreational and athletic space need to be provided in strategic locations, physical arrangements and quantity sufficient to allow full development of a variety of recreation and sports programs. The Master Plan

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1 Issues include items identified by campus and community members during Fall 1998, at public meetings during Winter 1999, during task force discussions in Spring 1999, and at subsequent meetings with campus and community groups in Fall 1999 and Winter 2000.
provides opportunities to locate recreational fields in optimal proximity to existing and future campus residential areas and to consolidate athletic programs to focused areas on campus (as proposed in the Heery Plan).^2

**Proximity**
Recreational facilities proposed in the Master Plan should be in close proximity to the population they are intended to serve. Physical education instruction must occur within normal course schedules, and students use recreation facilities between classes, thus getting to and from facilities within 10 minutes is important. Furthermore, the location of recreation amenities adjacent to residential areas is critical to establish a complete living environment. Finally, field and facility design should incorporate space for spectators (including ticket sales and concessions when appropriate) and access to field maintenance equipment.

**Multipurpose Use**
The Master Plan seeks to develop flexible recreation and athletic space that can be shared by multiple users for a variety of activities. Space and facilities should accommodate both informal recreation and organized recreation sports programs. Outdoor and interior facilities need to be adequate in number to accommodate free play as well as scheduled activities.

**Specialization**
Where standards permit, facilities should be designed to serve recreation, physical education and intercollegiate athletic uses. Nevertheless, some sports facilities have specific standards, are designed for certain programs, and need scheduling priority to remain available for exclusive use. The Master Plan provides direction for site specific or specialty facilities.

**Continuity**
Where the Master Plan calls for moving recreation facilities in the future, the principle of continuity calls for the identification and development of a new site and facilities first, so as to minimize disruption.

**Variety**
Both the quantity and variety of recreational facilities and spaces should be designed with the specific needs of a diverse college population in mind rather than general community recreation standards.

^2 The Master Plan team synthesized this list of principles from meetings with the President and senior campus executives and from recommendations provided by the campus/community Land Use, Public and Support Services and other task forces during Spring 1999.
Plan Components

The Master Plan identifies the recreation and athletic facilities necessary to support the future enrollment capacity of the University at the main campus. The new sports complex will be readily accessible from new on-campus student housing located to the north along Brizzolara Creek. Additional field space would be located within the new residential complexes and across from Yosemite Hall for greater convenience. These areas would greatly enhance the recreation opportunities on campus and achieve a much-needed redistribution of field space. The following section outlines the primary components of recreation and athletic spaces on campus.

Grand Avenue and Slack Street Fields

A deficiency of field space continues to exist in the southeast area adjacent to Yosemite Residence Halls. Therefore, the Master Plan proposes to locate additional field space on the northwest corner of Grand Avenue and Slack street in a portion of the current parking lot. These fields would provide needed and proximate field space to the existing freshmen dorms and the student recreation center. The Master Plan calls for an unlighted informal recreation area, that includes space to accommodate the following facilities:

- One (1) softball field
- One (1) recreation soccer/football field
- Two (2) basketball courts

Environmental Consequences

The area proposed is currently a temporary parking lot. The development of recreation fields would constitute a beneficial impact for the area by reducing runoff and improving visual quality.

Brizzolara Recreation Area

Located adjacent to student housing north of Brizzolara Creek, these recreation facilities would be intended to serve the new student population in this area. The recreation space would be developed as informal green space.
Recreation, Athletics and Physical Education

Existing Recreation/Sports Facilities
- Sports Complex
- Crandall Pool
- Mustang Stadium
- ASI Recreation Center
- Practice Soccer Field
- Mott Gym Sports Complex
- Running Track and Tennis Courts
- Informal Recreation at Housing

New Recreation/Sports Facilities
- Informal Recreation at Housing
- New Recreation Sports Fields and Courts

Legend

- Existing Recreation/Sports Facilities
  1. Sports Complex
  2. Crandall Pool
  3. Mustang Stadium
  4. ASI Recreation Center
  5. Practice Soccer Field
  6. Mott Gym Sports Complex
  7. Running Track and Tennis Courts
  8. Informal Recreation at Housing

- New Recreation/Sports Facilities
  9. Informal Recreation at Housing
Sports Complex Area

Beyond the facilities completed in the Sports Complex, the Heery plan identified this general area north of Brizzolara Creek for a number of additional facilities discussed below, including a new arena for basketball, other indoor events and maintenance facilities. The Master Plan draws from the recommendations of the Heery plan for siting future athletic facilities. However, the Master Plan supercedes the Heery plan with respect to the details of both siting and size of such facilities based on more recent analysis of recreation needs and the findings of the environmental review conducted for the Sports Complex. As the Master Plan is implemented, the campus, and ASI in particular, will review and refine the kinds of recreational facilities needed to serve students, faculty and staff. As noise and light impacts are significant concerns, the campus will conduct further studies, like the Jones and Stokes Sound Study prepared in 1997 by the City and community for the Sports Complex. In addition, any additional sports facilities, like any other facility on campus, will be designed so as to mitigate environmental impacts on and off campus. Particular consideration will be given to minimizing impacts on established neighborhoods and public open space.

Athletic Field House

The athletics program projects a need for an 8,000-seat sports arena for intercollegiate basketball, currently housed in Mott Gym. With a new arena Mott Gym could be used for additional recreational sports activities. The new arena would include flexible court space, locker rooms, training facilities, office space and exhibit areas. This facility would also allow use by other sports and non-sports events. The arena would be located most beneficially adjacent to the potential future site of Mustang Stadium where locker room and other support facilities could be shared. Parking for events would be located in close proximity to the new structure at Via Carta. Refer to the Heery plan for a description.

Environmental Consequences

The site is currently occupied by corrals. The development of recreational fields will constitute an improvement in use. Policies in the landscape are designed to reduce nutrient loading and the introduction of pesticides to the surface waters specified in the Master Plan will keep impacts at a less than significant level (Class III).
Recreation, Athletics and Physical Education

** Mustang Stadium **

The football program will remain in its present location at Mustang Stadium at least during the initial phases of the Master Plan. When it is timely, and if resources are available, the football stadium could be relocated to the Sports Complex on the north side of Brizzolara Creek (in the location shown on the Heery plan) during a later phase of Master Plan implementation.

Moving Mustang Stadium to this location would displace two (2) soccer fields and two (2) softball fields. One (1) soccer field and (1) softball field would be relocated to the Grand Avenue and Slack Street entrance. Mustang Stadium would be designed to accommodate approximately 10,000 to 12,000 seats. This location would provide immediate access.

** Environmental Consequences **

An 8,000 seat arena would generate additional traffic to the area, though not during peak hours. The site is appropriately located adjacent to other existing and proposed athletic facilities, as well as the most abundant parking supply on campus. This area was studied in the 1997 EIR for the Cal Poly Sports Complex.

Several alternative sites were examined for a possible relocation of Mustang Stadium, most of which would have had serious environmental consequences. The Sports Complex is the most compatible area for this facility if and when it is moved. However, the current strategy proposed for Mustang Stadium is to renovate the current facility in place.
to the new parking structure at Via Carta and primary access from Highland Drive.

If Mustang Stadium were moved, the present site would be converted to intramural recreation use, accommodating soccer and/or softball fields.

**Environmental Consequences**

Since intercollegiate football games occur on Saturday, peak use of the facility would have no effect on weekday peak hour traffic. Soccer games (which are held during weekday evenings) would generate approximately 400 trips and 40 peak hour trips. Noise and lighting impacts would be significant, but mitigable (Class II). Additional studies (similar to the 1997 Jones and Stokes Sound Study) will be conducted so that any future facility could be designed to mitigate noise and light impacts.

**Mott Gym**

The athletics program has identified a phased expansion to Mott Gym including increasing seating capacity to 4,000. The increase in seating capacity would include upgrading access for the disabled, press boxes, restroom facilities and concession space. In the event a new sports arena is constructed at the Sports Complex, the mid- and long-range improvements to Mott Gym would not be necessary. The potential use of Mott Gym as an additional recreation sports facility would need to be reviewed. Immediately south of Mott Gym, adjacent to the new parking structure, six new tennis courts will be constructed.

**Track and Field Area**

This facility is proposed to remain unlighted in its current location in the southeast corner of campus. Track events are supported by adjacent parking and the proximity to the Recreation Center and Mott Gym facilities. However, improvements to this facility are proposed in the Master Plan. The track will be resurfaced and relined. New seating for approximately 500 would be added in grandstand arrangements and new facilities for restrooms, concessions and press boxes will be planned.

**Environmental Consequences**

Track and field improvements are relatively minor and would likely result in less than significant impacts.
Immediately to the west of the Track a new practice field for a variety of sports will be developed.

**Environmental Consequences**

A new practice field in this location could have some effects on nearby residences from nighttime lighting and noise. Mitigation for lighting and limits on announcing would reduce impacts to a less than significant level.

**Recreational Trails - Foot, Mountain Bike and Equestrian**

Cal Poly students, faculty and staff and members of the larger community use many of the roads and trails on outlying lands and campus ranches for recreation. The Natural Environment element of the Master Plan calls for standards for the design and management of footpaths, mountain bike trails and equestrian trails. Future campus maps would designate trails by appropriate use.

**Environmental Consequences**

Effects of trails are addressed in the Natural Environment Element.

**Informal Outdoor Recreation**

In addition to formal recreation fields, the Master Plan shows informal outdoor recreation space within the new residential communities. These include small courtyards and areas for passive recreation, as well as sites for activities like pick-up basketball and volleyball.

**Informal Indoor Recreation**

The new residential communities should include multi-purpose indoor recreation space, including game rooms.

As the organization responsible for managing student recreation programs, ASI should be involved in the design of new outdoor and indoor recreation facilities.
Public Facilities and Utilities

Introduction

Public facilities and utilities include the physical facilities and infrastructure required to support campus operations. Some public facilities and services are highly visible, such as University Police, while others support students, faculty, staff, and visitor activity indirectly, even invisibly.

Background and Issues

Specific public facilities and services on the main campus include:

• University Police, Parking and Access Services offices, operations center, and vehicle parking on the north side of North Perimeter Road and the information booth at the Grand Avenue entrance to the campus
• Transportation Services offices, garage, and vehicle storage yards, currently on the north side of North Perimeter Road
• The Farm Shop machine shop and garages, currently east of Via Carta, just south of Brizzolara Creek.
• Facility Services and Facilities Planning offices, workshops, and warehouse

Some aspects of the utility infrastructure occupy specific sites on campus:

• The Central Heating and Cooling Plant in Building 40 in the campus instructional core
• The Electrical Substation at the entrance to Poly Canyon
• The Future Thermal Energy Storage Tank - site studies under way

Other utilities function as systems linking services to campus facilities. Cal Poly has just completed the first phase of a combined utility infrastructure project known as the Utilidor. This phase consists of a mile-long looped vault for district heating, district cooling, domestic water and high-voltage electricity service.

The following utilities are described by their capacity and distribution:

Electricity

Capacity

The recently completed, University owned, Mustang Substation has the capacity for moderate capacity increases. Physical space exists for a twin primary transformer that together with the current primary transformer
should provide ample capacity for the growth anticipated in the Master Plan.

**Distribution**
The campus is served by two 12,000 volt primary switched loops, one underground serving the campus core, and one overhead serving farm areas as far northwest as the new Poultry Unit. Both loops have ample capacity for the growth anticipated in the Master Plan. Future development would require connection and/or minor modifications to the existing loops and their associated switches.

**District Heating**
**Capacity**
The current central heating plant has three boilers serving the campus. Additional development may require the addition of boilers to the plant (Building 40). Relocation of the Graphic Communication printing press would provide space for these additional boilers.

**Distribution**
The Utilidor has ample capacity for current and future heating. Future development would require connection to the lines in the vault.

**District Cooling**
**Capacity**
The current central cooling plant has two chillers serving the campus. Additional development may require the addition of chillers to the plant (Building 40). Relocation of the Graphic Communication printing press would provide space for these additional chillers.

**Distribution**
The district cooling lines in the Utilidor are approximately half complete. Any major development, especially on the north side of campus would require completion of the loop in addition to connection to the lines in the vault.

**Water**
**Capacity**
Cal Poly derives its water from groundwater sources and through surface water entitlements. For domestic (non-agricultural) use, the University owns entitlement to 33% of the water in Whale Rock Reservoir or approximately 13,707 acre-feet. This entire amount is not available for regular annual consumption, however; because a certain level of water must be maintained in the reservoir to avoid a deficit.
The City of San Luis Obispo, which shares the reservoir with Cal Poly, has a computer model which accounts for drought conditions, line loss, evaporation, and other factors. The model assumes drought-year recharge, and assigns allowable yearly withdrawals based on worst-case weather cycle conditions. The model shows that during the 27-year cycle from 1942-1969, approximately 1,384 acre-feet per year (AF/Y) would have been available to the University, and would have drained Cal Poly’s allocation during that 27-year period. This is a very conservative lower limit on consumption. The City of San Luis Obispo’s water use from Whale Rock regularly exceeds their worst-case allocation.

Water from Whale Rock reservoir is treated at the Stenner Canyon water treatment facility owned and operated by the City of San Luis Obispo. A portion of the entitlement is diverted prior to treatment for use in landscape and turf irrigation. Peak treatment capacity has been recently expanded to 16 million gallons per day (mgd). Since water is conveyed to the University through the City’s treatment plant and distribution system, the actual source of drinking water arriving at the campus may be either Whale Rock Reservoir or Salinas Reservoir. No matter the source, Cal Poly’s allotment is still based upon its Whale Rock share.

Five wells on Cal Poly property supply water for agricultural irrigation. Irrigation water is stored in three reservoirs on campus with a combined holding capacity of approximately 40 AF. The reservoirs are used to collect rainwater as well as to hold water from Whale Rock until it is needed.

**Distribution**

Current (2000) domestic water use by the University (for non-agricultural purposes) is 568 AF/Y and agricultural use is currently 460 AF/Y, and the sports complex and housing project will add 129 AF/Y, for a total of 1,028 AF/Y. This figure varies considerably; records have shown total consumption as high as 1,228 AF/Y (1997-1998), and as low as 792 AF/Y (1992-1993).

**Environmental Consequences**

Supplies will be adequate for all institutional development and student and staffing increases proposed in the plan. Projects for which sizes have not been established (e.g., off-campus housing) will require further analysis, although water constraints are not apparent. Increases in distribution to ensure adequate fire flow must be sensitively sited and constructed to avoid adverse environmental impact.
**Natural Gas**

*Capacity*
Natural gas delivery to the campus edge has capacity for the growth anticipated in the Master Plan.

*Distribution*
Power Plant boiler additions may require additional gas capacity to that facility. Development north of Brizzolara Creek, if not connected to the Utilidor, would require extensive improvements to the campus distribution system.

**Sanitary Sewage**

*Capacity*
Cal Poly participated in the construction of the new treatment plant and allowed for campus growth anticipated in the Master Plan. Present consumption is approximately 0.323 million gallons per day. Cal Poly’s portion of the plant capacity is 0.471 million gallons per day. Total capacity in the collection system is 1.2 million gallons per day. However, storm run-off often exceeds this capacity.

*Distribution*
An extensive infiltration problem with storm water exists that could be solved by re-lining of existing lines and rerouting storm drainage from sewer lines. Development on the north side of campus, especially residences, may require a new trunk line to the campus’ western edge.

**Environmental Consequences**

Increased capacity at the City treatment plant will be sufficient to serve growth proposed in the Master Plan. Stormwater system improvements will further reduce inflow.

**Storm Drainage**

*Capacity*
All existing storm drains are close to capacity during high rains. Replacement development per the Master Plan should have little impact and may improve impact on existing system. Future storm drainage in undeveloped areas should be independent of the existing system.

*Distribution*
All existing storm drains feed into Brizzolara and Stenner creeks. New development will require greater on-site remediation of storm water impacts.
Environmental Consequences

Stormwater facility development will be guided by Best Management Practices. These measures should ensure that water entering streams does not contribute unduly to sediment or nutrient loading, or any form of contamination.

Data and Communications

Capacity
Cal Poly has most of the conduit capacity to make modifications as technology changes. Present technological changes require less conduit capacity for the backbone. The campus is in the process of a communications infrastructure upgrade. The campus should have a complete fiber backbone and all applicable spaces should have connectivity. This should give the campus the flexibility for Master Plan growth and technological changes.

Distribution
Cal Poly has a fiber backbone and copper connection to 90% of the spaces on campus. The campus core is 98% connected. As the campus core expands into undeveloped areas, infrastructure will be added to supply those areas.

Solid Waste and Recycling

Capacity
Solid waste is collected and removed daily by a waste hauler to the local landfill. The campus landfill is closed to all future use. The campus is presently diverting up to 50% of its waste from the landfill by recycling, except for waste from construction projects.

Distribution
Solid waste is collected in dumpsters at each building. Recycling containers are placed at the same location where room allows. Recycling collection is made by campus personnel and brought to a central location for pickup by the recycler. As the value of certain recycled material increases, it may be in the interest of Cal Poly to designate an area for processing and storing materials for sale to recyclers.
Public Facilities and Utilities

**Issues**

Many public facilities and services currently occupy land slated for campus-core redevelopment. Additionally, the functional capacity of certain existing facilities is compromised due to their age. Thus, the Master Plan addresses the following issues:

- Condition
- Location
- Resource capacity
- System capacities
- Energy consumption
- Conservation and recycling

**Principles**

Public facilities and services should be located outside the campus core unless their academic mission or functional nature requires immediate access to the core. Utility infrastructure must be provided for the expanded campus instructional core as well as for new residential communities. The following principles guide the location and approach to public facility and utility planning.

**Dependability**

Public services and utilities should support the University efficiently, with the flexibility to meet changing needs. The utility infrastructure shall be designed for ease of maintenance and renovation.

**Balance Between Cost and Environmental Impact**

Development of campus facilities and their utility infrastructure support

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1 Issues include items identified by campus and community members during Fall 1998, at public meetings during Winter 1999, during task force discussions in Spring 1999, and at subsequent meetings with campus and community groups in Fall 1999 and Winter 2000.

2 The Master Plan team synthesized this list of principles from meetings with the President and senior campus executives and from recommendations provided by the campus/community Utilities, Built Environment, Land Use, Public and Support Services and other task forces during Spring 1999.

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**Environmental Consequences**

The Cold Canyon Landfill recently underwent expansions to serve the County, including Cal Poly, until 2015. Cal Poly is required to maintain its current 50% diversion rate; impacts are considered less than significant (Class II).
Public Facilities and Utilities

Data Maps: Main Campus

Legend

- Underground High Voltage Loop
- Above Ground High Voltage Loop
- Utilidor (district heating, cooling and domestic water)
- Gas Entry Points
- Water Lines/Connection Points
- Water Facilities
- Sewer Exit Point
- Area Requiring Utility Distribution Expansion
- Public Facilities
- Possible TES (Thermal Energy Storage) Locations
shall consider sustainability, alternative sources, self-sufficiency, life-cycle costing and/or other strategies to minimize impacts on the environment.

**Resource Capacity and Conservation**
Utility design and use patterns need to acknowledge that they consume limited resources, and that their use has impacts on and off campus.

**Invisibility**
To the extent possible, most public facilities and utility support structures shall be concealed from view. However, some may be visible as explicit contributions to teaching students about an environmental aesthetic that balances beauty and function.

**Plan Components**

**Corporation Yards**
The basic facilities that support campus operations should be relocated to the Old Poultry Unit site west of the railroad to allow expansion of the campus instructional core: Facility Services, Facilities Planning, Transportation Services, and the Farm Shop.

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**Environmental Consequences**
The site is currently developed with industrial-style buildings. Redevelopment of this site to house the corporation yards would have little impact on the visual quality. The proposed site is under five acres; it is fairly level and will require minor grading, the main source of PM10. Although the site exceeds the general size threshold for PM10, it is unlikely that the project will generate dust at a significant level. Construction and operational emissions are considered less than significant.

Although the site is underlain by prime agricultural soils, it would be impractical to return the site to productive agriculture. There is no impact. It is unlikely, due to prior disturbance of the site, that cultural resources are present. Compliance with Title 24 standards will reduce the risk of geologic and seismic hazards, and compliance with the campus Hazardous Materials Management Plan will reduce risk of upset or release. The proposed location is more distant from sensitive receptors of noise, emissions and odors. Impacts are beneficial (Class IV).

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With expansion of the campus instructional core and addition of new student residential complexes, the University Police, Parking and Access
Services operations center will be relocated at the northeast corner of the campus core.

**Other Public Facility and Utility Improvements**

In order to improve utility service and efficiency, the Master Plan includes the following projects:

- Location of the proposed Thermal Energy Storage tank(s) so as to minimize their visual impact while at the same time leave their functional capacity undiminished.
- Installation of a “twin” primary transformer at the Mustang electrical Substation.
- Relocation of the Graphic Communication printing press to allow for expansion of the Power Plant’s district heating boilers and district cooling chillers.
- Completion of the Utilidor chilled water loop.
- Repair and replacement of existing sewer and storm drains.
- Development of a distribution system that would enable the increased use of second-use water for irrigation.

**Environmental Consequences**

In general, the other facilities proposed in the plan would not have adverse effects on the environment. The development of a second-use water irrigation line would be beneficial to water supplies and the use of energy-efficient building design would reduce impacts on utilities. Replacement of storm drains would improve collection and visually sensitive siting of the TES Tank would reduce aesthetic impacts.

**Sustainable Campus Planning and Design**

Site selection, site planning and building design should account for solar exposure, prevailing wind direction, and patterns of light and shade to minimize energy requirements and enhance the quality of outdoor space. Design guidelines and processes for implementing the Master Plan should encourage energy efficient building design and resource conservation. The campus landscape plan should consider the impact of vegetation and water use on the resource efficiency of facilities and the creation of comfortable and functional outdoor space.
Design for renovation of existing buildings and new construction should consider ways to maximize energy efficiency and take advantage of the mild climate in San Luis Obispo. Alternative, renewable energy sources should be used to the greatest extent possible to offset growth in demand. As costs escalate for traditional energy sources, other options to consider include integrated photovoltaics and solar generation for electricity, passive and low energy cooling strategies for buildings (including materials, solar control, natural ventilation, thermal mass), passive solar space and water heating, and effective use of day lighting. New buildings should be well ventilated using natural ventilation, and existing buildings should be retrofitted where feasible to make them usable and livable during the summer without requiring air conditioning.

Consistent with Cal Poly’s mission, the campus should explore an integrated approach to sustainable, or “green” design for research, education and operational applications in new and renovated buildings and in the campus landscape treatment. In addition to the energy conservation measures noted above, these efforts should address water conservation and reclamation, re-use of materials and products, and life-cycle costing in general. Several opportunities for resource recovery projects with educational and research potential as well as operational value include water supply and waste treatment for animal facilities, enhancement of Brizzolara Creek and the construction of new student residential communities.
CIRCULATION

Introduction
University entrances and gateways, vehicular circulation and access, bike and pedestrian circulation and access, public transportation, and service and emergency access are key circulation issues concerning Cal Poly. Campus parking and alternative transportation systems are uniquely related to these issues and merit additional discussion in the alternative transportation and parking elements of the Master Plan.

Background and Issues
The Master Plan discusses circulation at three different geographic scales: (1) regional access to San Luis Obispo, (2) local access to the campus, and (3) circulation within the campus.

Regional Access
The Central Coast of California is relatively isolated from other parts of the State. Airline access is limited to turboprop aircraft; Amtrak serves the community with train and bus connections each way from the north and south; and one major highway (101) provides vehicle access inland to the north and south. Lesser roads connect the area to the coast and Central Valley. Approximately three-fourths of Cal Poly’s undergraduates come to the area from outside the Central Coast, and because of Cal Poly’s relatively remote location, many of these students from outside the area travel to and from Cal Poly by car.

Local Access
Cal Poly is adjacent to the City of San Luis Obispo where about two-thirds of its students live. However, students as well as faculty and staff also live in Los Osos, South County, North County or northern coastal areas. Approximately 13,600 students and 2,600 faculty and staff presently commute daily from off campus to study or work at the campus. With projected enrollment increases, the number of commuting students will not increase because additional students will live on campus. However, about 465 additional faculty and staff will commute to the University.

In recent years, Highland Drive and Grand Avenue have functioned as primary vehicular access points to the University. With nearly half of campus parking presently located along the instructional core’s northern edge, most traffic drives through the campus, contributing to pedestrian-
vehicle conflicts, long intersection queues and congestion at Highland and Highway 1.

California Boulevard is closest to the multi-family housing where many students live, but it provides limited access to the University and parking in the vicinity of Mustang Stadium and the Business Building. Currently, California Boulevard does not connect to any major parking lots. The Union Pacific Railroad grade crossing at Foothill Boulevard, just south of the California Boulevard entrance, can cause vehicular, pedestrian and bicycle traffic delays when a train is crossing.

A campus entrance at Stenner Creek Road and Highway 1 is currently very dangerous.

Public transit routes circulate around the campus with designated stops along Perimeter Road.

Bike and pedestrian routes to campus run parallel to the street system, but some are discontinuous. In addition, pedestrians often cross the Union Pacific Railroad at illegal locations. (refer to the circulation data map in the Existing Conditions chapter)

**Internal Circulation**

The primary vehicular circulation route within the campus follows Perimeter Road, Poly Canyon Road, Via Carta and Mount Bishop Road with connections to campus entrances as well as to the residence halls. The roads inside the perimeter (Poly View Drive and Via Carta) are open only to service vehicles, and these vehicles are supposed to avoid traveling on these roads during class breaks. The only bike routes on campus follow the vehicle routes, with one addition - bicyclists may cross campus from north to south on Via Carta. Pedestrian routes traverse the campus in all directions with some connecting through buildings.

**Issues with Internal Circulation**

- No direct connection between California Boulevard and Highland Drive

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1 Issues include items identified by campus and community members during Fall 1998, at public meetings during Winter 1999, during task force discussions in Spring 1999, and at subsequent meetings with campus and community groups in Fall 1999 and Winter 2000.
• Vehicle congestion at Highland and Highway 1, Highland and Via Carta, Grand and South Perimeter, Highland and Mount Bishop Road intersections

• Access to outdoor teaching and learning facilities and fields

• Uneven distribution of parking lots away from primary entrances

• Vehicle congestion at entrances and exits to parking lots, particularly at the change of classes

• Farm equipment and service access and circulation within core

• Vehicle and pedestrian conflicts along California, Grand, North and South Perimeter and Highland

• Lack of alignment between pedestrian routes and crosswalks

• Pedestrian ways are narrow, confusing and poorly lit

• Unclear delineation of pedestrian and bike paths on campus

• Lack of directional signage and building identification

• Limited, discontinuous bike routes on campus

• Topographical challenges to bike routes

• Inadequate bike storage and parking at key campus destinations

• Use of skateboards on pedestrian ways

**Principles**

Cal Poly is an integral and important part of its local and regional setting and must plan transportation systems and policies within this larger context. The campus-core environment is greatly affected by the perception of “automobile dominance.” A fundamental objective of the Circulation element is to redesign campus circulation systems to reduce automobile dependence by establishing a pedestrian-oriented campus core and reducing vehicular access to the core. Reducing conflicts between pedestrians, bicyclists and autos by establishing a comprehensive circulation plan is a primary objective of this Plan. Through careful pedestrian, bicycle and transit planning, the University should strive to obtain these goals and improve the quality of human spaces.²

² The Master Plan team synthesized this list of principles from meetings with the President and senior campus executives and from recommendations provided by the campus/community Circulation and other task forces during Spring 1999. The Landscape Advisory Committee also recommended a set of principles that apply to circulation.
Alternative Transportation

A multi-faceted approach to alternative transportation should assist in enabling a cultural shift away from automobile dominance. (See Alternative Transportation element). Less reliance on vehicles using internal combustion engines can also contribute to improving air quality and diminishing the use of fossil fuels.

Public Transportation

Given the small scale of San Luis Obispo and the quantity of off-campus housing in close proximity to campus, additional public transportation could greatly reduce the need to increase the University parking supply to accommodate enrollment growth. Further, public transit routes and stops must be fully integrated into the campus circulation system.

Vehicle Trip Reduction

Traffic congestion can be reduced by increasing the number of persons in a vehicle and substituting alternative transportation, including public transportation, bicycles and pedestrians. In addition, Cal Poly could consider means to reduce the number of trips altogether by such means as “telework,” technology-mediated instruction, using the Internet for administrative transactions, and providing services on campus so that students, faculty, and staff don’t need to come and go more than once daily.

Access to Campus

The Master Plan should address local access to Cal Poly, including the coordination of pedestrian, bicycle and vehicle circulation systems and public transportation routes with the City, County and transit providers.

Strategic Parking Locations

A key to reducing the perception of “auto-dominance” is to distribute public parking close to campus entrances and in close proximity to campus residential areas. Primary entrances to the University need to provide direct access to parking lots or structures in order to reduce impacts on the surrounding neighborhoods and minimize vehicle pedestrian conflicts on campus. (See Parking element.)

Bicycle Friendly

Safe and effective bicycle connections to the surrounding street system, a clear bike path system on campus, and convenient bike parking and storage can and should increase bike use as a preferred commuting choice. Where appropriate bicycle routes may follow service access roads.
**Compatibility of Circulation Systems**  
Traffic congestion and safety issues arise when circulation systems for motorized vehicles, bicycles, and pedestrians cross or overlap. The Master Plan should find ways to reduce these conflicts by designing separate routes and managing intersections. “Traffic calming” techniques and grade-separated pedestrian crossings should be considered, including railroad crossings in cooperation with Union Pacific.

**Pedestrian Orientation**  
An instructional core free from parking and vehicular access has long been a University goal. As the instructional core redevelops, a greater amount of land should be dedicated to campus green space and pedestrian spaces supporting a student-centered and learner-friendly atmosphere. At the same time, pedestrian routes must be accessible for people with disabilities of all types and under a range of weather conditions.

**Service Access**  
While removing vehicles from the instructional core, access by service, emergency and vehicles for disabled persons must be provided. Functions such as deliveries, trash pick-up, maintenance and emergency services are a vital necessity. Service routes should be designed to be used and look like pedestrian ways in terms of paving and layout. Many of the pedestrian-oriented circulation routes should also serve these vehicles.

**Organization**  
Campus pedestrian systems in particular must be clearly organized to link all parts of campus in order to help visitors as well as students, faculty and staff find their way around. The pedestrian system must provide for access for the disabled to all campus facilities. Paths through campus should be efficiently designed to move people to their destinations, whether by car, bike, foot or Disability Resource Center services vehicle.

**User Friendly**  
For visitors and daily users alike, a clear directional sign and facility identification system is a must. People should know where they are on campus at all locations and be able to find any campus destination with ease.

**Safety**  
Safety must be addressed with respect to all circulation systems - vehicular, bicycle, pedestrian - including visibility and management of traffic flow at problematic intersections and crossings. In addition, pedestrian routes need to be lighted, graded or surfaced to ensure personal safety.
Beautification

Attractive gateways and entrance corridors, as well as the campus landscape setting, should also enhance circulation to and through the campus. (See Campus Instructional Core element.)

Plan Components

In support of the circulation policies and principles, the Master Plan Update reflects a commitment to providing enhanced access to and from campus for all modes of transportation. Concurrent with access improvements, the campus core should be restricted to pedestrian, bike, service and access for disabled persons. This shift in access is aimed at creating a pedestrian-oriented instructional core with vehicle access to strategically placed parking areas at the perimeter. This shift also underscores a commitment to developing a safe and efficient pedestrian circulation system that reduces pedestrian/vehicular conflict. The plan further recommends beautification and enhancement of key gateways and entrance corridors. These improvements are critical in order to reinforce the University’s importance as an educational institution.

The Circulation element focuses on the following components:

- Campus entrances and gateways
- Campus pedestrian system
- Campus bicycle system
- Campus connection to public transit system
- Campus shuttle
- Campus vehicle circulation system

Campus Entrances and Gateways

Campus entrances provide the first image of the University to the community, visitors and prospective students as well as students, faculty and staff. The three principal entrances to the campus are very different in terms of context and design. The Grand Avenue entrance offers panoramic views of Cal Poly, the residence halls and landmarks like the Performing Arts Center. The Highland Drive entrance from Highway 1 provides a scenic overview of the City of San Luis Obispo, the campus, its natural setting and agricultural fields. The California Boulevard entrance provides a connection to San Luis Obispo’s historic railroad past and to many of the campus’ older buildings.

Environmental Consequences

Improvement of the entrances will have a beneficial impact on campus access and aesthetics.
Legend

- Existing Parking That Remains
- New Surface Parking
- Remote Parking Options
- New Parking Structures
- Primary Campus Roadways
- Campus Gateways
- Key Intersections (May require traffic control)
**Grand Avenue and Slack Street**
Highway 101 exit signs direct visitors to the Grand Avenue entrance to campus. This entrance provides an informal procession through adjacent residential areas and panoramic views of the entire SLO community. The entrance at Slack Street provides opportunities to screen parking areas, provide exposure to adjacent hillsides and display recreation fields and prominent Cal Poly facilities such as the Performing Arts Center and various residence halls. Views from this entrance also offer a contrast between the scale of the single-family neighborhoods to the south and the more institutional appearance of the campus.

**Highland Drive and Highway 1**
The campus entrance at Highland Drive and Highway 1 is important not only as an image statement about the University but also as a key entrance to the City of San Luis Obispo and as the southern end of scenic Highway 1. Beautification efforts should strive to acknowledge these three elements and provide for a balanced approach supportive of this context. Particular attention should be given to the views both of campus and to the surrounding morros from this location. The more detailed Highland Corridor Area Plan (in progress) recognizes how important the visual connection is between the dense campus instructional core and the University’s natural environment and agricultural heritage; it also redesigns circulation at this entrance to reduce conflicts between vehicle, bicycle and pedestrian traffic.

**California Boulevard, Foothill Boulevard and Campus Way**
The California Boulevard entrance provides the closest access to student-occupied multi-family housing both east and west of the Union Pacific Railroad. This historic palm-lined street once was the University’s primary entrance. It should be redesigned to improve access, and Cal Poly should work with the City and Union Pacific Railroad to address access and congestion because vehicles approach this entrance from either California or Foothill Boulevard. Intersection redesign should address bicycle and pedestrian access and safety as well as provide for motor vehicles.

**Campus Pedestrian System**
A clearly defined system of pedestrian ways, linking all campus functions together and to the broader community, is a critical component in the shift to a pedestrian dominated campus core.
Pedestrian Connections To and From Off-Campus Locations

Redesign of Cal Poly’s three entrances should address pedestrian access to campus, with the following features:

- Grand Avenue: Sidewalks along this corridor should be widened and linked to more direct routes to campus core destinations.

- Highland Drive: The more detailed Highland Corridor Area Plan (in progress) recommends pedestrian treatment on this route.

- California Boulevard redesign should include a widened pedestrian way from Foothill to Highland along the California frontage. Informal pedestrian crossings of the Union Pacific railroad should be replaced by one well-placed crossing to adjacent off-campus housing areas. A pedestrian path should be developed to provide a direct connection between off-campus housing areas along Foothill and the campus core.

- Other pedestrian access from off campus: Improve pedestrian routes and walkways from major points of access to the internal campus network, including Slack Street at the soccer practice field, from Longview and Hathaway on either side of the Recreational Center, and Crandall Way between the Child Care Center and Alumni House.

Internal Pedestrian Circulation

The pedestrian circulation system should link campus urban spaces with student destinations and perimeter parking, providing a logical and easy-to-use pathway system.

Many of the existing campus walkways started as paved streets with little space designed and dedicated to the pedestrian. The Design Guidelines and Landscape Plan, as part of the Master Plan implementation, should provide guidance for resurfacing major pedestrian pathways. Surfaces must be designed to accept service and emergency vehicle loads.

- Consider grade-separated crossings along Highland and Grand at key locations to reduce conflicts between cars and pedestrians traveling to and from campus residential areas.

- Explore “traffic calming” alternatives to reduce vehicle/pedestrian conflicts.

- Develop at-grade crossings with appropriate traffic control systems at strategic locations along California, Highland and Grand and
Primary Campus Pedestrian Circulation Routes
Controls to Inhibit At-Grade Pedestrian Crossing
Class I Railroad Recreation Trail
Brizzolara Creek Trail
Pedestrian Crossing
Potential Grade-Separated Crossings
include corresponding pedestrian circulation designs to channel pedestrians to these key crossing locations.

• Improve Via Carta as a major pedestrian promenade from the recreation center to Highland Drive.

• Improve pedestrian access and connections to all transit stops and to all parking lots.

• Design all pedestrian ways wide enough to comfortably accommodate high use and to be well lighted, have well-placed directional signs, supported by a consistent campus furnishing theme, i.e. light types, benches, trash, signposts and graphics.

• Design all pedestrian ways to reduce conflicts between foot traffic and bicyclists.

• The pedestrian system must be compliant with the Americans with Disabilities Act (ADA).

• Develop a new pedestrian path along Brizzolara Creek from the California/Highland intersection to the new residential housing community at the Poly Canyon entrance. The path should be sensitively sited to support enhancement of this natural creek corridor. This path will be designed as part of the Brizzolara Creek Enhancement Project to ensure that it is located outside the riparian corridor. Creek crossings will be consolidated and minimized.

• Develop other new pedestrian ways to connect the instructional core with the surrounding residential villages and natural areas such as Brizzolara Creek and Poly Canyon.

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**Environmental Consequences**

Development of a campus pedestrian system and associated amenities will have a beneficial impact on campus aesthetics. Development of a more convenient campus pedestrian system may reduce impacts to air quality associated with vehicle emissions if it induces more people to walk instead of drive. Designation and improvement of the campus pedestrian system should also reduce conflicts with vehicles.

Pedestrian paths proposed for sensitive areas (e.g., Brizzolara Creek, Poly Canyon) are specified in the Master Plan to be sensitively sited and in concert with restoration efforts. Impacts to sensitive species and habitat are therefore less than significant (Class III).
**CAL POLY MASTER PLAN**

**PHYSICAL PLAN ELEMENTS**

Circulation

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**CAMPUS BIKEWAYS**

**EXHIBIT 5.14**

**LEGEND**

- **Designated Campus Bikeways**
- **Class I Bikeway Along Railroad**
- **Class II Bikeways on Roadways**
- **Principal Bike Storage Areas**

---

**Main Campus**

Legend:

- Designated Campus Bikeways
- Class I Bikeway Along Railroad
- Class II Bikeways on Roadways
- Principal Bike Storage Areas
Development of a campus bicycle system is an important step in reducing vehicle trips to the campus. Of particular importance is the connection of the surrounding City bikeway system to the campus system while ensuring direct routes to primary destinations and ease of use. Campus bike lanes need to be clearly marked and proper use of these lanes needs to be enforced. Separating pedestrians and vehicles from bike lanes is important as well.

- Extend the Class I railroad recreational trail from Foothill Boulevard north to the new recreation sports complex.
- Provide Class II bike lanes on Highland Drive, California Boulevard and Grand Avenue and connect these bike lanes to the surrounding City bikeway system.
- Establish an internal bikeway system for the campus core linking the off-campus route to key on-campus destinations.
- Establish clearly marked bike lanes on campus through the use of special paving surfaces, color markings and attractive signage.
- Establish clear bike routes from perimeter parking lots to key destinations on campus.
- Provide conveniently located safe, secure and attractive bicycle storage facilities at primary destinations and activity centers.
- Consider expansion of options and facilities for solar and electricity-powered bicycles.

Detailed planning for bicycle routes and storage will be included in the guidelines for implementing the Master Plan. These guidelines will be developed with campus bicycle user groups and committees.

A Class I bike lane is completely separated from roadways.

A Class II bike lane is part of a roadway, but it has its own lane.

**Class I Bike Lane**

Section 8’ Minimum Recommended 10-12’
Campus Connection to Public Transit System

An effective transit system is key to supporting alternative modes of access and transportation to the campus. Connection with pedestrian and bike systems is critical to making the entire system easy and efficient to use. Thus, Cal Poly should continue to work with local transit providers to enhance access to Cal Poly and integrate transit access into the campus circulation system.

- Adjust transit routes to follow new campus roadway alignment.
- Locate transit pullouts and shelters at strategic locations providing convenient access and connections to destinations on campus.
- Use state-of-the-art technologies to add to the convenience and efficiency of transit use.

Environmental Consequences

Enhancement of access to public transit may reduce vehicle traffic by providing a convenient alternative. Air quality, consequently, may be beneficially impacted (Class IV).
**Campus Shuttle**

In order to encourage alternative transportation and to provide access to and from nearby student residential complexes, parking lots and outdoor teaching and learning facilities, Cal Poly should undertake a financial feasibility analysis to institute a campus shuttle service with dedicated funding. Routes should be designed to serve regular locations on a frequent schedule. In addition, the shuttle service feasibility study should include an analysis of the ability to provide ad hoc access for student field trips and other activities in the Extended Campus away from the instructional core. The shuttle should have regular loading and unloading points at key buildings, parking lots and structures. Consideration should be given to using electric or similar low-emissions vehicles for the shuttle service. *(refer to Alternative Transportation element)*

---

**Environmental Consequences**

*Access to a campus shuttle may reduce vehicle traffic by providing a convenient alternative. Air quality may also be beneficially impacted (Class IV).*

---

**Campus Vehicle Circulation System**

The campus vehicle circulation system should be redesigned to surround the campus instructional core, with consideration of medians in the primary roads to create a boulevard effect.

**Grand Avenue**

Grand Avenue should continue to offer key access to campus from Highway 101 and San Luis Obispo’s northeastern area. Grand Avenue should provide necessary access to the Performing Arts Center, Grand Avenue Parking Structure and the large surface parking area in front of the Yosemite residence halls. The lane configuration and design should remain largely as it presently exists. Pedestrian crossings should be redesigned to increase access and safety across Grand Ave.
Highland Drive

Highland Drive should be redesigned and extended from the current terminus at Via Carta to connect with Perimeter Drive adjacent to the Fisher Science Building.

This new alignment will include additional land in the campus instructional core, thus providing needed expansion space for academic redevelopment. Highland Drive should provide access to a new parking structure at Via Carta and new residential villages along Brizzolara Creek at the entrance to Poly Canyon. Highland Drive should include both one travel lane and a Class II bike lane in each direction.

Highland Drive should also be improved with landscaping and other beautification efforts from the entrance at Highway 1 to the intersection at California pursuant to the Highland Corridor area plan (in progress). (see Roadway Section, below)

Environmental Consequences

Implementation of roadway projects that are included in the Master Plan would reduce traffic at this location. Improvement of pedestrian crossings will reduce conflicts between pedestrians and vehicles. This component is therefore considered beneficial (Class IV).

Routing of additional traffic in this area will increase noise levels over existing conditions. Additional traffic expected under the Plan on Grand Avenue totals 1,485 ADT, a 12% increase. This corresponds to a decibel increase of less than one, well below the threshold of human hearing; sensitive receptors will not perceive an increase. Impacts are less than significant (Class III).

An alternative considered was to bring Highland Drive around through the residence halls so it would meet Grand just north of Vista Grande restaurant. This would have offered greater design flexibility in the core, but would have disrupted residential life.
Highland Drive should be designed to accommodate pedestrian crossings.

Environmental Consequences

Improvement of landscaping and other beautification efforts will visually enhance the Highland Drive corridor (Class IV). Runoff from the roadway may adversely impact water quality, steelhead trout and other sensitive species inhabiting the creek, through transport of sediment and pollutants into the creek. Programs in the Master Plan, including BMP’s for drainage, reduce the significance of these impacts.

Routing of additional traffic in this area will increase noise levels over existing conditions. Additional traffic expected under the Plan on Highland Drive totals 935 ADT, a 14% increase. This corresponds to a decibel increase of less than one, well below the threshold of human hearing; sensitive receptors will not perceive an increase. Significance is further reduced in that peak vehicle traffic does not generally correspond with class sessions when sensitive receptors are most likely to be disturbed. Impacts are less than significant (Class III).

Operation of the realigned Highland Drive will be hampered in three locations: the intersection with Mount Bishop Road, the intersection with California Boulevard and at Via Carta. The Traffic and Parking Report (Chapter 6 and Appendix B) suggests that these intersections will require further study and improved traffic controls. The Master Plan contains a policy (“Key Intersections,” below) to further study these intersections and address any issues. Impacts are less than significant (Class III).
California Boulevard

California Boulevard should be connected to Highland Drive. A new connection at Highland Drive should greatly enhance access to the campus from the Foothill corridor area. An important circulation aspect of the California Boulevard extension to Highland Drive is the internal connection between the southwest corner of campus and other major campus gateways. For example, with the proposed closure of North and South Perimeter Roads to campus traffic, a visitor arriving at the Visitor Information Center on Grand Avenue for a meeting at Career Services would otherwise have to leave the campus roadway system and reenter campus via California Boulevard.

California should be redesigned to provide access to a new parking structure at the corner of Campus Way and California and should provide both one travel lane and a Class II bike lane in each direction. The extension of California Boulevard calls for extending the 3-acre lawn west of the Business Building both north and south along the new street as an expanded Campus green belt.

Environmental Consequences

Proposed improvements to California Boulevard should benefit the visual quality of this roadway (Class IV). Operational air quality impacts are individually insignificant; refer to the discussion in Chapter 6 for a discussion of cumulative impacts.

A Mitigated Negative Declaration prepared for the Engineering III Project—California Boulevard Extension in 1999 identified certain Poly Grove trees as potentially historic resources. Policies in the Master Plan specifically state that Poly Grove historic trees will be retained. One archaeo-

(continued next page)
Environmental Consequences (cont.)

Logical site eligible for listing on the NRHP may be impacted by the project; mitigation is recommended to reduce potential impacts.

Routing of additional traffic in this area will increase noise levels over existing conditions. Additional traffic expected under the Plan on California Boulevard totals 1,870 ADT, a 12% increase. This corresponds to a decibel increase of less than one, well below the threshold of human hearing; sensitive receptors will not perceive an increase. Impacts are less than significant (Class III).

The analysis in Chapter 6 shows that implementation of the Master Plan will not reduce roadway or intersection levels of service below acceptable thresholds. Impacts are not significant.

Via Carta

Via Carta, north of its intersection with Highland Drive, should be redesigned to accommodate additional vehicles and pedestrians needing to access the recreational sports facility, new residential village areas and the new parking structure. This road should be widened to accommodate travel lanes in each direction, a center turn lane and one class II bike lane in each direction.

A new widened pedestrian way should be developed on each side of the street to provide convenient access for pedestrians and should be connected to the Brizzolara creek walkway. The intersection at Via Carta and Highland Drive should be improved for increased capacity.

With the extension of Highland Drive, Via Carta will no longer be needed for through traffic south of Brizzolara Creek, and will be closed except for service access.
Key Intersection Designs
The design of specific campus roadway intersections should depend on a case-by-case analysis. However, designs should explore a range of solutions that provide the best response to the needs. Designs should therefore consider roundabouts, signalization, stop signs, intersection geometry, lane configuration and other solutions. Intersection redesign needs to accommodate pedestrians and bicycles as well as motorized vehicles. Intersection redesign should also reduce reliance on University Police staff to monitor and control traffic as a routine daily practice.

Environmental Consequences
Operational air quality impacts are individually insignificant; refer to the discussion in Chapter 6 for a discussion of cumulative impacts, and the Parking Facilities element for a discussion of impacts associated with the parking structure. Via Carta crosses Brizzolara Creek before its intersection with Highland Drive. Impacts to the creek during construction and operation are mitigated by required construction erosion control and mitigation specified in the EIR.

Routing of additional traffic in this area will increase noise levels over existing conditions. Additional traffic expected under the Plan on Via Carta has not been quantified; given increases expected on other streets, however, resulting noise is expected to be less than significant.

Circulation to the Extended Campus
The campus circulation system will be enhanced and expanded to provide access to the new residential communities as well as to Outdoor Teaching and Learning fields, units and study areas.

Service, Emergency and ADA Access
Access to the campus core by service and emergency vehicles is very important. These vehicles need to circulate throughout the core while sharing circulation routes with pedestrians and bicyclists. Conflicts between these users should be reduced through design and routing plans. Most, if not all, buildings need to be accessed for routine maintenance.

The term ADA is an acronym for the American Disabilities Act which requires that facilities for the public be made readily accessible for the handicapped.
and service on a daily basis. Clearly defined routes between service centers, such as the Corporation Yard and the campus core, are identified in the Master Plan. The Disability Resource Center shuttle service should use these routes as well. (refer to the campus service access map on the following page)

<table>
<thead>
<tr>
<th>Environmental Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>The designation of clearly defined routes and preservation of access will benefit circulation on campus and reduce conflicts (Class IV).</td>
</tr>
</tbody>
</table>

**Loading and Unloading**

The Master Plan accommodates loading and unloading of car pools and van pools at strategic and convenient locations along roads surrounding the campus core.

<table>
<thead>
<tr>
<th>Environmental Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Designation of specific loading zones will reduce potential conflicts and traffic delays (Class IV).</td>
</tr>
</tbody>
</table>
CAMPUS SERVICE ACCESS
Instructional Core

LEGEND

- Major Roadways
- Primary Campus Service Access Ways
ALTERNATIVE TRANSPORTATION

Introduction

The need to bring people to campus in a more efficient and environmentally responsible way is so important that the subject merits a separate element in the Master Plan. Enrollment growth would place additional demands on the road system that provides access to campus. Also, Master Plan studies show that the campus cannot reasonably accommodate the anticipated future demand for parking. This element describes Cal Poly’s current program and future plans for increasing the use of alternatives to the private vehicle for transportation to and from campus.

Background and Issues

The primary means of arriving on campus other than by automobile are on foot, by bicycle and bus. Van pools and car pools are active on campus as well. Cal Poly ranks number one in San Luis Obispo County for the average ridership per vehicle. This means more people commute to campus than to any other county institution in something other than a single occupancy vehicle. The following agencies provide the most common alternative means of transportation available to students, staff and faculty:

- SLO Transit - the city operates the local bus service that provides service within the city limits and Cal Poly.
- Central Coast Area Transit (CCAT) provides regional bus service to Cal Poly.
- San Luis Obispo Regional Ridesharing is a referral service providing information on car pools, van pools, shuttles, bicycling and public transit.
- The Cal Poly Access Services office provides information regarding car pools, van pools, shuttles, bicycling and public transit.
- Cal Poly operates a van pool program for campus employees (who share the monthly cost). 10% of faculty and staff regularly participated in van pools in 1999.

1 Cal Poly currently provides an annual operating subsidy to both SLO transit and CCAT to encourage students, faculty and staff to use public transportation.
Route 1 - Johnson, Broad and Cal Poly
Route 2 - South Higuera, Cal Poly
Route 3 - Johnson, Airport, Broad & Cal Poly
Route 4 - Madonna, Laguna Lake, Cal Poly
Route 5 - Cal Poly, Laguna Lake, Madonna
Route 6 - South Higuera, Cal Poly

Bus Stops

SLO City
Cal Poly
Issues

- Cal Poly’s remote regional location, which encourages students to bring cars when they move to San Luis Obispo.
- Dependence on the automobile by many students, faculty and staff.
- Perception of alternative transportation as slow and otherwise inconvenient.
- Difficulty in setting transit schedules to meet class schedules.
- The cost to the University of maintaining access to alternative transportation, especially the bus service.
- Lack of incentives to change travel behavior.

Principles

Cal Poly should continue its regional leadership role in fostering the use of alternative transportation and discouraging the use of single-occupant automobiles. An important step toward achieving these goals should be working to modify the culture of Cal Poly students, faculty and staff regarding the use of the automobile.

Education

Cal Poly should continue to improve its programs to demonstrate the availability of transit services and other forms of alternative transportation. To change the culture with respect to reducing automobile dependence, the campus should expand its current educational programs.

Encouragement

Cal Poly should study the financial feasibility of expanding its incentives for students, faculty, and staff to encourage use of alternative transportation.

Support

Cal Poly will continue to provide financial support for public transportation. Further, the campus should explore how the University can balance the allocation of resources toward trip reduction programs rather than toward the cost of providing more parking on campus.

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2 Issues include items identified by campus and community members during Fall 1998, at public meetings during Winter 1999, during task force discussions in Spring 1999, and at subsequent meetings with campus and community groups in Fall 1999 and Winter 2000.

3 The Master Plan team synthesized this list of principles from meetings with the President and senior campus executives and from recommendations provided by the campus/community Circulation and other task forces during Spring 1999.
Convenience
Cal Poly should continue to work with city and regional agencies to make alternative transportation increasingly convenient, including scheduling, access and quality of service.

Plan Components
Cal Poly’s approach to encouraging the use of alternative transportation involves both incentives and policies. Cal Poly will reduce parking demand by 2,000 spaces by the time the campus attains the new Master Plan enrollment. The following list of possibilities will be addressed in more detail in operational plans associated with the implementation of the Master Plan. Analysis of practices at comparable institutions should provide helpful insight into the feasibility and potential success of these and other programs.

• Van pools - Increase this service’s convenience and available information.
• Car pools - Encourage car pooling by considering more convenient parking locations and/or lower parking fees for regular car pools.
• On-campus Transit - Explore the feasibility of providing shuttle service on-campus so that students, faculty, and staff do not need their cars to cover longer distances on campus.
• Integrated Transit Plan - Work with SLOCOG, City and County to develop both short and long term transit plans.
• Energy Technology - Collaborate with SLOCOG and public transportation providers in exploring alternative technologies, including vehicles not dependent on fossil fuels, “real time” arrival/departure information, flexible as well as fixed routing, etc..
• Bike/Pedestrian Enhancement - Make bike and pedestrian travel to campus safer and more convenient, especially at the California Boulevard entrance to campus. (See Circulation element.)
• Faculty/Staff Incentives - Explore additional means of making alternative transportation more attractive, subject to collective bargaining arrangements.
• Entertainment and Other Services - Provide entertainment and recreation resources on campus that will entice resident students to stay on campus rather than traveling elsewhere for these services.

Not housing the new enrollment on campus would triple the number of new peak hour car trips to campus.

Many comments on the Master Plan have raised concerns about the continuation of the fully subsidized bus passes for Cal Poly students and employees. The current bus subsidy is an element of a negotiated arrangement between Cal Poly and the City of San Luis Obispo. The current agreement is for four years and ends on June 30, 2001. The negotiations are complex and are influenced by ever increasing costs. In addition, Cal Poly’s current funding (through parking fines) has been and continues to be relatively stable, meaning it has not been increasing commensurate with increased transit costs. Because the subsidy is the result of two party negotiations, it is not possible for the University to predict that it will always be able to reach an agreement with the city. Nevertheless, Cal Poly is committed to maintaining the funding for the bus at least at the currently designated level, and is exploring funding sources, such as an increase in parking fees, to fully cover the subsidy.
• **Subsidy** - Continue to provide financial incentives for students, faculty and staff to use public transportation, as it reduces the need to provide parking on campus.

• **Parking Fees** - Explore the adjustment of parking fees, to the extent allowed by law and CSU policy, to meet costs and assist with alternative transportation systems.

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**Environmental Consequences**

The successful implementation of alternative transportation modes will result in beneficial impacts to area traffic and air quality. On the other hand, if Cal Poly fails to meet its goal of reducing vehicle trips, there will be significant impacts on traffic congestion and air quality.

---

<table>
<thead>
<tr>
<th>Cal Poly Commuting Patterns, 1997 and 1999</th>
<th>faculty and staff</th>
<th>Inferred Number</th>
<th>students</th>
<th>Inferred Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of respondents</td>
<td>997 594</td>
<td>2,552</td>
<td>422 414</td>
<td>16,296</td>
</tr>
<tr>
<td>Average vehicle occupancy</td>
<td>1.42 1.48</td>
<td>3.16 3.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most frequent mode</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>drive alone</td>
<td>59.0% 56.0%</td>
<td>1,429</td>
<td>25.0% 26.4%</td>
<td>4,302</td>
</tr>
<tr>
<td>carpool</td>
<td>13.8% 14.0%</td>
<td>357</td>
<td>9.9% 7.4%</td>
<td>1,206</td>
</tr>
<tr>
<td>vanpool</td>
<td>7.3% 10.0%</td>
<td>255</td>
<td>14.5% 7.5%</td>
<td>1,222</td>
</tr>
<tr>
<td>bicycle</td>
<td>3.6% 4.0%</td>
<td>102</td>
<td>14.9% 7.5%</td>
<td>1,222</td>
</tr>
<tr>
<td>walk</td>
<td>3.2% 3.0%</td>
<td>77</td>
<td>36.7% 37.5%</td>
<td>6,111</td>
</tr>
<tr>
<td>City bus</td>
<td>2.0% 2.0%</td>
<td>51</td>
<td>7.0% 12.8%</td>
<td>2,086</td>
</tr>
<tr>
<td>County bus</td>
<td>1.0% 2.0%</td>
<td>51</td>
<td>1.0% 1.0%</td>
<td>163</td>
</tr>
<tr>
<td>Sub-total, alternative modes</td>
<td>30.9% 35.0%</td>
<td>893</td>
<td>69.1% 66.2%</td>
<td>10,788</td>
</tr>
<tr>
<td>89.9% 91.0%</td>
<td></td>
<td></td>
<td>94.3% 92.6%</td>
<td></td>
</tr>
</tbody>
</table>

Note: Inferred number column applies percentages from survey to entire campus population for Fall 1999.
PARKING

Introduction

Parking is a challenge for any large institution. Many students, faculty, and staff travel several miles to campus. While Cal Poly already enjoys a high average vehicle occupancy rate compared with other County employers, there is still a large demand for parking on campus. The program contained in the Master Plan provides for parking in three structures and various surface lots around the Campus Instructional Core. The structures should use land more efficiently, bring commuters closer to campus, and reduce the need for continued sprawl of surface lots. A structure should be located at each of the three major entrances to campus. (Refer to the Circulation and Parking data map in Chapter 4 for existing parking locations)

Existing Conditions and Issues

Most of Cal Poly’s present parking facilities are located on the southeast corner and north side of campus. Several small lots for visitors, deliveries, disabled individuals, short-term parking, other special needs, and staff are tucked into the campus instructional core. Cal Poly has approximately 5,800 existing parking spaces. A 931-space parking structure located adjacent to the Grand Avenue entrance was completed in Fall 2000.

Lots with a total of 1,530 spaces serve campus residence halls. Approximately 55% of the students who reside on-campus have cars with them, have purchased parking permits, and are accommodated in these lots.

Over 8,000 commuting students are issued parking passes. Of these, approximately 1,500 live on campus and receive residential permits. Close to one-fourth of those students receiving permits live within one mile of campus (9% live within one-half mile).

<table>
<thead>
<tr>
<th>General Location (Area)</th>
<th>General</th>
<th>Staff</th>
<th>Other*</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southwest Campus (C)</td>
<td>29</td>
<td>454</td>
<td>187</td>
<td>670</td>
</tr>
<tr>
<td>Grand Avenue (G)</td>
<td>568</td>
<td>242</td>
<td>80</td>
<td>890</td>
</tr>
<tr>
<td>North Campus (H)</td>
<td>2013</td>
<td>564</td>
<td>218</td>
<td>2795</td>
</tr>
<tr>
<td>Residential (R)</td>
<td>1337</td>
<td>8</td>
<td>35</td>
<td>1380</td>
</tr>
<tr>
<td>Administration (A)</td>
<td>0</td>
<td>0</td>
<td>67</td>
<td>67</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>3947</td>
<td>1268</td>
<td>587</td>
<td>5802</td>
</tr>
</tbody>
</table>

*includes: guest, disabled, metered, state, loading, short term

Table 5.7

![Campus Parking.xls, Campus Parking](Image)
Parking demand typically peaks during Winter Quarter, mid-week in the middle part of the day. At these times, occupancy reaches 95% or higher. This level is considered full occupancy and, therefore, lots in the core area are fully utilized during peak daytime periods.

**Issues**

- Full occupancy of parking lots during peak times.
- Inconvenient access to surface lots extending too far from the campus instructional core.
- Safety in reaching distant lots, especially in the evening
- Land valuable for other purposes consumed by surface lots
- Visual obtrusiveness of lots and structures

**Principles**

Cal Poly seeks to provide efficient parking that brings students, faculty and staff close to the campus core without overwhelming the campus environment. The University cannot reasonably meet future demands for parking at existing parking ratios. To remedy the projected future parking deficit, Cal Poly should seek to change the culture of the campus with regard to the automobile.

**Culture**

The Master Plan includes many features that should encourage both commuters and on-campus residents to reduce their use of the automobile. Part of this cultural shift should include the development of activities and facilities on campus that make it function as a community, reducing the need or desire to go elsewhere.

**Reduction**

Cal Poly should use policies and incentives to reduce parking demand by students, faculty and staff.

**Location and Access**

Concentrating parking near campus entrances should reduce through-

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1 Issues include items identified by campus and community members during Fall 1998, at public meetings during Winter 1999, during task force discussions in Spring 1999, and at subsequent meetings with campus and community groups in Fall 1999 and Winter 2000.

1 The Master Plan team synthesized this list of principles from meetings with the President and senior campus executives and from recommendations provided by the campus/community Circulation, Land Use and other task forces during Spring 1999.
circulation, control sprawl and maintain a 10-minute walking distance within the campus instructional core. For those who must park farther away, Cal Poly should study the feasibility of providing shuttle service.

**Alternatives**
Opportunities and encouragement should be provided for finding other ways to campus. These are described more fully in the Alternative Transportation element of this plan.

**Parking Management**
The campus should research parking management alternatives, including limiting permit access and establishing pricing policies to reduce the need to develop additional parking.

**Neighborhoods**
Cal Poly should be sensitive to the impact of campus circulation and parking policies on adjacent neighborhoods.

**Visibility and Safety**
Parking lot and structure design should reduce their visual obtrusiveness, but at the same time be responsive to concerns about personal safety or burglary and vandalism.

**Plan Components**
The purpose of this Master Plan element is twofold: to provide for efficient parking necessary to accommodate the enrollment and housing increases, and to change the culture of the campus in a way that reduces dependence on the automobile.

**Parking Supply**
Enrollment and residential increases on campus will increase the demand for parking. The Master Plan provides for parking facilities to replace lots converted to other uses and to meet a portion of the additional demand for parking. These should be organized around the three principal entrances to campus, each of which should have a parking structure for maximizing the use of space near the campus core.

- Construct two parking structures. Parking Structure II (up to 700-800 spaces) should be located in the southwest corner of campus off California Boulevard. Parking Structure III (up to 1,300 spaces) should be located adjacent to Via Carta in the northern edge of the campus core.

<table>
<thead>
<tr>
<th>Campus Parking Supply and Demand</th>
<th>Current</th>
<th>Future</th>
<th>Net Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without Grand Ave. Structure</td>
<td>5,802</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grand Ave. Structure</td>
<td>931</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted Supply</td>
<td>6,733</td>
<td>7,184</td>
<td>451</td>
</tr>
<tr>
<td>Demand</td>
<td>5,692</td>
<td>8,694</td>
<td>3,002</td>
</tr>
<tr>
<td>Planned Reduction</td>
<td>(2,000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted Demand</td>
<td>5,692</td>
<td>6,694</td>
<td>1,002</td>
</tr>
<tr>
<td>Net Surplus (Deficit)</td>
<td>1,041</td>
<td>490</td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 5.8**
Three alternative locations have been proposed for the parking structure to be located near the intersection of Highland Drive and Via Carta. Each location favors a different use. The northeast corner of the intersection would place the structure closest to the new residential community near Brizzolara Creek. However, this would be farther from the instructional core and have a greater impact on agricultural resources. Cal Poly’s former Master Plan had the structure located on the surface parking lot directly north of the library. While most proximate to campus, this location removes a large area of land from the instructional core that could be developed with academic and related uses. The third location, north of Brizzolara and west of Via Carta, is roughly equidistant from the new housing, the athletic facilities existing and proposed at the Sports Complex, and most importantly, the instructional core. This location requires the development of an effective method for getting pedestrians across Highland.

Environmental Consequences

Parking Structures II and III would introduce additional light and glare within already developed portions of the Cal Poly campus, which would be visible to motorists on nearby streets and surrounding land uses. Light and glare impacts are considered significant but mitigable (Class II). Parking Structure II would be highly visible to off-campus student housing along California Boulevard near the southwestern edge of campus. The proposed project is generally consistent with City policies regarding neighborhood preservation. The proposed parking structure is not one of the specified incompatible uses, and more importantly, does not differ from the general nature of development that currently exists adjacent to these homes—namely, large university-related facilities. The visual character of a parking structure is consistent with surrounding campus development. Impacts can be mitigated by design and therefore are considered less than significant (Class III).

Operation of Parking Structures II and III may result in NOx and CO emissions that exceed APCD thresholds. Mitigation measures that modify the operations of the garage may be required to maintain the levels below the APCD thresholds. Operation of the parking structures would create noise that would not be generally audible to sensitive land uses. The 1998 Parking Structure EIR found that although periodic annoyances such as horns and alarms create noise above acceptable standards, operation of the structure would not elevate usual ambient noise levels.
Parking Demand
To limit the amount of land devoted to parking, the Master Plan is based on achieving a reduction in parking demand to a level of 2,000 spaces fewer than would be required if present parking ratios were to continue. A campus access and parking management plan will be developed to implement the Master Plan. Such a plan should consider the following possible means to reduce parking demand.

Freshman Parking
One approach to reducing parking demand is to restrict freshmen residents from maintaining cars on campus (with exceptions made for hardship and job-related requirements). The inelasticity of demand for first-year student housing should prevent this policy from having a detrimental effect on the market for the residence halls. In addition, if students become familiar with alternative transportation systems they may be more likely to continue to use them throughout their careers as students.

Environmental Consequences (cont.)
above acceptable levels. Impacts are therefore, less than significant (Class III).

Title 24 compliance requires a site-specific geotechnical survey that will reduce seismic and geologic impacts to a less than significant level (Class III).

• Build additional surface lots adjacent to new residential areas to meet the needs of upper-division residents.
• Integrate parking into other structures at ground level or below as feasible.
• Continue to provide small lots to meet special needs strategically within the campus core.
• Explore the need for a remote vehicle storage to be used if the demand for residential parking exceeds supply. The value of the remote site would be to preclude the need for additional surface lots near the campus core. This would be especially valuable for students who only need their cars occasionally.

The Master Plan parking plan calls for reducing parking demand by 2,000 spaces. However, the Master Plan team recognizes that at some future date the campus may still need to provide some parking areas beyond those designated near the Campus Instructional Core and new Residential Communities. The land use and circulation maps (exhibits i, 4.11, 5.1 and 5.12) show several potential areas for remote vehicle parking or storage. They are located on Cheda Ranch because that area contains some land that is not prime agriculture (class I) and has access from Highway 1, Stenner Creek and/or Mount Bishop roads. Two sites are near the intersection of Stenner Creek and Mount Bishop Road. Another possible site would be the Goldtree area in the northwest portion of Cheda Ranch, where some additional parking might be consolidated with a possible applied research park. If parking demand should require Cal Poly to consider using any of these locations, additional site analysis will be undertaken to determine the amount of land needed, the most appropriate site or sites, how access will be provided, the effect on circulation, how the parking area(s) would be secured, and how existing uses can be relocated. Planning for development of a remote parking site that would involve moving any Outdoor Teaching and Learning activities, such as the forestry demonstration area or sheep grazing, would follow the principle that a new site for their operations would need to be identified and developed first, so as to minimize disruption.
Another measure to reduce parking demand on campus is to limit the eligibility of students living near campus to purchase quarterly parking permits, unless they have special needs.

### Environmental Consequences

Any restriction on parking permits will result in an increase in pressure by students to park in nearby residential neighborhoods. Cal Poly will work with the City to evaluate and implement effective means to manage impacts to neighborhoods, such as an extension of the residential permit system surrounding Cal Poly.

#### Enrollment scenarios

Yet another approach to managing parking demand would be to spread the schedule of courses over more hours each day and over a longer week, including weekends. This could reduce the peak demand times. In addition, some demand for parking would be reduced by students who use technology-mediated instruction, or by staff who “telework” at home rather than drive to campus. On the other hand, a more concentrated or efficient class schedule for individual students would discourage multiple daily trips to campus.

See Alternative Transportation element for complementary proposals for managing parking on campus.

### Miles From Campus

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<th>Miles From Campus</th>
<th>Students with Permits</th>
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</tr>
<tr>
<td>.25 - .5</td>
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</tr>
<tr>
<td>.5 - .75</td>
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<td>.75 - 1</td>
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**Table 5.9**

### Campus Parking Reduction - Policy Illustration

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<td><strong>Adjusted Demand</strong></td>
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**Table 5.10**
Support Activities and Services

Introduction

An academic community with a significant residential component requires a wide range of support activities and services. These services encompass programs and activities that address the needs of four population groups: students, faculty, staff, and visitors or guests. People in any of these groups may have special needs, depending on their personal or family situation, such as a disability, ethnic origin or cultural background. Support services address the following types of activities, whether they are required routinely on a daily or weekly basis, or only occasionally: (1) academic support, (2) institutional support, (3) governance, (4) social, cultural and recreational activities, and (5) basic daily living activities.

Background and Issues

Cal Poly presently offers a wide range of support services through all of its major units:

The Division of Academic Affairs includes the Library, Information Technology Services, Enrollment Support Services (Admissions, Academic Records, and Financial Aid), and academic advising, in addition to direct instruction.

The Division of Student Affairs provides a range of co-curricular activities, including Student Academic Services, Student Life and Activities, Judicial Affairs, Disability Resource Center, Career Services, Health and Counseling, as well as Housing and Residential Life.

Associated Students Inc. manages student organizations and activities including student government, the Children’s Center, Recreational Sports Center, intramural recreation, and the University Union.

The Cal Poly Foundation supports the campus with retail and food services, and manages research grants and contracts.

The Division of Administration and Finance provides basic administrative support functions such as human resources (personnel), facilities planning and operations, university police, risk management, budgeting, accounting, procurement, mail, and the like.
The Division of Advancement offers the means to supplement resources available from the State of California with private funds for such purposes as scholarships, and equipment and facility enhancement. It maintains communications with the public, alumni and friends of the University.

**Issues**

Major concerns with many support services focus on their programmatic characteristics - service quality, variety, hours, and funding - as well as their sufficiency or adequacy to meet future demands. Not only must any increase in enrollment be accompanied by the operating budget to provide for a proportionate increase in service needs, but the campus must also be able to find the space and personnel to offer those services.

Additional specific issues identified during the planning process include the following:

- Services for non-traditional students, such as adults returning to study part way through their careers.
- Services during evenings and weekends
- Services for graduate students
- Child and dependent care.
- Campus safety and security.
- Emergency response.
- Access for students, faculty and staff to commercial services not currently available on campus.
- Impacts of any enrollment growth on public services provided by the City or County.

**Principles**

The Master Plan recognizes the importance of a safe, accessible, supportive and affordable environment to the academic community. Fundamentally, all support services must be designed with respect to how they contribute (directly or indirectly) to teaching and learning. At the same time, support services must offer options that are responsive to

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1 Issues include items identified by campus and community members during Fall 1998, at public meetings during Winter 1999, during task force discussions in Spring 1999, and at subsequent meetings with campus and community groups in Fall 1999 and Winter 2000.
different needs and interests of sub-groups among students, faculty, staff and visitors. Any significant growth or change in the composition of the student population needs to be accompanied by a commensurate increase and/or adjustment in the nature of services provided. These may include service availability during summers, evenings and weekends as more classes and other learning opportunities are scheduled during those times.

Ten general principles guide the support services element of the Master Plan. While many of them reinforce one another, it is helpful to list each as an important concept. Many of these principles stress the nature of services required on campus, with the expectation that the Master Plan provide space to accommodate them.

Array
The following types of services need to be provided on campus: (1) services that are needed specifically by students (e.g., library, advising, bookstore); (2) services that benefit from or require knowledge of the campus and that require coordination with academics or other campus services (e.g., financial aid, academic assistance, disability resources, personal counseling for students); and (3) services used frequently by a considerable number of students, faculty and/or staff daily (e.g., food service, banking, health care).

Commercial Services
Cal Poly is not immediately adjacent to a city commercial district, which limits student, faculty and staff access to such services. As a result, the campus needs to ensure provision of some commercial services on campus (e.g., banking) to reduce the need for students, faculty and staff to run errands off campus during the day. Furthermore, the University needs to design its new campus residential communities with sufficient space to provide for a modest selection of convenient personal and entertainment services.

Diversity of Needs
Contemporary learning studies find that students have different ways of learning effectively. Furthermore, people of different ages and from different personal, ethnic, and cultural backgrounds have different tastes and needs. To accommodate such differences, services need to be

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2 The Master Plan team synthesized this list of principles from meetings with the President and senior campus executives and from recommendations provided by the campus/community Circulation and other task forces during Spring 1999.
Support Activities and Services offered in a variety of forms. Examples include different kinds of supplemental instruction for students requiring extra help in their classes, or food service options and meal plans to accommodate a range of budgets and diets.

**Use Patterns**
Facility and circulation system capacities are typically designed with peak use patterns in mind. Support services require the same consideration to accommodate peak periods, or manage demand so as to even out peaks - e.g., class schedules and exams spread out over the day and week, rotation of registration priorities. Service centers of all types (e.g., advising, counseling, health care) need sufficient space to accommodate students (or other clientele) waiting for service.

**Coordination**
Support services should be planned with a holistic approach using collaborative interactive processes to involve all parties delivering and receiving services. Related services that require face-to-face interactions should be coordinated and consolidated in central, accessible locations so as to be convenient to the students, faculty and staff they are intended to serve.

**Accessibility**
Services must be accessible both physically and temporally. In some instances, 24-hour/7-day electronic access can substitute for physical access - e.g., Computing Help Desk, Health Center Hot-Line, Career Services Web site, touch-tone or Web registration, and on-line purchasing. In other instances, however, students, faculty and staff need to be able interact with service providers face-to-face. For routine services, locations must be accessible to people with disabilities, convenient to other teaching and learning activities, and office hours must accommodate changing schedules. Services with frequent off-campus interaction - such as visits by potential students, donors, parents, vendors or other guests - should be located close to off-campus circulation routes and parking facilities.

**Flexibility**
Facility design for all campus services - academic, residential, social, cultural, recreational - should be flexible enough to keep pace with changing technology and changing student needs. This should include multi purpose rooms for student clubs and organizations.
Community Interaction
Cal Poly can draw upon the broader community for services used infrequently or by a relatively small proportion of students, faculty and staff. At the same time, Cal Poly can provide opportunities to contribute to services desired by the larger community through such programs as the Performing Arts Center, service learning and the activities of clubs and organizations.

Access When Away From Campus
University services are usually established to support students in residence, or living in the local community. However, the distributed teaching and learning scenario for increasing enrollment implies that additional students should be learning while physically away from campus. The service needs of these students need to be addressed by campus programs, even when they do not require access to facilities on campus, including direct academic services, such as computing, library access, academic advising, counseling, health care, etc.

Legal Compliance
Campus services and facilities must be designed to meet or exceed applicable legal guidelines such as access for those with physical or learning disabilities, fire safety, and emergency response systems.

Plan Components
The Master Plan provides for a full range of academic and student services in support of expanded enrollment, instructional facilities and new residential learning communities. This implies the need for curriculum, advising, recreation, social, and other student service programming to occur concurrently with physical Master Plan development and phasing. The Master Plan provides space to accommodate these support services and activities, consistent with the principles listed above. Because support activities and services are integrated with other land uses - primarily the instructional core and residential communities - the land use map does not designate special areas for them.

Academic Support
Activities, such as library services, information technology, advising, supplemental instruction, testing, and registration, directly support teaching and learning. The Master Plan incorporates these services in office space within the campus instructional core.
Support Activities and Services

Institutional Support
Other institutional activities are necessary to keep the University operating daily. Where these activities involve routine face-to-face interactions with students, the Master Plan incorporates them within the instructional core. Several institutional support activities, such as warehousing and transportation services, require relatively large amounts of land and do not need to be within a 10-minute walking distance of the campus core. They are being consolidated at the Old Poultry Unit. (refer to Public Services and Facilities element)

Governance
The campus requires space to support student organizations and faculty and staff involvement in collegial consultation. The Master Plan accommodates a variety of meeting spaces within the campus instructional core. In addition, space in student residential communities can accommodate formal and informal functions of student organizations closer to where students live.

Social, Cultural and Recreational Activities
The primary center for cultural and social activities will continue to be the area around the University Union and Performing Arts Center. These will be expanded to serve the larger on-campus residential population (see Campus Instructional Core element). Other formal and informal social and recreational activities are integrated both within the instructional core and in residential communities. (The Recreation element addresses organized recreational activities.)

Basic Living Activities
Students, faculty, staff and visitors might use a variety of other services and activities routinely or occasionally on campus, such as food service, banking, and personal services. The Master Plan accommodates space for the array of services suggested in the principles above, both within the expanded campus core and within new residential communities. The Campus Core and Circulation elements also address access and safety issues.

Commercial Retail Services
The vision of the Master Plan calls for a primary campus activity center near the University Union that is focused on students. Thus, the range of retail businesses and other activities would remain specialized and not constitute a full urban commercial center. Cal Poly understands that there is a delicate balance in determining how much of what services will be sufficient to support the campus community and manage commuting.
Effective alternative transportation will allow students, faculty, and staff - as well as members of the broader community - to take advantage of the range of services and facilities both on and off campus without adding to traffic congestion. The Cal Poly Foundation is presently the exclusive provider of certain services - e.g., food service, vending machines and bookstore. Other services compete for campus outlets - e.g., travel service, ATMs. As planning for an increased range and volume of services occurs, the campus will need to determine which it should offer directly and which might be provided through franchise or "privatization."

Note: Many of the Support Activities and Services principles should be implemented more directly in the Design and Landscape Guidelines that should be developed to implement the Master Plan.

**Environmental Consequences**

In general, support services will be developed within the campus instructional core. Since this area is urbanized, there will be little or no impact associated with these facilities.
ANCILLARY ACTIVITIES AND FACILITIES

Introduction

A university often attracts ancillary activities that contribute to the life of the campus and surrounding community. Funding of facilities for ancillary activities is typically tied to opportunities for partnerships with donors and other interested parties.

Background and Issues

Cal Poly has a successful history of partnerships to provide facilities that cannot be supported entirely by State of California funds. Where such partnerships contribute directly to teaching and learning, the campus has provided for them within or close to the campus core. Thus, the Performing Arts Center - a partnership between Cal Poly, the City of San Luis Obispo, and the Foundation for the Performing Arts Center - was built adjacent to the Cal Poly Theatre to expand instructional opportunities for students in the performing arts. Similarly, Cal Poly and its Associated Students, Incorporated, have formed partnerships to provide for student recreation (Recreational Sports Center and the Sports Complex) and services such as the Children’s Center near the campus core. Furthermore, Cal Poly has taken advantage of donor and grant funding for a range of research facilities, including Applied Research and Development Facilities and Activities (ARDFA), Advanced Technology Lab, Irrigation Training and Research Center, Dairy Products Technology Center, Gallo vineyards, and Computer-Aided Design Research Center (CAD Research Center).

From time to time campus and community members propose additional facilities that would build on and enhance Cal Poly’s faculty and student research or other instructional activities. Examples include a conference center, applied research partnerships with local firms, “incubator” support for technology development, English-as-a-second-language institutes, golf learning center, and the like. Often, these activities would involve significant amounts of land and require access for groups other than Cal Poly’s regular students, faculty and staff.
Issues

- Competition for land between ancillary activities and land uses more central to teaching and learning, particularly Outdoor Teaching and Learning.
- Infrastructure and access requirements for ancillary facilities.
- Staffing and financial requirements to support partnerships for ancillary activities and facilities.

Principles

The primary policy associated with ancillary activities is that they must clearly complement teaching and learning. Ancillary facilities should not compete with core instructional needs for land within or near the campus core. Such activities can be located at more remote sites when they need not be provided within a 10-minute walking radius and/or when they require significant land area.

Principles for locating specific ancillary facilities should be the same as for land use in general—that is, relationship to the University’s academic mission, environmental suitability, compatibility between adjacent uses, proximity among related uses, and community-building—except that compactness in the instructional core may not apply. Please see the Land Use element for discussion of these principles.

Plan Components

The Master Plan identifies two potential sites for ancillary activities and facilities on the main campus and Cheda Ranch. No sites are proposed on the western ranches in order to maintain their rural character and to support outdoor teaching and learning.

Ancillary Activities

The most commonly mentioned ancillary activities include a visitor center, conference center, and applied research park. This section...
explores the nature of each briefly; however, each would require further detailed analysis at such time as a specific proposal is made.

A visitor center would provide a facility to welcome guests to the campus. It could include a station where visitors could obtain parking permits, campus maps, and directions to their destinations. The visitor center could serve as the starting point for campus tours conducted by Poly Reps. It could also include a small exhibit covering Cal Poly’s history and accomplishments.

No detailed program has been suggested for a conference center, yet the idea has been studied several times and continues to arise. Presently, Cal Poly’s Conference Services use regular campus facilities during times that they are not scheduled for instruction, and house attendees in some of the residence halls during the summer. The Master Plan calls for an expansion of alumni services near the present Alumni House, which may include small conference or retreat facilities. In addition, the area near Grand Avenue and Slack Street has been suggested for potential conference facilities. Cal Poly will continue to use its residence halls during the off season to support conferences.

The City and County of San Luis Obispo have supported a research partnership with Cal Poly through the California Central Coast Research Park (C3RP) task force. While a number of sites both on and off campus have been suggested over the years, the Master Plan explores the potential of an applied research park on campus. One possible site is in the Goldtree area. It is important to note that an applied research park on Cal Poly lands would focus on applied research and advanced development activity in support of the University’s academic mission, including applied research partnerships, “incubator” support for new technology, and business development. It is likely to be heavily involved in and dependent on technology - information technology, telecommunications, biotechnology, geographic information systems, visual imaging, etc. An applied research park would provide opportunities for faculty professional development, internships for students, and employment for partners and spouses of faculty and staff. It could include business services (e.g., photocopying equipment, meeting rooms, and food service). However, it would not include activities often associated with business or industrial parks, such as professional offices or manufacturing (assembly) except as incidental to applied research and development.
Slack Street and Grand Avenue
A site in the southeast corner of the main campus adjacent to Slack Street offers one potential site for ancillary facilities. The Master Plan shows this site for limited student housing adjacent to Yosemite dorms and provides for a buffer between students and the adjacent residential neighborhood. The balance of the site’s usable area is not large enough to support a significant amount of faculty and staff housing. However, it does offer access at the Grand Avenue entrance of the campus, and may be suitable for a visitor-oriented ancillary facility, or additional conference facilities.

Environmental Consequences
The project will involve minimal security lighting at night in an area of existing street and other facility lighting. Lights will be hooded to reduce spillover into adjacent areas. Impacts are, therefore, less than significant (Class III).

The eventual size of the project is not yet known, but it is unlikely to approach construction acreage necessary for air quality review or mitigation. Operational emissions are expected to be minimal. Impacts are less than significant (Class III).

Biological surveys performed on site did not reveal the presence of any sensitive plant species. Use of the site by special-status wildlife is most likely limited to foraging habitat. Impacts are considered less than significant (Class III).

The site is bisected by a drainage channel which has wetland characteristics near Grand Avenue. The facility will be sited to avoid this area.

No known cultural resources exist onsite. A pre-construction Phase I survey will reduce the potential for impact.

A Visitor Center is not likely to attract additional traffic to campus, but site planning will need to address circulation in and out of the facility.
Goldtree Project Area

Preliminary studies suggest that approximately 60 acres are potentially suitable for development in the Goldtree area of Cheda Ranch as an applied research park, conference center or similar ancillary activities. These studies are exploring the potential for between 300,000 and 600,000 square feet of development.

Environmental Consequences

The project site is adjacent to the California Men’s Colony and lies east of the County Operations Center, both of which are significant existing light sources. However, the project would involve a new source of light, glare and development in a heretofore undeveloped area visible from Highway 1. Impacts are reduced to a less than significant level by the use of hooded lighting and the implementation of design guidelines (Class III).

Operational emissions would stem from vehicle traffic and energy consumption. The level of operational emissions will also depend on the size of the project and the type of facility developed.

Preliminary botanical studies of the site show that it is unlikely that sensitive plant or animal species are present on site on a regular basis. However, it is likely that species use the grasslands on site for foraging. Serpentine soils may also be present on site, which may support sensitive plant species. A spring plant survey is recommended to reduce impacts. Cumulative loss of grasslands is addressed in Chapter 6, “Other CEQA Sections”.

The site has not been surveyed to determine the presence of cultural resources. Given the overall sensitivity of Cal Poly lands, a Phase I survey should be performed prior to facility design.

Title 24 compliance will reduce geologic and seismic impacts to less than significant levels.

The project site is located adjacent to grasslands that constitute a moderate fire hazard. All facilities will comply with the local fire code, and adequate access shall be ensured. Impacts are considered less than significant (Class III).

This site is adjacent to the upper Stenner Creek corridor. Siting should take into consideration drainage to this creek and potential impacts to water quality.
Environmental Consequences (cont.)

Noise constraints to development stem from the highway. By 2005, the County Noise Element predicts that development within 644 feet of the centerline of Highway 1 will face noise levels in excess of acceptable thresholds. Depending on the nature of the development proposed, buildings should be sited at least 139 feet from the centerline of the roadway (the location of the 70 dB noise contour) so that noise is reasonably mitigable by building design.

The development of this site will require the extension of campus police service into a previously unserved area. Careful coordination will be required during the planning phase of this project to determine impacts to this and other public services.

The type of facility proposed will affect the volume and distribution of traffic to the site. Design of circulation systems will need to pay careful attention to entrance and exit from Highway 1. Access to the site from Highway 1 could require signalization or lane modification.

Any development at Goldtree will require additional environmental analysis. Until a development plan which includes some specifics about location, size and use has been proposed, detailed environmental analysis is premature.
What are the environmental impacts?
INTRODUCTION

This chapter, together with the accompanying Master Plan (Plan) as project description, constitutes the Final Environmental Impact Report (FEIR) for the California Polytechnic State University, San Luis Obispo Master Plan Update. Several of the components of the Master Plan have a discussion of their environmental consequences within the Plan document. This information is also part of the environmental analysis of the Plan.

Purpose/Legal Requirements

This EIR has been prepared in accordance with the California Environmental Quality Act (CEQA) and the State CEQA Guidelines. In accordance with Section 15121(a) of the State CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3), the purpose of this EIR is to serve as an informational document that:

“... will inform public agency decision makers and the public generally of the significant environmental effect of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project.”

Consistent with the decision in Environmental Information and Planning Council vs. County of El Dorado (1982), this EIR evaluates the Final Master Plan on the basis of existing conditions rather than comparing plan goals to those of previous plans. This approach provides a more realistic assessment of how implementation of the plan elements will affect the current Cal Poly environment.

Forecasting, Degree of Specificity

The preparation of an EIR necessarily involves some degree of forecasting and speculation. The CEQA Guidelines speak to these issues as follows:

15144. Forecasting. Drafting an EIR or preparing a Negative Declaration necessarily involves some degree of forecasting. While foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can.

15145. Speculation. If, after thorough investigation, a Lead Agency finds that a particular impact is too speculative for evaluation, the Agency should note its conclusion and terminate discussion of the impact.

15146. Degree of Specificity. The degree of specificity required by an EIR will correspond to the degree of specificity involved in the underlying activity which is described in the EIR.

a. An EIR on a construction project will necessarily be more detailed in the specific effects of the project than will be an EIR on the adoption of a local general plan or comprehensive zoning ordinance because the effects of the construction can be predicted with greater accuracy.

b. An EIR on a project such as the adoption or amendment of a comprehensive zoning ordinance or local general plan should focus on the secondary effects that can be expected to follow from the adoption or amendment, but the EIR need not be as detailed as an EIR on the specific construction projects that might follow.

This EIR focuses on the impacts that could result from the implementation of the Master Plan. The degree of specificity corresponds to the degree of specificity contained in the plan.
Scope & Content

In accordance with the State CEQA Guidelines, Cal Poly, as Lead Agency, solicited comments from the public through the distribution of a Notice of Preparation (NOP) (Appendix A). The comments received in response to the NOP were incorporated into this EIR. The scope of the EIR includes analysis of the environmental impacts of the proposed Master Plan in the following issue areas:

- Aesthetics
- Agricultural Resources
- Air Quality
- Biological Resources
- Cultural and Historical Resources
- Hydrology and Water Quality
- Geology and Soils
- Noise
- Public Services
- Transportation and Circulation
- Construction Impacts

Each issue area is analyzed in regard to both Master Plan and cumulative impacts. The potential growth inducing impacts of the Master Plan are also analyzed. Environmental impacts related to issues not analyzed in this EIR were determined to be less than significant.

The alternatives analysis is prepared in accordance with Section 15126(d) of the State CEQA Guidelines and California court decisions. The alternatives section describes a range of reasonable alternatives that could feasibly attain the basic objectives of the proposed Master Plan and identifies an environmentally superior alternative.

State CEQA Guidelines Section 15088 requires that “the lead agency... evaluate comments on environmental issues received from persons who reviewed the draft EIR and... prepare a written response.” Due to the number and length of comments received during the review process, the comment letters and the lead agency’s responses are bound as a separate document. This document will be available for review at the Cal Poly Facilities Planning Office; responses to individual letters will be forwarded to each commenter.

Lead, Responsible, & Trustee Agencies

Cal Poly is the lead agency with respect to fulfilling CEQA requirements for the proposed Master Plan. Section 15367 of the State CEQA Guidelines defines the lead agency as “the public agency which has the principal responsibility for carrying out or approving a proposed project.”

The California State University Board of Trustees has discretionary approval power over the proposed Master Plan as a responsible agency pursuant to Section 15381. Pursuant to Section 15386, trustee agencies for the Master Plan include all state agencies having jurisdiction over natural resources affected by Master Plan implementation, including the California Department of Fish and Game and the State Water Resources Control Board.

Environmental Impact Review Process

The environmental impact review process, as required under CEQA, is outlined below. The steps are presented in sequential order.

1. Notice of Preparation (NOP) Mailed. After deciding that an EIR is required, the lead agency must file a NOP soliciting input on the EIR scope to “responsible,” “trustee,” and involved federal agencies; to the State Clearinghouse, if one or more state agencies is a responsible or trustee agency; and to parties previously requesting notice in writing (State CEQA Guidelines Section 15082; Public Resources Code Section 21092.2). The NOP must be posted in the County Clerk’s office for 30 days. A scoping meeting to solicit public input on the issues to be assessed in the EIR is not required, but may be conducted by the lead agency.
2. **Draft Environmental Impact Report (DEIR) Prepared.** The DEIR must contain: a) table of contents or index; b) summary; c) project description; d) environmental setting; e) significant impacts (direct, indirect, cumulative, growth inducing and unavoidable impacts); f) alternatives; g) mitigation measures; h) short term uses vs. long-term productivity (required only in EIRs on plans, policies, ordinances, [LEFCO] actions and joint National Environmental Protection Agency [NEPA] documents); and i) irreversible changes (required only for EIRs as indicated for “h” above).

3. **Public Notice and Review.** A lead agency must prepare a Public Notice of Availability of an EIR. The Notice must be placed in the County Clerk's office for 30 days (Public Resources Code Section 21092). The lead agency must send a copy of its Notice to anyone requesting it (State CEQA Guidelines Section 15087). Additionally, public notice of DEIR availability must be given through at least one of the following procedures: a) publication in a newspaper of general circulation; b) posting on and off the project site; and c) direct mailing to owners and occupants of contiguous properties. The lead agency must consult with and request comments on the DEIR from responsible and trustee agencies, and adjacent cities and counties (Public Resources Code Sections 21104 and 21253). The minimum public review period for a DEIR is 30 days. When a DEIR is sent to the State Clearinghouse for review, the public review period must be 45 days unless a shorter period is approved by the Clearinghouse (Public Resources Code 21091). Distribution of the DEIR may be required through the State Clearinghouse (State CEQA Guidelines Section 15305). CEQA does not require public hearings on the DEIR, although in practice, most agencies conduct such hearings.

4. **Notice of Completion.** A lead agency must file a Notice of Completion with the State Clearinghouse as soon as it completes a DEIR.

5. **Final EIR (FEIR).** A FEIR must include a) the DEIR; b) copies of comments received during public review; c) list of persons and entities commenting; and d) responses to comments.

   **Note:** Comments received during the public review process and responses to these comments are bound as a separate document due to their number and length. Responses to individual letters will be forwarded to the commenter.

6. **Certification of FEIR.** The lead agency shall certify: a) that the FEIR has been completed in compliance with CEQA; b) that the FEIR was presented to the decision making body of the lead agency; and c) that the decision making body reviewed and considered the information in the FEIR prior to approving a project (State CEQA Guidelines Section 15090).

7. **Lead Agency Project Decision.** A lead agency may: a) disapprove a project because of its significant environmental effects; b) require changes to a project to reduce or avoid significant environmental effects; or c) approve a project despite its significant environmental effects, if the proper findings and statement of overriding considerations are adopted (State CEQA Guidelines Sections 15042 and 15043).

8. **Findings/Statement of Overriding Considerations.** For each significant impact of the project identified in the EIR, the lead or responsible agency must find, based on substantial evidence, that either: a) the project has been changed to avoid or substantially reduce the magnitude of the impact; b) changes to the project are within another agency's jurisdiction and such changes have or should be adopted; or c) specific economic, social, or other considerations make the mitigation measures or project alternatives infeasible (State CEQA Guidelines Section 15091). If an agency approves a project with unavoidable significant environmental effects, it must prepare a written Statement of Overriding Considerations that set forth the specific social, economic or other reasons supporting the agency's decision.
9. **Mitigation Monitoring/Reporting Program.** When an agency makes findings on significant effects identified in the EIR, the agency must adopt a reporting or monitoring program for mitigation measures that were adopted or made conditions of project approval to mitigate significant effects.

10. **Notice of Determination.** An agency must file a Notice of Determination after deciding to approve a project for which an EIR is prepared (State CEQA Guidelines Section 15094). A local agency must file the Notice with the County Clerk. The Notice must be posted for 30 days and sent to anyone previously requesting notice. Posting of the Notice starts a 30-day statute of limitations on CEQA challenges (Public Resources Code Section 21167[c]).
SUMMARY

This section has been prepared in accordance with the State of California Environmental Quality Act (CEQA) Guidelines. The section is divided into two components. The first summarizes the characteristics of the areas affected by the Master Plan, and identifies areas of controversy known to the Lead Agency (Cal Poly). The second identifies the environmental impacts, mitigation measures, and residual impacts associated with the Master Plan and cumulative development. Additionally, this section summarizes Master Plan alternatives.

Project Synopsis

Project Proponent

The California State University
Office of the Chancellor
400 Golden Shore
Long Beach, California 90802-4275

Project Description

The project is a Master Plan Update that includes management and development strategies for University land holdings in San Luis Obispo County covering 6,000 acres. The Plan is designed to accommodate an increased in enrollment from 15,000 net FTE academic year students to 17,500 net FTE academic year students and 2,500 net FTE during the summer session. The Master Plan serves as the project description for this EIR.

Location

The Master Plan involves two sites in San Luis Obispo County: one 3,000 acre site adjacent to the City of San Luis Obispo and another 3,000 acre site on State Highway 1 about midway between the City of San Luis Obispo and Morro Bay. San Luis Obispo County is approximately midway between San Francisco and Los Angeles (refer to Exhibit 6.1, page 217).

Areas of Controversy Known to the Lead Agency

Geologic Hazards

There is some controversy regarding the stability of a landslide underlying the southeastern third of the campus, northeast of San Luis Obispo. Geotechnical studies that are required for compliance with Title 24 would provide more information; this EIR does not attempt to assess the stability of the landslide.

Summary of Environmental Impacts, Mitigation Measures and Alternatives

Impact Classification

The summary in Table 6.1 identifies four types of potential impacts that are associated with the proposed Master Plan:

Class I. Significant, unavoidable, adverse impacts for which “specific economic, social or other considerations make infeasible the mitigation measures or project alternatives identified in the final EIR.” If the Lead Agency decides to approve the project, a Statement of Overriding Considerations must be adopted for any identified Class I impact, as required by CEQA Guidelines Section 15093(b).
Class II. Significant adverse impacts that can be feasibly mitigated to less than significant levels. CEQA Guidelines Section 15091(a)(1) requires that "Findings" be made indicating that changes or alterations have been required in the Master Plan to substantially lessen these impacts.

Class III. A diverse impacts that have been found less than significant.

Class IV. Beneficial impacts.

Cumulative Impacts

The CEQA Guidelines Section 15355 defines cumulative impacts as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.” Further, “the cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.”

The following sections analyze both the cumulative effects of development proposed under the Master Plan and the effect of the Plan in light of other regional projects. Regional projects included in the analysis are:

- Increased enrollment at Cuesta College (approximately 2,300 students for a total of 10,000)
- Projects currently proposed but not built in the City (refer to Appendix C, “Traffic and Parking Study”)
- Regional (Projected growth under the City of San Luis Obispo General Plan (1997) and the San Luis Obispo Area Plan (County, 1995))

Alternatives

The EIR focuses on alternatives that are capable of eliminating or reducing significant adverse effects associated with the Master Plan while feasibly attaining the basic objectives of the Master Plan. The EIR identifies the "environmentally superior" alternative from the alternatives assessed. The alternatives evaluated include:

- "No Project" - No further development
- Alternative Enrollment Scenarios - “Student Progress”
  “Distributed Teaching and Learning”
  “Year-round Operations”
  “Increased AY FT Es”
- Alternatives to Plan Components - Housing
  No additional on campus housing
  Housing in different locations
  Modifying housing configurations
- Parking
  Development with current supply
  No additional structures
  Reduction in parking spaces
  Modification of structure locations

Summary Table

The following table summarizes the impacts identified in the EIR, their significance, mitigation applied to reduce such impacts, and the residual impact. The residual impact refers to the impact's level of significance after mitigation is applied. In most instances, Class II impacts can be reduced to Class III through proper mitigation.
Implementation of the Master Plan would result in a number of beneficial impacts (Class IV) and two significant, unavoidable impacts (construction and operational air quality) which mitigation would not reduce to less than significant levels.

**Table 6.1. Summary of Impacts and Mitigation Measures**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Impact (Significance)</th>
<th>Mitigation</th>
<th>Residual Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geology</td>
<td>Policies protecting riparian areas and steep slopes may result in the reduction of erosion potential in these areas (Class IV).</td>
<td>None</td>
<td>Class IV</td>
</tr>
<tr>
<td>Seismic impacts</td>
<td>Seismic impacts are less than significant because of required Title 24 compliance (Class III).</td>
<td>None</td>
<td>Class III</td>
</tr>
<tr>
<td>A landslide (Hall and Prior, 1975) has been identified along the southeastern third of the campus, in the vicinity of Grand Avenue and Slack Street. Structures proposed for this area, including H-4, H-6 and the ancillary facilities, could face an increased risk of landslide. Mitigation is recommended to reduce landslide risk (Class II).</td>
<td>Mitigation measures would need to be developed on the basis of site-specific study of the landslide. The general degree of required mitigation would depend on the findings, which could range from: 1) finding that the existing landslide is relatively stable and therefore no significant mitigation is needed; to 2) the existing landslide is marginally stable and will require extensive strengthening and/or subsurface drainage improvements to provide adequate factors of safety for design and construction. This EIR therefore recommends that such a study be performed to estimate the factor of safety of the existing landslide for existing static and earthquake loading conditions, and to evaluate what impact the proposed site improvements could have on the stability of the landslide. The study will specify mitigation measures for any site improvements that are needed.</td>
<td>Class III</td>
<td></td>
</tr>
<tr>
<td>Title 24 compliance</td>
<td>Title 24 compliance reduces the risk of damage from expansive soils to less than significant levels (Class III).</td>
<td>None</td>
<td>Class III</td>
</tr>
<tr>
<td>Hydrology and Water Quality</td>
<td>Policies which aim to enhance degraded riparian and reservoir areas will benefit hydrologic processes where those functions and qualities are impaired (Class IV).</td>
<td>None</td>
<td>Class IV</td>
</tr>
<tr>
<td>Impacts to water quality</td>
<td>Impacts to water quality from increased landscaping and recreational fields are less than significant (Class III).</td>
<td>None</td>
<td>Class III</td>
</tr>
<tr>
<td>Runoff from the relocated Beef Unit may adversely impact</td>
<td>Refer to mitigation in Biological Resources, below</td>
<td></td>
<td>Class III</td>
</tr>
<tr>
<td>Topic</td>
<td>Impact (Significance)</td>
<td>Mitigation</td>
<td>Residual Impact</td>
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<tr>
<td>Chorro Creek (Class II)</td>
<td>Projects along Brizzolara Creek will include impervious surfaces that may increase runoff and contribute to erosion.  This impact is less than significant because of Master Plan policies calling for proper drainage and filtering of runoff (Class III).</td>
<td>No additional</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>Use of reclaimed water in cooperation with the City of San Luis Obispo would not adversely impact water quality (Class III)</td>
<td>None</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>Portions of the Design Village and Parking Structure III lie within the 100-year floodplain of Brizzolara Creek (Class III)</td>
<td>Title 24 compliance</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>Substantial seismic activity may compromise the integrity of Drumm Reservoir. Only parking facilities have been sited in downslope areas to minimize risks (Class III).</td>
<td>None</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>Cumulative impacts to water quality are less than significant (Class III).</td>
<td>None</td>
<td>Class III</td>
</tr>
<tr>
<td>Biological Resources</td>
<td>The Master Plan calls for protection and inventory of natural resources, along with ecological sensitivity in farming processes (Class IV).</td>
<td>None</td>
<td>Class IV</td>
</tr>
<tr>
<td></td>
<td>Development at the Grand and Slack site will not impact sensitive species (Class III).</td>
<td>None</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>Preliminary analysis shows that the Goldtree site does not support sensitive species (Class II).</td>
<td>A site-specific spring botanical survey will be completed prior to construction. A reas supporting sensitive plant species shall be avoided; disturbed populations will be replanted in a suitable area at a ratio deemed appropriate by a qualified biologist.</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>Enhancement efforts along Brizzolara and Stenner Creeks will have a net benefit (Class IV).</td>
<td>None</td>
<td>Class IV</td>
</tr>
<tr>
<td></td>
<td>Operation of the Bull Test facility may have adverse impacts on the sensitive species present in Chorro Creek through runoff or direct</td>
<td>Drainage plan. Prior to construction of the Bull Test facility, a construction and operational drainage plan will be drafted with contingencies for storm event and system failures.</td>
<td>Class III</td>
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<td>Topic</td>
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<tr>
<td>disturbance (Class II).</td>
<td>Limitation of Cattle Access. Cattle will not be allowed to enter the creek.</td>
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<tr>
<td>Reservoir maintenance may have an adverse effect on sensitive species and wetland habitat (Class II)</td>
<td>Reservoir maintenance should be scheduled outside of the breeding and nesting periods of sensitive species that may inhabit the area, and should be approved by jurisdictional agencies where appropriate.</td>
<td>Class III</td>
<td></td>
</tr>
<tr>
<td>Further development at the Design Village is constrained by potential wetlands, and serpentine habitat (Class II).</td>
<td>Future development at the Design Village shall be restricted to areas not limited by serpentine soils, Army Corps jurisdictional wetlands greater than $1/10^{th}$ of an acre in size, and other areas populated by sensitive plant species, unless impacts to plants can be mitigated by replanting and/or relocation. Prior to construction, a site-specific biological and jurisdictional wetlands delineation shall be prepared.</td>
<td>Class III</td>
<td></td>
</tr>
<tr>
<td>Trails policies are implicit in their aim to protect natural resources (Class III).</td>
<td>None</td>
<td>Class III</td>
<td></td>
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<tr>
<td>Occupancy of the H-1 and H-2 housing projects may adversely impact populations of Calochortus obispoensis (Class II).</td>
<td>Pedestrian Restriction. The northern and eastern portions of the H-1 and H-2 projects will be designed to prevent direct pedestrian access to the native grassland and biological preserve (Exhibit i). In general, access to buildings and recreation areas will be oriented towards the main campus and away from sensitive areas to the north and east. Pedestrian traffic in the area of Brizzolara Creek will be designed in accordance with the “Goals and Guidelines for the Cal Poly Creek Management and Enhancement Plan” included as Appendix F. Signs will be posted to indicate the sensitivity of the areas. Plant Population Restoration. Suitable habitat exists on campus for replanting of Calochortus obispoensis. Any populations or individuals of Calochortus obispoensis disturbed by construction of the H-1 and H-2 housing projects will be replanted in suitable areas at ratios deemed suitable by a qualified biologist.</td>
<td>Class III</td>
<td></td>
</tr>
<tr>
<td>The loss of grassland foraging habitat associated with the H-1 and H-2 housing projects and the Goldtree project would not significantly impact the fecundity of sensitive bird</td>
<td>None</td>
<td>Class III</td>
<td></td>
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<td>Topic</td>
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<td>species. Impacts are less than significant (Class III).</td>
<td></td>
<td>Refer to mitigation restricting pedestrian access in sensitive areas, above. Plans for the H-1 and H-2 housing units will include pedestrian systems which are sensitive to the Brizzolara Creek corridor, and which limit access to open space areas to the east of the project site. The Goldtree site has been sited away from the Stenner Creek corridor.</td>
<td>Class III</td>
</tr>
<tr>
<td>Occupancy of the H-1, H-2 and Goldtree projects would extend human activity into open space areas. The projects are designed to be compact, and avoid impact to corridor (i.e., riparian) areas. Impacts are less than significant (Class III).</td>
<td></td>
<td>The Highland Drive realignment shall be designed with drainage systems sensitive to the creek corridor. Drainage shall incorporate silt and grease traps and/or vegetative buffer strips to prevent pollution and sedimentation of the creek. Landscaping shall consider native vegetation compatible with the riparian area where it is appropriate. Inlets that drain to the creek will be marked accordingly.</td>
<td>Class III</td>
</tr>
<tr>
<td>Slopes and cutbanks associated with the realignment of Highland drive will be in closer proximity to Brizzolara Creek. Runoff may impact sensitive species (Class II).</td>
<td></td>
<td>Class III</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cumulative grassland loss is less than significant (Class III).</td>
<td>None</td>
<td>Class III</td>
</tr>
<tr>
<td>Agricultural Resources</td>
<td>The Master Plan specifically states that prime agricultural land will be retained in agricultural use and that agricultural land will be managed to protect ecological resources (Class IV).</td>
<td>None</td>
<td>Class IV</td>
</tr>
<tr>
<td>Although portions of the H-1, H-2 and H-3 housing sites are designated “Farmland of Statewide Importance” and “Unique Farmland,” the analysis finds that these designations do not apply. Impacts are less than significant (Class III).</td>
<td></td>
<td>None</td>
<td>Class III</td>
</tr>
<tr>
<td>Cumulative non-prime agricultural land loss is less than significant (Class III)</td>
<td></td>
<td>None</td>
<td>Class III</td>
</tr>
<tr>
<td>Cultural and Historical Resources</td>
<td>The development of housing and Parking Structure II in the southwestern portion of campus will necessitate the removal of buildings deemed potentially eligible for listing on the NRHP (Class II).</td>
<td>Buildings deemed potentially eligible for listing on the NRHP will be studied to determine their significance. If they are determined to be significant, Cal Poly will undertake proper documentation of the resource. Given the number of buildings on campus that are over 50 years old, determination of historical significance shall be made by a historic architect (with a</td>
<td>Class III</td>
</tr>
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<td>Topic</td>
<td>Impact (Significance)</td>
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<td>historic preservation background) prior to removal or substantial remodeling of any such structure.</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>At least one known archaeological site is eligible for listing on the NRHP and may be impacted by the Master Plan (Class II).</td>
<td>Prior to design, Phase II archaeological studies will be completed at known sites; determination of significance will be made, and appropriate mitigation measures followed, as suggested by the archaeologist.</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>Given the number of known archaeological sites, mitigation is recommended to reduce likelihood of impact to undiscovered resources (Class II).</td>
<td>Where soil surfaces are undeveloped and visible and where no previous survey has been completed, Phase I archaeological surveys will take place prior to construction.</td>
<td>Class III</td>
</tr>
<tr>
<td>Circulation</td>
<td>Improvement of the campus pedestrian, bicycle, and transit systems will have a beneficial impact (Class IV).</td>
<td>None</td>
<td>Class IV</td>
</tr>
<tr>
<td></td>
<td>Improvement of key intersections and clear definition of ADA routes and loading zones will reduce conflicts and improve circulation (Class IV).</td>
<td>None</td>
<td>Class IV</td>
</tr>
<tr>
<td></td>
<td>All of the Cal Poly area roadways are forecast to operate at acceptable levels of service at Baseline and Baseline + Project conditions (Class III).</td>
<td>None</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>The closure of South Perimeter Road will be successful as long as the California Boulevard and Highland Drive projects take place first (Class III).</td>
<td>None</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>Intersection operations are forecast to operate at acceptable levels (Class III).</td>
<td>Mount Bishop Road/Highland Drive. This location will need to have all-way stop control removed at some time prior to the full implementation of the Master Plan. California Boulevard/Highland Drive. The extension of California Blvd. to Highland would result in a new at-grade three-way intersection. Monitoring the intersection will be required; however, it seems likely that a signal will be needed. Via Carta/Highland Drive. Via Carta north of its intersection with Highland Drive will need to be widened to accommodate vehicular and pedestrian traffic. The intersection should be monitored to see if</td>
<td>Class III</td>
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<td>Impact (Significance)</td>
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<td></td>
<td>Impacts to transit from the Master Plan are considered less than significant (Class III).</td>
<td>The University will need to implement a campus shuttle or other alternative transportation modes to accomplish parking reduction goals.</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>The Master Plan parking supply is forecast to accommodate future demands (Class III).</td>
<td>No additional mitigation is necessary. The following mitigation measure has been added to reinforce the need for improved transit and reduced parking:</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>The analysis shows that all of the Master Plan-area intersections are forecast to operate within their respective design capacities when cumulative traffic is considered (Class III).</td>
<td>None</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>Two of the Master Plan-area intersections are forecast to operate below acceptable levels (Class II).</td>
<td>California Boulevard/Taft Street. The peak hour traffic forecasts meet warrants for consideration of traffic signals. California Boulevard/U.S. 101 north bound ramps. The peak hour traffic forecasts meet warrants for consideration of traffic signals.</td>
<td>Class III</td>
</tr>
<tr>
<td>Air Quality</td>
<td>Operational air quality impacts from traffic are mitigated by policies contained in the Master Plan (Class III). Mitigation is suggested for reduction of stationary source emissions (Class II).</td>
<td>No additional mitigation are required for traffic-related impacts. Stationary source emissions. Cal Poly shall implement the following or similar APCD-approved energy-reducing measures to reduce stationary source emissions: • Shade tree planting along the southern exposures of buildings. • Building orientation to take advantage of natural light and heating and cooling.</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>Operation of the parking structures may result in CO emissions exceeding acceptable thresholds (Class II).</td>
<td>Design. The structures shall be designed with multiple exits in order to reduce the time required to vacate the cars. Walls should be generally open allowing for free passage of outside air through the</td>
<td>Class III</td>
</tr>
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<td>Topic</td>
<td>Impact (Significance)</td>
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<tr>
<td></td>
<td>structures.</td>
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<td></td>
<td>Parking payment options. Prepayment of parking fees should be considered to prevent vehicle queuing when leaving.</td>
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<td></td>
<td>Reduction of exit time. The University shall incorporate management strategies contained in Section 2 of the Cal Poly Parking and Commuter Services Event Parking Management Plan (Draft) for the structures.</td>
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<td></td>
<td>Prior to construction, specific air quality models will be conducted for the off-campus housing projects.</td>
<td></td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>Operational emissions associated with the Corporation Yards are considered less than significant (Class III).</td>
<td>None</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>Implementation of the Master Plan will contribute to non-attainment of ozone precursors when viewed in light of other regional projects. The Master Plan is consistent with the Clean Air Plan and suggested mitigation measures have been incorporated into the plan. However, impacts will remain cumulatively significant (Class I).</td>
<td>No additional</td>
<td>Class I</td>
</tr>
<tr>
<td>Noise</td>
<td>Noise impacts from the movement of Mustang Stadium are significant, but mitigable (Class II).</td>
<td>Mustang Stadium. A specific noise analysis and mitigation plan will be developed for the Stadium when the relocation is proposed. Design recommendations at this time include the following:</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>Public Address System. In general, speakers should be oriented towards the interior of the stadium and/or directed downward.</td>
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<td></td>
<td>More speakers with a smaller output dispersed throughout the stadium would have less external noise impacts than a few, louder speakers.</td>
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<td></td>
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<tr>
<td></td>
<td>Building Orientation. The stadium should be designed to be oriented away from</td>
<td></td>
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<td>Topic</td>
<td>Impact (Significance)</td>
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<td></td>
<td>Off campus housing facilities may face exterior noise from Highway 1 exceeding acceptable levels (Class II)</td>
<td>Off campus housing facilities north of Highland and at Highland and Highway 1 should be sited to minimize noise and should incorporate acoustic design intended to reduce interior noise to acceptable levels.</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>Vehicular traffic over the long-term associated with the implementation of the Master Plan will not result in audible noise increases (Class III)</td>
<td>None</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>Operation of the parking structures would not elevate ambient noise levels above acceptable levels (Class III).</td>
<td>None</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>Cumulative noise from traffic associated with the University and regional growth would not be considerable (Class III).</td>
<td>None</td>
<td>Class III</td>
</tr>
<tr>
<td>Aesthetics</td>
<td>Development of greenspace, protected natural space, and unified landscaping will enhance the visual quality of the campus core (Class IV).</td>
<td>None</td>
<td>Class IV</td>
</tr>
<tr>
<td></td>
<td>Enhancement of campus entrances and protection of steep slopes will minimize adverse impacts to City residents (Class IV).</td>
<td>None</td>
<td>Class IV</td>
</tr>
<tr>
<td></td>
<td>Lighting and glare from implementation of the Master Plan are considered significant, but mitigable (Class II)</td>
<td>All exterior lighting associated with the proposed Master Plan will be hooded. No unobstructed beam of light shall be directed toward sensitive uses (e.g., Brizzolara Creek, Drumm Reservoir, environmental and Horticultural Sciences (EHS), and neighborhoods). The use of reflective materials in all structures shall be minimized (e.g., metal roofing, expanses of reflective glass on west-facing walls).</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>Lighting from the Parking Structures (especially Parking Structure II) may adversely affect sensitive land uses. Impacts are significant, but mitigable (Class II).</td>
<td>All interior lighting associated with proposed parking structures shall be directed internally with lamp “cut-off shields.” Unobstructed beams of light shall not be directed toward land uses outside the structure and shall not interfere with vehicular traffic on nearby streets. Examples of specifications for minimizing light and glare include the following: All lights must be shielded to avoid glare</td>
<td>Class III</td>
</tr>
<tr>
<td><strong>Topic</strong></td>
<td><strong>Impact (Significance)</strong></td>
<td><strong>Mitigation</strong></td>
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<tr>
<td>Lighting from Mustang Stadium may adversely affect views from area residences (Class II).</td>
<td>If this project were to occur, final design shall include measures to reduce light and glare visible to area residents. The stadium will be redesigned from that which is shown in the Heery Plan in order to accomplish the following measures: Examples of specifications include the following: &lt;br&gt;  &lt;br&gt; All lights must be shielded to avoid glare and spillover onto adjacent areas and onto public right-of-way areas &lt;br&gt;  &lt;br&gt; The use of reflective materials will be minimized &lt;br&gt;  &lt;br&gt; Landscape illumination will be accomplished with low-level, unobtrusive fixtures &lt;br&gt;  &lt;br&gt; Minimum safe lighting levels will be used in adjacent parking and other facilities</td>
<td>Class III</td>
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<tr>
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<td>Further environmental analysis of the lighting and glare impacts would be required as part of future environmental review for this project.</td>
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<td>Projects potentially impacting views from Highway 1 include off-campus housing north of Highland, the Goldtree facility, and the Bull Test. Impacts are significant, but mitigable (Class II).</td>
<td>City Consultation. Prior to design finalization, the University shall consult with the City regarding the visual impact of the proposed off-campus housing on the City gateway. Compliance with County Guidelines. If the proposed facilities lie within 100 feet of Highway 1, the Bull Test and the Goldtree facilities will comply with County Guidelines for design near scenic highways. In any case, the University shall consult with the County regarding reduction of visual impacts to sensitive areas such as the Highway 1 corridor</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>Cumulative visual impacts are less than significant (Class III).</td>
<td>No additional</td>
<td>Class III</td>
</tr>
<tr>
<td>Public Services</td>
<td>The use of reclaimed water and the continuation of the campus recycling program will have beneficial impacts on public services (Class IV).</td>
<td>None</td>
<td>Class IV</td>
</tr>
<tr>
<td></td>
<td>The Plan specifically addresses emergency access; the completion and expansion of the Utilidor will address fire flow deficiencies. Impacts to fire service are less than significant (Class III).</td>
<td>None</td>
<td>Class III</td>
</tr>
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<td></td>
<td>Implementation of the Master Plan will increase the need for police services. Impacts are significant, but mitigable (Class II)</td>
<td>The University will provide for at least the equivalent of 3.3 additional police personnel to serve the anticipated growth. The University will work with the campus police to determine an adequate level of service ratio for the campus and will plan for provision of needed personnel.</td>
<td>Class III</td>
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<td></td>
<td>The Master Plan will result in the increased need for personal safety infrastructure. The Master Plan is explicit in its requirement that all proposed development consider personal safety in design. Impacts are less than significant (Class III).</td>
<td>None</td>
<td>Class III</td>
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<td></td>
<td>City of San Luis water supply models show that during worst-</td>
<td>Because future water demand will begin to tax the University's supply of Whale Rock</td>
<td>Class III</td>
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<td>case weather cycle conditions, Cal Poly demand would exceed supply. During normal rain years, it is likely that considerably more water would be available to Cal Poly; impacts are significant, but mitigable (Class II).</td>
<td>water, the following programs should be instituted:&lt;br&gt;&lt;br&gt;<strong>Water Conservation Program.</strong> The University should develop a program designed to reduce overall water consumption on campus. The program will incorporate water-saving fixtures into new development, retrofit older facilities over time, and modify landscaping irrigation requirement.</td>
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<td>Drought contingency plan. As part of implementation of the Master Plan, the University will draft a drought contingency plan to address potential water shortages associated with extended drought conditions.</td>
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<td>Additional Water Supply. The University should investigate the availability of additional water supplies over the next twenty-year horizon.</td>
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<td>Impacts to the wastewater system (treatment and infrastructure) will be less than significant (Class III).</td>
<td>None</td>
<td>Class III</td>
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<td>Impacts to solid waste collection and disposal capability are considered less than significant (Class III).</td>
<td>None</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>Cumulative impacts to public services are considered less than significant (Class III), except for water, which is significant but mitigable (Class II); cumulative impacts to police services are less than significant because of incorporated mitigation (Class II).</td>
<td>None; refer to police and water supply mitigation above</td>
<td>Class III</td>
</tr>
<tr>
<td>Construction Impacts</td>
<td>Aesthetics. Campus construction will have less than significant impacts on views (Class III).</td>
<td>None</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>Aesthetics. Off-campus construction may have temporary adverse impacts on views from Highway 1. Impacts are significant, but mitigable (Class II).</td>
<td>Contractors at the Goldtree and off-campus housing facilities will locate stockpiling and staging areas out of view where feasible</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>Air Quality. Some buildings on No</td>
<td>None</td>
<td>Class III</td>
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</table>

*Final Environmental Impact Report Summary*
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<thead>
<tr>
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<td>campus may contain asbestos or lead, which may pose a risk during demolition. Regulations require proper handling and disposal of these materials; impacts are less than significant (Class III).</td>
<td>Dust and vehicle emissions are mitigated by Cal Poly Standard Construction Requirements and measures recommended by the consultant. Refer to the Construction Impacts section for full text.</td>
<td>Class I for H-1, H-2, Goldtree, off-campus housing and Grand and Slack housing; Class III for all other projects</td>
</tr>
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<td></td>
<td>Air Quality. Construction activities may result in dust and vehicle emissions exceeding acceptable thresholds. Impacts are significant but mitigable (Class II).</td>
<td>Dust and vehicle emissions are mitigated by Cal Poly Standard Construction Requirements and measures recommended by the consultant. Refer to the Construction Impacts section for full text.</td>
<td>Class I for H-1, H-2, Goldtree, off-campus housing and Grand and Slack housing; Class III for all other projects</td>
</tr>
<tr>
<td></td>
<td>Biological Resources/Hydrology and Water Quality. Construction of facilities may have adverse impacts on sensitive species associated with riparian areas. Impacts are significant, but mitigable (Class II).</td>
<td>Construction drainage plan. Prior to construction, the contractor shall draft a drainage and activity plan to protect channels on the Goldtree, Grand/Slack, H-1, H-2 and H-3 housing sites, Highland drive, Parking Structure III and the Brizzolara Creek enhancement projects and their associated habitats. The plan will emphasize avoidance, and erosion and runoff control. The University will consult with appropriate jurisdictional agencies prior to any activity.</td>
<td>Class III</td>
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<td></td>
<td>Hydrology and Water Quality. Construction activities may adversely affect the drainage channels at the Grand/Slack and Drumm Reservoir area. At Grand/Slack, the northern drainage will need to be filled to accommodate development. (Class II).</td>
<td>Refer to Construction Drainage Plan, above.</td>
<td>Class III</td>
</tr>
<tr>
<td></td>
<td>Hydrology and Water Quality. Impacts to Brizzolara Creek from enhancement projects and other direct alterations would have temporary adverse effects (Class II).</td>
<td>Refer to “drainage plan” above</td>
<td>Class III</td>
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<td>Biological Resources. Develop, for each enhancement project and other direct alteration, a set of performance standards, incorporating the following requirements:</td>
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<tr>
<td>Noise</td>
<td>Noise levels will temporarily exceed acceptable thresholds. Impacts are significant, but mitigable (Class II).</td>
<td>University Construction Noise standards (refer to section for full text)</td>
<td>Class III</td>
</tr>
<tr>
<td>Traffic and Circulation. Construction activities may hamper circulation and pose hazards to pedestrians (Class II).</td>
<td>Circulation Plan. Where vehicle and pedestrian routes and residential areas conflict with construction activities, a circulation plan will be developed, which will include warning signs and detours, as well as efforts to minimize noise in residential areas.</td>
<td>Class III</td>
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</tbody>
</table>
PROJECT DESCRIPTION

Project Proponent

The Master Plan proponent is:

California Polytechnic State University
San Luis Obispo, California 93407
(805) 756-1131

The California State University owns the properties under the jurisdiction of the Master Plan.

Project Location

Regional Location

The Master Plan guides development at the campus of California Polytechnic State University at San Luis Obispo (Cal Poly). This EIR does not address University property located in Santa Cruz County. The campus occupies over 6,000 acres west and northeast of the City of San Luis Obispo in the western foothills of the Santa Lucia Range in Central San Luis Obispo County. Exhibit 6.1 represents the campus in context to its regional location. These lands provide hands-on opportunities for students, especially those studying agriculture, biological sciences, architecture, and engineering, to apply their classroom knowledge to real-life situations. During fall 1999 (the largest term of the academic year) Cal Poly enrolled about 16,500 students, which converts to 14,800 full-time equivalent students for the academic year.

Site Location

The Master Plan site consists of the entire California Polytechnic State University campus in San Luis Obispo County. For a more detailed location of specific projects refer to the preceding Master Plan.

Project Objectives

In keeping with its mission to provide the highest quality “learn-by-doing” educational experience, Cal Poly has undertaken an extensive program to expand and modernize its campus facilities. The Cal Poly Master Plan is key in helping to guide the ongoing improvements. The Master Plan provides a blueprint for the expansion and modernization of campus facilities, academic programs, and services -- including housing -- through the year 2020.

The Master Plan’s focus and direction follows the Cal Poly Mission Statement, which outlines the University’s academic mission, key institutional characteristics, aspirations and principles. Through the mission statement Cal Poly is committed to providing an environment where all share in the common responsibility to safeguard each other’s rights, encourage mutual concern for individual growth and appreciate the benefits of a diverse campus community. Some of the characteristics include national reputation, polytechnic program emphasis and residential campus as well as applied instruction (learn by doing) and state-of-the art education. The aspiration is to be a model for public higher education as well as to follow principles such as having a student-centered, learner-directed culture, where teaching and learning resources systematically foster active learning. Please refer to the Master Plan introduction for specific examples of principles guiding the Master Plan.
Project Characteristics

This document is a comprehensive Master Plan prepared to guide development within the campus. Refer to the Master Plan for details regarding components of the Plan.

Standard Construction Requirements

The California State University system has adopted standard construction requirements that govern new construction on university campuses. The standards contain provisions that contractors must adhere to and include provisions that help mitigate certain impacts associated with construction. The Standard Construction Requirements are incorporated herein by reference and may be reviewed at California Polytechnic State University San Luis Obispo, Office of Facilities Planning located in Building 70 on the Cal Poly campus, as well as the offices of Crawford Multari and Clark Associates, 641 Higuera Street, Suite 303, San Luis Obispo.

Discretionary Approvals Required

The Master Plan requires the approval of the California State University Board of Trustees. No other discretionary actions are required. Some individual plan components will require subsequent approval by agencies such as the California Department of Fish and Game (CDFG), Army Corps of Engineers (ACOE), and/or the Regional Water Quality Control Board (RWQCB).
Environmental Setting

The main and extended campus of Cal Poly, along with the San Luis Obispo Creek watershed ranches, lie at the base of the western foothills of the Santa Lucia Range in central San Luis Obispo County immediately northeast of the City of San Luis Obispo (see Figure 6.1). Stretching west to the Pacific Ocean is a series of small volcanic peaks, or Morros, which provide a unique scenic backdrop of regional significance. The University and surrounding urban area are located in a valley formed by the Santa Lucia mountains to the north and east and the eastern-most Morros, Bishop Peak and Cerro San Luis, to the west. This scenic setting and proximity to the ocean make San Luis Obispo an attractive choice for university students and residents alike.

The Master Plan also addresses land use at the University ranches located north and west of Cuesta College towards Morro Bay. The Chorro Creek watershed ranches are located in the Chorro Creek Valley, between the Morros to the south and the foothills to the north.

Climate

The climate of San Luis Obispo County can be described as semi-arid with warm, dry summers followed by a cool, rainy period from November to March. Weather systems are dominated by the Pacific high pressure system which persists off the coast of California for much of the year, diverting storms northward. A daily pattern of dense morning fog followed by periods of afternoon sunshine occurs regularly during the summer months near the coast and within numerous small coastal valleys. Minimum average temperatures in San Luis Obispo average about 42°F in January; September is the warmest month with an average maximum temperature of about 79°F. High and low temperatures are moderated by the proximity of the ocean, about twelve miles to the west. The average annual rainfall in San Luis Obispo measured from 1950 to 1980 was 23 inches.

Population

The 1999 Department of Finance population estimate for the City of San Luis Obispo is 44,000 people, approximately 17% of the population of the County during that same year (255,000 people). During fall 1999 (the largest term of the academic year) Cal Poly enrolled about 16,500 students, of which about 2,800 lived on campus (outside of the City limits).

Site-specific Setting

Information regarding the site-specific setting is provided in the following sections under applicable topics.
Regulatory Setting

The Cal Poly campus and ranches (refer to Exhibits i and ii in the Master Plan) are owned by the California State University, a system of 23 campuses providing comprehensive undergraduate and post-baccalaureate professional education. The Board of Trustees has jurisdiction over development projects on campus. The campus properties covered in the Master Plan are in the unincorporated area of San Luis Obispo County. Development is not subject to local land use regulations. However, relevant policies and programs of the City of San Luis Obispo General Plan provide additional context for land use decisions in the immediate vicinity of the campus. It is also important to include policies from County planning documents that are relevant to development near the campus ranches.

City of San Luis Obispo General Plan

The City’s General Plan was adopted in April of 1997 after undergoing a lengthy revision that began in the fall of 1988. The Land Use Element map designates land near the University for residential development at densities up to 24 dwelling units per acre, recognizing the value of providing lower-cost housing near the campus. Land Use Element policies 1.12.2 and 2.7.1 speak directly to the role the University plays in the community of San Luis Obispo:

1.12.2 Cal Poly. The City favors Cal Poly’s approved master enrollment targets. These targets should not be changed in a way that would exceed campus and community resources. The City favors additional on-campus housing, enhanced transit service, and other measures to minimize impacts of campus commuting and enrollment.

2.7.1 Cal Poly. California Polytechnic State University campus should provide housing opportunities for both faculty and students. Existing on-campus housing should be retained. On-campus housing should increase at least as fast as enrollment, so the proportion of students living on campus can remain the same as in 1992.

2.7.3 Amenities. Multi-family housing likely to be occupied by students should provide the amenities which students seek in single-family areas, to provide an attractive alternative.

Master Plan Response. The Plan proposes additional enrollment. The Plan incorporates means to reduce the impact of these additional students on the surrounding community, including on-campus housing, parking restrictions, and alternative transportation modes. The Plan also proposes an increase in available amenities on campus, which should reduce vehicle trips and reduce conflicts with neighborhoods.

County of San Luis Obispo

Most relevant to the campus ranches are the Agriculture and Open Space Element of the General Plan (1998), and the San Luis Obispo Area Plan (revised January, 1997). The Agriculture and Open Space Element provides policies to guide use and development of agricultural land. The San Luis Obispo Area Plan provides policies and programs specific to the unincorporated areas surrounding the City. The Area Plan makes the following statement regarding Cal Poly:

“The county encourages continued coordination between both of these planning efforts within the campus administration and with the larger community and county. Assessments are needed that fully review the potential impacts of enrollment and facilities expansions, including adverse impacts to the regional housing supply and transportation system. On- and off-campus housing should be provided concurrently as enrollment increases and be designed to serve student and faculty needs with apartments, condominiums and detached residences. Commuting impacts within the region could be avoided by providing enhanced transit and other types of transportation along with enrollment increases.”
Cal Poly is encouraged to acquire by gift, lease of fee title those production agriculture lands shown within the city's “Greenbelt Plan” which would be beneficial to Cal Poly's agriculture programs. Such acquisitions would allow Cal Poly to replace campus lands lost to expansion of academic buildings, sports facilities, and on-campus housing. The acquired lands should be permanently retained as agriculture or open space.” (Pg. 4-33)

**Master Plan Response.** The Plan designates areas beyond the instructional core as Outdoor Teaching and Learning or Natural Environment. These land use categories recognize the importance of protecting agricultural and environmentally sensitive resources. To this extent, the Plan is consistent with the County's policies.

The County Agriculture and Open Space Element contains the following policy relevant to the ranches:

A GP24: Discourage the conversion of agricultural lands to non-agricultural uses through the following actions:

4. Avoid locating new public facilities outside urban and village reserve lines unless they serve a rural function or there is no feasible alternative...

**Master Plan Response.** The Goldtree facility is the only non-agricultural facility proposed for location outside of the existing core and extended campus.

OSP13: Establish a network of Major Ecosystems

a. Identify and establish a network of Major Ecosystems that are representative of the region's most important natural ecosystems. Use public lands, such as National Forests or Natural Area Preserves, as the core for such areas.

b. Work with and support the efforts of local, state, and federal agencies and conservation, environmental, and agricultural organizations and private landowners to establish a Major Ecosystem Network.

c. Designation of a Major Ecosystem shall not interfere with agricultural uses on private lands that are either within or adjacent to the Major Ecosystem.

**Master Plan Response.** The Master Plan proposes to relocate the Bull Test to the southern portion of Chorro Creek Ranch. The facility will be set back both from the highway and the creek, and will be consistent in character with the other agricultural facilities in the area.

 osp 14 through 20 call for the protection of wildlife corridors, riparian areas, and unique or sensitive habitat. As mentioned above, the Master Plan also provides policies for the protection of these resources.

**Morros Natural Area.** The Morros Natural Area as identified in the County Agriculture and Open Space Element corresponds to the southern side of Highway 1 between San Luis Obispo and Morro Bay, to Los Osos Valley Road on the south. The County is currently preparing to draft a plan to address the management of this area. Although it is too early in the process to speculate on the outcome, the plan would be most relevant to proposed uses on the southern portion of Chorro Creek Ranch.

**Master Plan Response.** The Master Plan proposes to relocate the Bull Test to the southern portion of Chorro Creek Ranch. The facility will be set back both from the highway and the creek, and will be consistent in character with the other agricultural facilities in the area.

**Trails Plan.** The County has a Trails Plan (1991), which designates areas for expansion of the County trails system. Some trails are shown in the Cal Poly area, including the Poly Canyon/Stenner Creek and Cal Poly to West Cuesta Road trails.

**Master Plan Response.** The Master Plan provides for expansion and improvement of trail systems, with protection of the environment paramount. Implementation of the Master Plan (Chapter 7) will include consultation with the County to site trails on Cal Poly property.
The following section analyzes the impacts of the proposed Master Plan in terms of geologic structure and potential hazards.

Setting

Seismic Setting

The San Luis Obispo area is located in a seismically active region of California where relatively strong ground motion has occurred in the past, and is likely to occur again in the future. Area faults are shown in Exhibit 6.2. The fault activity nomenclature defined under the State of California’s Alquist-Priolo Fault Hazards Act (APFHA) was used as the basis for evaluating fault activity and seismicity for this study. The activity rating of faults under the act is summarized by the following guidelines:

- A fault is considered active if it can be substantiated that the fault has ruptured during the Holocene (within the last 11,000 years BP).
- A fault is considered potentially active if it can be substantiated that the fault has ruptured during the Pleistocene (within the last 2,000,000 years BP) but not during the Holocene.
- A fault is considered inactive if it can be substantiated that the fault has not ruptured during the Pleistocene or Holocene (in other words, it has not ruptured within the last 2,000,000 years).

APFHA active faults are assigned an exclusionary zone of variable width, which require special fault studies to estimate the feasibility of construction within that zone. It should be noted, however, that there are many faults in California and the local area that satisfy the Alquist-Priolo Fault Hazard Act definition of being active, that are not currently zoned under the act. Although there are mapped active and potentially active faults in the region, no known faults have been mapped through campus (Dibblee, 1974; Hall and Prior, 1975; Pacific Gas & Electric, 1988; San Luis Obispo County Seismic Safety Element, 1975).

There are three main faults that lie near the study area: 1) the Cambria fault, 2) the West Huasna/Oceanic fault, and 3) the Los Osos fault (refer to Exhibit 6.2). The Cambria fault lies approximately ½ mile northeast of the site. The southern end of the Cambria fault could be considered part of the West Huasna/Oceanic fault group where the faults nearly join east of Cal Poly. A line of serpentinite rock ridges distinguishes the boundaries of the fault. Splays of the Cambria fault break Pliocene strata east of Cambria, but there is no known offset of Holocene age rocks by the system (Chipping, 1987). The West Huasna/Oceanic fault is located approximately 2-1/4 miles northeast of the site. This fault lies along the crest of the western side of the Santa Lucia Range. It is approximately 75 miles long and has a near vertical dip (Buchanan-Banks, et al., 1978). Both of these faults exhibit Quaternary displacement (during the past 700,000 years) and are considered potentially active at this time (Jennings, 1994).

The Los Osos fault is the closest active fault to the site, located approximately 3.5 miles southwest. This fault is considered a west-northwest-trending reverse fault located on the south side of the Los Osos Valley. The Los Osos fault is divided into four segments. The westerly segment of the fault is the Estero Bay segment, which lies mostly offshore. The Irish Hills segment starts near Los Osos and extends to just past San Luis Obispo Creek. A two-mile length of this segment west of Laguna Lake is considered to be active (Treiman, 1989) and is designated as an Earthquake Fault Zone (Hart, 1997, revised). The other two segments of the Los Osos fault are the Lopez Reservoir segment and the Newsome Ridge segment, located southeast of the Irish Hills segment. The Los Osos fault is capable of generating a maximum moment earthquake of magnitude 6.8; the recurrence interval for an earthquake of this magnitude is approximately 1,925 years (Petersen, 1996).
Other faults that are likely capable of generating strong ground motions in the campus region are the San Andreas Fault, the Nacimiento fault, the Rinconada fault, and the Hosgri-San Simeon fault. A description of these major faults is presented below.

San Andreas Fault Zone. The Mojave segment of the San Andreas Fault is mapped along the eastern County line, approximately 35 miles east of the City of San Luis Obispo. The San Andreas is the most historically active fault in California, and is considered the most likely source of future major earthquakes. The San Andreas Fault is estimated to be capable of a maximum credible seismic event of moment magnitude 8.3 to 8.5. It is expected that a magnitude 8.5 earthquake on the fault could result in up to 30 feet of ground displacement along the fault trace.

Nacimiento Fault Zone. The Nacimiento fault is a regional, active to potentially active fault extending northwest from about Santa Margarita into northern Monterey County. The fault system is located about 10 miles northwest of Cal Poly and may have been responsible for the November 21, 1961, magnitude 6.0 earthquake. However, there is some controversy related to the location of that seismic activity (San Luis Obispo Seismic Safety and Safety Element, 1975).

Rinconada Fault Zone. The Rinconada fault, which trends northwest to southeast, joins the Nacimiento fault approximately 10 miles east of the City of San Luis Obispo (Dibblee, 1976). Dibblee indicates that the Paso Robles formation, which is likely not younger than several hundred thousand to a million years old, is the most recent geologic unit that has been conclusively displaced by the Rinconada fault. PG&E (1988) reported that data was inconclusive, but it is believed that the Rinconada fault will probably not cause ground rupture in the near future.

San Simeon-Hosgri Fault. The Hosgri fault is located offshore approximately 15 miles west of San Luis Obispo. The fault trends in a northwesterly to southeasterly direction, and comes onshore as the San Simeon fault near San Simeon Point. It has been identified as having the potential to produce an earthquake event of magnitude 7.2 to 7.7 every 200 to 800 years. The San Simeon fault, which is onshore, is a right-lateral fault that has been substantiated as having ruptured during the Holocene, thus indicating the fault is active (Hall et al., 1990). The Hosgri fault, which is also a right-lateral fault, was studied by Lettis et al. (1990) and is inferred to have moved within the Holocene; indicating the fault is active. The last rupture event along the San Simeon fault could have occurred between about 265 and 2,000 years ago (Hall et al., 1990). The southern segment of the Hosgri fault could be responsible for the 1927 magnitude 7.0 Lompoc Earthquake.

Edna Fault. The Edna fault depicted in Exhibit 6.2 is generally considered part of the Los Osos Fault Zone (San Luis Obispo County Safety Element, 1999).

Geologic Hazards

The San Luis Obispo area is subject to several types of related but distinct geologic hazards, including earthquakes, liquefaction and landslides. These hazards are described briefly below.

Earthquakes. PG&E (1988) indicate that at least 20 earthquakes of magnitude 5.0 or greater have occurred in or near San Luis Obispo County within the historical record (beginning in about the year of 1812). As described above, many active faults in the area could rupture and subject the campus to seismic shaking. Several types of seismic hazards are associated with earthquake events, including ground rupture, liquefaction, tsunami and seiches.

Fault-Related Ground Rupture. The term fault-related ground rupture refers to a break in the ground surface that occurs as a result of movement of a fault. As no known faults cross or are located immediately adjacent to the campus, the potential for fault-related ground rupture is considered low.
Seismically-induced Settlement. Seismically induced settlement of sufficient magnitude to cause significant structural damage is normally associated with poorly consolidated, predominately sandy soils, or variable consolidation characteristics within the building areas.

Liquefaction. Liquefaction is the loss of soil strength during a significant seismic event. Liquefaction occurs primarily in loose, fine to medium-grained granular material in saturated or near-saturated condition. Liquefaction occurs during rearrangement of the soil particles into a denser condition, resulting in localized areas of settlement.

Tsunami and Seiches. Tsunami are mistakenly called “tidal waves,” and are in reality seismically induced waves that occur in large bodies of water, such as the ocean. Because the site is not near the ocean, tsunami will not affect the site. Seiches are standing waves set in motion on rivers, reservoirs, ponds and lakes at the time of passage of seismic waves from an earthquake. A seiche can also affect water tanks and other water impoundments.

Differential Settlement. Differential settlement occurs when a foundation of a particular building spans two materials having different settlement characteristics, such as soil and rock. The soil-supported portion of the building will settle more than the rock-supported portion; this situation can stress and possibly damage foundations, often resulting in severe cracks and displacement. To reduce this potential, it is necessary for all foundations of an individual building to bear in relatively uniform material.

Landslides and Slope Stability. A geologic map prepared by Hall and Prior (1975) indicates that most of the eastern third of the Cal Poly campus is underlain by a landslide (see Exhibit 6.3). It has not yet been determined whether the landslide is stable (no longer moving) or whether it is active in part or whole. Investigations performed for Parking Structure I (1997) encountered landslide deposits; however, no assessment of the stability was made.

Expansive Soil. Expansive soils tend to swell with seasonal increases in soil moisture and shrink during the dry season as soil moisture decreases. The volume changes that the soils undergo in this cyclical pattern can stress and damage slabs and foundations if precautionary measures are not incorporated into the construction procedure. Methods commonly used for slab protection include placement of nonexpansive material beneath the slab or premoistening of subslab soils.

Soils Setting

A map of the soils and slopes for the extended campus northeast of San Luis Obispo can be found in the Master Plan. Soil types vary widely and have slopes ranging from zero to more than 20 percent. The suitability of such soils for development varies, as does the potential for geologic hazard. The following tables identify the soils types located on the campus and ranches and their characteristics.
Exhibit 6.3
Purported Landslide Boundary

Generalized Landslide Boundary

Source: Hall and Prior, 1975 and Earth Systems Consultants, 1999
## Table 6.2: Campus Soil Types

<table>
<thead>
<tr>
<th>Soil Name</th>
<th>Percent Slope</th>
<th>Irrigated</th>
<th>Non-irrigated</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concepcion Loam</td>
<td>5-9%</td>
<td>Ile-3(14)</td>
<td>Ile-3(14)</td>
<td>Very deep soil, moderate drainage, permeability very slow, runoff medium to moderate hazard</td>
</tr>
<tr>
<td>Concepcion Loam</td>
<td>15-30%</td>
<td>Ile (14)</td>
<td></td>
<td>Deep to moderate soil, well drained, permeability very slow, rapid erosion</td>
</tr>
<tr>
<td>Cropley Clay</td>
<td>2-9%</td>
<td>Ile-5(14)</td>
<td>Ile-5(14)</td>
<td>Moderate well drainage, potential for soil compaction</td>
</tr>
<tr>
<td>Diablo Clay</td>
<td>5-9%</td>
<td>Ile-(15)</td>
<td>Ile-(15)</td>
<td>Deep soil, drains well</td>
</tr>
<tr>
<td>Diablo and Cibo Clay</td>
<td>30-50%</td>
<td>Vle(15)</td>
<td></td>
<td>Drains well, slow permeability</td>
</tr>
<tr>
<td>Lodo Clay Loam</td>
<td>5-15%</td>
<td>Ile-1(15)</td>
<td></td>
<td>Moderate permeability</td>
</tr>
<tr>
<td>Lodo Clay Loam</td>
<td>15-30%</td>
<td>Vle(15)</td>
<td></td>
<td>Moderate permeability</td>
</tr>
<tr>
<td>Lodo Clay Loam</td>
<td>30-50%</td>
<td>Vle(15)</td>
<td></td>
<td>Excessively drain, moderate permeability</td>
</tr>
<tr>
<td>Lodo Clay Loam</td>
<td>50-75%</td>
<td>Vle(15)</td>
<td></td>
<td>Shallow soil, excessive drainage, very steep, permeability moderate</td>
</tr>
<tr>
<td>Los Osos Loam</td>
<td>5-9%</td>
<td>Ile-3(15)</td>
<td>Ile-3(15)</td>
<td>Moderate to deep soil, drains well</td>
</tr>
<tr>
<td>Los Osos Loam</td>
<td>15-30%</td>
<td>Ile-1(15)</td>
<td></td>
<td>Moderate to deep soil, drains well</td>
</tr>
<tr>
<td>Los Osos Loam</td>
<td>30-50%</td>
<td>Vle(15)</td>
<td></td>
<td>M oduate to deep soil, drains well</td>
</tr>
<tr>
<td>Los Osos-Diablo Complex</td>
<td>9-15%</td>
<td>Ile-1(15)</td>
<td>Ile-1(15)</td>
<td>Moderate soil, drains well, permeability slow, runoff medium</td>
</tr>
<tr>
<td>Los Osos-Diablo Complex</td>
<td>15-30%</td>
<td>Ile-1(15)</td>
<td></td>
<td>Moderate deep, drains well, permeability slow</td>
</tr>
<tr>
<td>Los Osos-Diablo Complex</td>
<td>30-50%</td>
<td>Vle(15)</td>
<td></td>
<td>Moderate deep, drains well, permeability slow, water erosion</td>
</tr>
<tr>
<td>Obispo Rock Outcrop Complex</td>
<td>15-75%</td>
<td>Vle(15)</td>
<td></td>
<td>Shallow soil, well drained, permeability slow, surface runoff rapid</td>
</tr>
<tr>
<td>Riverwash</td>
<td>Vlllw(14)</td>
<td></td>
<td></td>
<td>Permeability rapid to very slow, moderate well drain</td>
</tr>
<tr>
<td>Salinas Silty Clay Loam</td>
<td>0-2%</td>
<td>I (14)</td>
<td>I1lc-1(14)</td>
<td>Very deep soil, drains well, permeability slow</td>
</tr>
</tbody>
</table>

## Table 6.3: Ranch Soil Types

<table>
<thead>
<tr>
<th>Soil Name</th>
<th>Percent Slope</th>
<th>Irrigated</th>
<th>Non-irrigated</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cropley Clay</td>
<td>2-9%</td>
<td>Ile-5(14)</td>
<td>Ile-5(14)</td>
<td>Drains well, potential for soil compaction</td>
</tr>
<tr>
<td>Cropley Clay</td>
<td>2-9%</td>
<td>Ile-5(14)</td>
<td>Ile-5(14)</td>
<td>Moderate well drainage, potential for soil compaction</td>
</tr>
<tr>
<td>Diablo Clay</td>
<td>5-9%</td>
<td>Ile-(15)</td>
<td>Ile-(15)</td>
<td>Deep soil, drains well</td>
</tr>
<tr>
<td>Diablo and Cibo Clay</td>
<td>5-15%</td>
<td>Ile-(15)</td>
<td>Ile-(15)</td>
<td>Deep soil, drains well, slow permeability</td>
</tr>
<tr>
<td>Diablo and Cibo Clay</td>
<td>9-15%</td>
<td>Ile-(15)</td>
<td>Ile-(15)</td>
<td>Deep soil, drains well, slow permeability</td>
</tr>
<tr>
<td>Diablo and Cibo Clay</td>
<td>15-30%</td>
<td>Vle-5(15)</td>
<td></td>
<td>Drains well, slow permeability</td>
</tr>
<tr>
<td>Diablo and Cibo Clay</td>
<td>30-50%</td>
<td>Vle(15)</td>
<td></td>
<td>Drains well, slow permeability</td>
</tr>
<tr>
<td>Lodo Clay Loam</td>
<td>5-15%</td>
<td>Ile-1(15)</td>
<td></td>
<td>Moderate permeability</td>
</tr>
<tr>
<td>Lodo Clay Loam</td>
<td>15-30%</td>
<td>Vle(15)</td>
<td></td>
<td>Moderate permeability</td>
</tr>
<tr>
<td>Lodo Clay Loam</td>
<td>30-50%</td>
<td>Vle(15)</td>
<td></td>
<td>Excessively drain, moderate permeability</td>
</tr>
<tr>
<td>Los Osos Loam</td>
<td>5-9%</td>
<td>Ile-3(15)</td>
<td>Ile-3(15)</td>
<td>Moderate to deep soil, drains well</td>
</tr>
<tr>
<td>Soil Name</td>
<td>Percent Slope</td>
<td>Irrigated</td>
<td>Non-irrigated</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------------</td>
<td>---------------</td>
<td>---------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>159 Los Osos Loam</td>
<td>9-15%</td>
<td>Ille-3(15)</td>
<td>Ille-3(15)</td>
<td>Moderate to deep soil, drains well</td>
</tr>
<tr>
<td>160 Los Osos Loam</td>
<td>15-30%</td>
<td>lve-1(15)</td>
<td></td>
<td>Moderate to deep soil, drains well</td>
</tr>
<tr>
<td>161 Los Osos Loam</td>
<td>30-50%</td>
<td>vle(15)</td>
<td></td>
<td>Moderate to deep soil, drains well</td>
</tr>
<tr>
<td>194 Riverwash</td>
<td>vlllw(14)</td>
<td></td>
<td></td>
<td>Permeability rapid to very slow, moderate well drain</td>
</tr>
<tr>
<td>216 Tierra Sand Loam</td>
<td>2-9%</td>
<td>Ille-3(15)</td>
<td>Ille-3(15)</td>
<td>Moderate to well drain, surface runoff slow to medium drain</td>
</tr>
</tbody>
</table>

The subsurface soil structure is generally unknown; the above table reflects mostly surface data.

Geologic and Seismic Regulation

Cal Poly is required to meet Title 24 standards for geologic and seismic hazards in the construction of buildings. Compliance with the standards involves, among other things, site-specific geotechnical surveys, and seismic design and peer review. Potential impacts from such hazards, therefore, are largely mitigated by regulatory requirements.

Significance Thresholds

Impacts associated with geology may be grouped into two categories: those associated with seismic events, and those stemming from the geologic structure. According to the State CEQA Guidelines, an impact to geologic structures or resources may be significant if:

- The project would expose persons or structures to adverse effects from earthquake fault rupture, seismic ground shaking, or seismic-related ground failure
- The project would expose persons or structures to adverse effects from landslides
- The project would result in substantial soil erosion or loss of topsoil
- The project would be located on unstable soils
- The project would be located on expansive soils
- The project would directly or indirectly destroy a unique geologic feature

Impacts

Beneficial Impacts

The enhancement of riparian corridors and reservoirs will suppress soil erosion. Protection and enhancement of other natural resources and steep slopes may reduce the potential for soil erosion and landslides in areas where conditions are degraded and prevent sedimentation of riparian areas, while improving the overall condition of riparian and wetland areas. These impacts are considered Class IV, beneficial.

Seismic Hazards

To comply with Title 24, a site-specific geotechnical study and seismic peer review must be performed prior to construction. These requirements reduce any potential seismic impacts to a less than significant level. No known faults cross properties proposed for development under the Master Plan.

Erosion

Construction activity is the most likely source of erosion associated with the Master Plan. Impacts are discussed in the “Construction Impacts” section towards the end of this chapter.
Landslide

A landslide (Hall and Prior, 1975) has been identified along the southeastern third of the campus, in the vicinity of Grand Avenue and Slack Street. Structures proposed for this area, including H-4, H-6 and the ancillary facilities, could face an increased risk of landslide. Mitigation is recommended to reduce landslide risk.

Expansive Soils

Expansive soils may be present on campus. Required geotechnical surveys will identify areas containing this soil condition; implementation of appropriate engineering techniques will reduce the impacts to a less than significant level (Class III).

Cumulative Impacts

No cumulative impacts are identified.

Mitigating Measures

Landslide. Mitigation measures would need to be developed on the basis of site-specific study of the landslide. The general degree of required mitigation would depend on the findings, which could range from: 1) finding that the existing landslide is relatively stable and therefore no significant mitigation is needed; to 2) the existing landslide is marginally stable and will require extensive strengthening and/or subsurface drainage improvements to provide adequate factors of safety for design and construction. This EIR therefore recommends that such a study be performed to estimate the factor of safety of the existing landslide for existing static and earthquake loading conditions, and to evaluate what impact the proposed site improvements could have on the stability of the landslide. The study will specify mitigation measures for any site improvements that are needed.

Residual Impacts

Seismic hazards are a condition of living in California. Title 24 requirements along with mitigation proposed above reduce these and other geologic hazards to the extent feasible. Impacts are less than significant (Class III).
HYDROLOGY AND WATER QUALITY

The following section analyzes impacts to water quality and drainage associated with implementation of the Master Plan.

Setting

Drainage Patterns

The main campus and contiguous ranches lie within the watershed of San Luis Obispo Creek, a perennial coastal stream that flows south through the City of San Luis Obispo to an estuary at Avila Beach. The San Luis Obispo Creek watershed covers an area of about 18 square miles stretching from the foothills of the Santa Lucia Mountains to the ocean. The main campus and contiguous ranches lie within the Stenner Creek Sub-basin, a tributary to San Luis Obispo Creek, which flows southwest of the campus for approximately 1.8 miles to its junction with San Luis Obispo Creek. Brizzolara Creek drains the Poly Canyon area north of Highland Drive, and flows southwest towards the City.

The campus ranches (Chorro, Walters, and Escuela) to the north and west of Cuesta College lie within the Chorro Creek watershed. Chorro Creek originates in the foothills east of the California Men’s Colony and is a tributary of the Morro Bay National Estuary.

Stenner and Brizzolara Creeks and their floodplains are shown in Exhibit 6.4. The floodplain of Chorro Creek is not mapped where it crosses Cal Poly property.

Threats to Water Quality

Threats to water quality on campus include the following:

- Urban runoff (parking lots, roofs, landscaping)
- Degraded streambanks and
- Agricultural operations

Water Quality Management Plan

Cal Poly is developing a Water Quality Management Plan for all agricultural and other non-urban activities on campus. This plan will address Regional Water Quality Control Board requirements for stormwater management of point and non-point sources on campus. Measures include manure management, runoff controls, and livestock fencing (away from creeks).

Significance Thresholds

Impacts to water quality were determined to be significant if Master Plan implementation would not comply with surface water quality objectives established by the Regional Water Quality Control Board (RWQCB) in Chapter 3 of the Water Quality Control Plan, Central Coast Region.

Impacts

Beneficial Impacts

The Plan contains policies that aim to enhance degraded reservoirs and riparian corridors and will benefit hydrologic processes and water quality where those functions and qualities are impaired (Class IV).
Water Quality - General

The development of increased campus greenspace and landscaping, particularly lawns, will increase the need for fertilizer use on campus. This could adversely impact water supplies and nearby waterbodies. Greens located near waterways, specifically Brizzolara Creek, may result in increased runoff of nitrates and other pollutants from fertilizers. The University landscaping department minimizes the use of fertilizers, reducing the likelihood of adverse impact. Increased amounts of impervious surfaces (i.e., parking lots, roofs) will also contribute to increased runoff. The “grading and drainage” policy contained in the Master Plan specifically calls for proper drainage and filtering of runoff and protection of water quality. Potential impacts to water quality are therefore less than significant (Class III).

Chorro Creek

Runoff from the Beef Unit would include nitrates and other pollutants that may adversely impact the quality of Chorro Creek water. Mitigation identified at the end of this section would reduce impacts to the extent feasible.

Brizzolara Creek - Runoff

Projects along Brizzolara Creek have been sited at a distance from the creek to minimize direct impacts. However, development will involve the construction of parking and driveways, sidewalks, patios, and buildings. These impervious surfaces will increase the amount and velocity of runoff leaving the site to surrounding drainage systems, which in turn could accelerate erosion of soils. This impact is considered less than significant (Class III), because of policies in the Master Plan calling for proper drainage and filtering of runoff, and implementation of BMP’s to protect water quality.

Degradation of water quality in Brizzolara Creek could also occur from increased sediment loads caused by erosion and from hazardous substances washed from parking lots. Accumulated silt and sediment could adversely affect creek habitat and the capacity of the creek to carry runoff. This impact is considered less than significant because of policies guiding drainage identified above. Impacts are further reduced by mitigation in the Biological Resources section for Highland Drive.

Reclaimed Water

The University is currently working with the City of San Luis Obispo to establish a system using reclaimed water to irrigate the Sports Complex. Use of this water is governed by the Health Department, and would require careful piping, risk management and public notification. Generally, reclaimed water is low in nutrients, and would not pose a considerable risk to water quality in Brizzolara Creek.

Flooding

Portions of the Design Village area and Parking Structure III lie within the 100-year floodplain of Brizzolara Creek. Title 24 compliance will require special design of any proposed structures within the floodplain to reduce risk of damage from flooding. Impacts are less than significant (Class III).

In the event of substantial seismic activity, the integrity of Drumm Reservoir may be compromised, causing flooding in its vicinity. Facilities proposed for areas downstream from the reservoir are limited to parking, to minimize risks to life and property. Impacts are less than significant (Class III).

Mitigating Measures

Chorro Creek

Mitigation listed in the Biological Resources section will reduce impacts to a less than significant level.
Cumulative Impacts

Implementation of the Master Plan will result in an overall increase in impermeable surfaces on campus. Policies in the Master Plan and mitigation included in this EIR reduce impacts to creeks to a less than significant level.

Residual Impacts

Residual impacts are less than significant.
BIOLOGICAL RESOURCES

The following section provides examples of the biological resources present on Cal Poly land holdings in San Luis Obispo County and analyzes potential impacts to these resources due to implementation of the Master Plan.

Introduction

The Cal Poly campus, located in the Central Coast biological region of the South Coast Range, sits at the base of the Santa Lucia Mountains and close to the Pacific Ocean. Because Cal Poly is located about halfway between Los Angeles and San Francisco the local plants and animals are representative of an interesting mixture of northern and southern California species and habitats. Many species reach their northern and southern limits along the Central Coast in the general vicinity of Cal Poly.

The biological resources of the Cal Poly campus have been the subject of many studies conducted by undergraduate and graduate students as well as faculty at Cal Poly. Many of these studies had a limited focus while others were more broadly based. The Biological Sciences Department is currently developing an inventory of the biological resources of the Cal Poly lands. This inventory will include a complete list of the plant and animal species and plant communities and wildlife habitats found on both contiguous and non-contiguous campus lands. The department is also mapping the vegetation and wildlife habitats for use on the campus GIS database. All sensitive species and habitats will be identified, inventoried, and mapped. Some of the information is available and is included in this report; however, there is still much more to learn about the biological resources on campus. These additional studies will be the subject of the on-going inventory of the campus, will be incorporated into future environmental review, and will be part of the implementation of specific policies in the Master Plan.

Existing Conditions

The diversity of vegetation and wildlife habitats found on the Cal Poly campus has developed in response to the interaction of a complex of environmental features that are variable over the area. Local climate (wind, temperature, rainfall, fog, etc.), topography, soils, parent materials, biotic components, fire, location of waterways, and natural historical events are all variables and have all historically affected the biological resources on campus. Past and present land-use and other human caused events have also resulted in changes in the flora, vegetation, and wildlife.

Soils and geology on the campus, like the vegetation, are complex and form a pattern that often corresponds with vegetation patterning. Geological formations range from sandstone-shale complex to serpentinite. Soils range from deep, fine textured soils in some of the floodplain and grassland areas to rocky soils on the steep hillssides covered by coastal scrub and chaparral. The natural vegetation of the Cal Poly campus is composed of a mosaic of terrestrial and aquatic communities consisting of rock outcrops, grasslands, shrublands, and woodlands. Blue gum eucalyptus, pepper trees, and many other exotics have been planted or have naturalized in several areas on campus. The diversity of wetland habitats found on campus range from open water and freshwater marshes to riparian woodlands and seasonal marshes.

Plant communities are dynamic assemblages of plants that interact among themselves and their environment. Some of these communities are well defined and distinct while others are not. No two sites within a given community are exactly the same in environmental requirements, vegetation structure, or species composition. Geographic or spatial boundaries among plant communities may be abrupt or gradual depending on changes in the environmental conditions. In addition, communities change through time due to ecological succession.

Plant communities provide habitat for, and exist in tandem with, populations of wildlife species that are as dynamic and varied as the vegetation they inhabit. Management and preservation of these species must take
place in concert with preservation of their habitats. The following sections include descriptions of these communities and habitats and discuss the integrated nature of plant and animal species.

**Common Plant Communities and Wildlife Habitats**

This subsection provides descriptions of the major vegetation types found on campus and lists the common plant and animal species found in each of them. Vegetation (plant communities) on the Cal Poly campus is complex and very diverse. Classification of vegetation types follows that of Holland and Keil (1996) although reference is also made to other classification systems such as Sawyer and Keeler-Wolf (1995) and Cowardin et al., (1979). More information regarding plant communities described below can be found at [http://biosci.cosam.calpoly.edu/BioSci/Faculty/Holland/Poly%20Cyn%20/plycnyn.html](http://biosci.cosam.calpoly.edu/BioSci/Faculty/Holland/Poly%20Cyn%20/plycnyn.html). Special status and sensitive species are described beginning on page 244.

**Valley and Foothill Riparian Communities.** Waterways such as drainage channels, creeks, streams, lakes, reservoirs, and marshes often support communities of hydrophilic trees, shrubs and herbs. These communities form narrow to locally broad corridors of dense to open woodland vegetation. The lateral extent of the woodland depends on the size and nature of the creek banks, the amount of water carried, on the depth and lateral extent of the subterranean aquifers, and the history of land use. Many of the plant species found in riparian habitats are restricted to the flood plain, banks of streams, drainage channels, and other areas where they have access to a shallow water table. Most of the trees and shrubs of the riparian corridors are deciduous plants that require a permanent water supply. However, patches of riparian woodland can also occur in depressions and canyons where the water table is shallow or around seeps and springs found in various locations in the hills around the campus.

Where permanent, slow moving pools of water occur along the creeks, patches of freshwater marsh become established. In these areas, the riparian woodland and freshwater marsh communities overlap and form a mosaic along the creek. Small freshwater marsh areas occur in scattered locations along the creeks on campus.

There are several creeks and drainages on the Cal Poly campus that support various forms of riparian vegetation ranging from broad corridors of dense riparian forests to small corridors of mostly aquatic and semi-aquatic shrubs and herbs. Common trees include Salix lasiolepis (arroyo willow), Salix laevigata (red willow), Populus balsamifera ssp. trichocarpa (black cottonwood), and Platanus racemosa (sycamore). Quercus agrifolia (coast live oak), Umbellularia californica (California bay-laurel), Heteromeles arbutifolia (toyon), and Sambucus mexicana (elderberry) join these riparian trees along several creeks. Eucalyptus globulus (blue gum) have escaped from cultivation or have been planted along some creeks, as have several other exotic species such as Olea europaea (olive), Phoenix dactylifera (date palm), and Schinus molle (Peruvian pepper tree).

Riparian areas support a diversity of wildlife species. These are complex habitats that provide water and moist areas in otherwise arid areas of the campus. The variety of vertical habitats created by the trees, shrubs and herbs provide nesting and foraging sites for a diversity of animal species. These habitats are critical for many wildlife species because they provide a rather permanent source of water and moist microhabitats.

Riparian communities are considered sensitive by CDFG and frequently qualify as wetland based on the USFWS wetland classification system (Cowardin et al., 1979).

Common wildlife species of riparian areas include:

<table>
<thead>
<tr>
<th>Species</th>
<th>Habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensatina</td>
<td>Western scrub jay</td>
</tr>
<tr>
<td>California Slender salamander</td>
<td>Chestnut backed chickadee</td>
</tr>
<tr>
<td>Black-bellied slender salamander</td>
<td>Bush tits</td>
</tr>
<tr>
<td>Pacific slender salamander</td>
<td>W hite-breasted nuthatch</td>
</tr>
<tr>
<td>Arboreal salamander</td>
<td>Berwicks wren</td>
</tr>
<tr>
<td>Western toad</td>
<td>Marsh wren</td>
</tr>
<tr>
<td>Bonaparte’s gull</td>
<td>Herring gull</td>
</tr>
<tr>
<td>Glaucous winged gull</td>
<td>Mourning dove</td>
</tr>
<tr>
<td>W e stern screech owl</td>
<td>V aux’s swift</td>
</tr>
</tbody>
</table>
**Riverine and Open Water.** Riverine/open water communities of the main campus occur primarily in the reservoirs on campus and the channels of Stenner Creek, Brizzolara Creek, and adjacent drainages. Just south of the Chorro Creek Ranch, Chorro Creek provides open water habitat. Stream channels and all associated tributaries, floodplains, drainages and streambanks, are specifically addressed by the CDFG Code Section 1600-1603 (Streambed Alteration Agreement) and are considered Waters of the U.S. Waters of the U.S., including stream channels and wetlands, fall under the jurisdiction of the Corps under Section 404 of the Clean Water Act.

Open water of the campus reservoirs and the pools along the creeks support limnetic plant communities. These communities have both an algal component and a higher plant component. The algal component may largely planktonic and consists of a mixture of various types of algae and cyanobacteria. If a body of water is sufficiently shallow (or is deeper and clear), algae that grow attached to bottom debris may be important as well. Vascular plants of the open-water environment are either rooted or planktonic. Floating on the surface of open water may be *Lemna minor* (duckweed) and *Azolla filiculoides* (mosquito fern). These wetland habitats are considered sensitive habitats by CDFG and are classified as wetland according to the USFWS’ wetland classification system.

Creek channels are generally flushed of vegetation during the winter/spring storms. Afterward a sparse to locally dense temporary vegetation develops on the sand and gravel bars along the creek and along the slowly flowing stream of the main channels. Species such as *Rorippa nasturtium-aquaticum* (Watercress), *Polypogon* spp. (Rabbitsfoot grass), and *Carex* spp. (Sedges) establish themselves in the creek channel. The plants characteristic of riparian environments are joined by some species common to the surrounding plant communities and, in some places, by a sparse waif flora of plants whose seeds were washed into the creek gravels by winter storms and germinated in the riparian area. These include a mixture of introduced weeds and native species more characteristic of non-riparian vegetation. The fate of most of the plants of the stream channel is to be washed out by the winter floods that scour the channel nearly free of vegetation.

Creek channels are often unvegetated in areas that have rocky and gravelly bars with little or no soil. These areas have no vegetation because of the substrate and because floodwaters during the rainy season wash the
vegetation in the channels away. However, tough-rooted or rhizomatous herbs such as Cyperus eragrostis (umbrella sedge), Carex spp. (sedges), and Juncus spp. (rushes) remain firmly anchored in the stream sediments in some sections.

The stream channels of Chorro, Stenner and Brizzolara Creek are expected to provide important habitat for various aquatic and semi-aquatic species of wildlife due to the presence of instream cover and substantial nearshore cover, consisting of overhanging and submerged woody riparian vegetation. Species expected to occur in association with these creeks include various resident fish species such as three-spine stickleback (Gasterosteus aculeatus) and prickly sculpin (Cottus asper), and a variety of amphibians including Pacific chorus frog (Pseudacris regilla), western toad (Bufo boreas), and bullfrog (Rana catesbiana), in addition to those listed above.

**Freshwater Marsh.** Freshwater marshes usually occur in nutrient-rich mineral soils that are saturated through most or all of the year by water. These communities are best developed in locations with slow-moving or stagnant shallow water. Such sites commonly occur on campus around springs and along the margins of ponds, reservoirs, or lakes and in the flood plains of slow-moving streams. In areas where freshwater marshes occur there is not always standing water throughout the entire year, but instead, the water table is so close to the soil surface that it can be tapped in the dry season by marsh plants.

Freshwater marshes are dominated mostly by a mixture of aquatic and semi-aquatic species such as erect, emergent plants from less than a meter to several meters tall. A mixture of lower-growing herbs is usually also associated. The tall dominant plants include: Typha spp. (cattails), Scirpus spp. (bulrushes, tules), Carex spp. (sedges), Eleocharis spp. (spike-rushes) and Juncus spp. (rushes). Commonly associated with these are species of Rumex spp. (docks) and Polygonum spp. (smartweeds), Rorippa nasturtium aquaticum (watercress), and Epilobium watsonii (willow-herb).

Wildlife species listed for the riparian areas above also use the freshwater marshes. Birds expected to occur in association with freshwater marsh communities include American coot (Fulica americana), mallard (Anas platyrhynchos), black-crowned night heron (Nycticorax nycticorax), great blue heron (Ardea herodias), as well as numerous other migratory bird species. In addition, a variety of warm water fish species, amphibians, and reptiles, including the native southwestern pond turtle, occur within these habitats, as mentioned above.

**Seasonal Freshwater Marsh/Seep.** Some freshwater marshes are seasonal communities. During the winter and spring when ample moisture is available in the soil, communities dominated by Juncus, Carex, Eleocharis, etc., occur in some low, wet areas. These sites may retain some soil moisture well into the summer, but the soil surface becomes dry and hard. Grassland species may predominate during the dry summer months. The perennial marsh species may die back to the ground level or may be grazed during the summer. However, their rhizomes remain alive, and in the following wet season these plants once again form a seasonal marsh.

Natural springs often support a localized assemblage of wetland species supported by seepage but have little or no standing water. Seeps may be seasonal or perennial. Hillside springs occur in scattered locations on the Cal Poly campus. Some have been tapped by springboxes in the past whereas others are undisturbed or periodically grazed by cattle.

Cirsium fontinale var. obispoense (Chorro creek bog thistle) occurs in areas of seasonal marsh associated with serpentinite parent materials. Freshwater seep communities are considered sensitive by CDFG.

Wildlife inhabiting wet meadow/freshwater seep habitat includes various amphibians such as Pacific chorus frog, Western toad, bullfrog, and California slender salamander. Other species of wildlife are expected to frequent wet meadow/freshwater seep habitat for foraging purposes, including raccoon (Procyon lotor), gopher snake (Pituophis melanoleucus), snowy egret (Egretta thula), as well as a variety of songbirds, including red-winged blackbird (Agelaius phoeniceus) and song sparrow (Melospiza melodia). A more complete list can be found above under the “Riparian and Open Water” section.
Coastal Valley Grassland. Grasslands are areas in which the dominant plants are various species of native and introduced grasses and forbs (dicot herbs). Often there are numerous species of herbaceous plants and scattered shrubs present. The grasses that dominate a grassland area may be annuals, perennials, or a mixture of the two depending on location. Many of the grasslands on campus are dominated by grasses and forbs introduced into California during the period of Spanish settlement.

Grasslands often occur on fine textured, clay rich soils of valleys and alluvial deposits at the base of hillsides. They integrate with coastal live oak woodlands on mesic hillside slopes, with coastal scrub and chaparral on xeric, steep, rocky slopes, and with riparian and freshwater marsh communities in aquatic and semi-aquatic areas along the creek. Many of the grassland species occur as understory species in the other communities.

Species composition varies from place to place but some of the most common species include the following:

- Slender wild oats (Avena barbata)
- False brome grass (Brachypodium distachyon)
- Soft chess brome grass (Bromus hordeaceus)
- Foxtail barley (Hordeum murinum)
- Rattail fescue (Vulpia myuros)

Common associated weedy forbs include:

- Scarlet pimpernel (Anagallis arvensis)
- Filarée (Erodium spp.)
- Smooth cat’s ear (Hypochaeris glabra)
- Slender lettuce (Lactuca saligna)
- Bristly ox-tongue (Picris echioides)
- Knotched dock (Rumex conglomeratus)
- Windmill pink (Silene gallica)
- Vetch (Vicia sativa)

Common native herbs include:

- Yarrow (Achillea millefolium)
- California poppy (Eschscholzia californica)
- Cudweed (Gnaphalium luteoalbum)
- Tarplants (Hemizonia spp.)
- Coast tarweed (Madia sativa)
- Blue-eyed-grass (Sisyrinchium bellum)
- Soap plant (C hlorogalum pomeridianum)
- Cudweed (G naphalium lutealbium)
- Hayfield tarweed (H emizonia congesta spp. luzulifolia)
- Lupines (Lupinus spp.)
- Buttercup (Ranunculus californicus)

Raptors, such as red-tailed hawk (Buteo jamaicensis), white-tailed kite (Elanus caeruleus), and American kestrel (Falco sparverius), commonly use open grassland areas extensively for foraging purposes, while species such as Western meadowlark (Sturnella neglecta) and Western bluebird use open grasslands for nesting. Reptiles that commonly breed within annual grassland habitats include Western fence lizard (Sceloporus occidentalis), common garter snake (Thamnophis sirtalis), and Western rattlesnake (Crotalus viridis). Mammals that are expected to occur in or frequent these habitats include black-tailed jackrabbit (Lepus californicus), Botta’s pocket gopher (Thomomys burtii), coyote, and muledeer (Mayer and Laudenslayer, 1988). In addition, various species of bat, including Townsend’s Western big-eared bat (Plecotus townsendii townsendii) forage nocturnally within this habitat type.

California Native Grassland. Cal Poly has an impressive number of native grasses in its grassland areas, much more than in most local grassland. These are particularly well developed in areas with soils derived from serpentine. The stands of perennial, native bunch grasses, which dominated California grassland prior to
Spanish settlement, have gradually been reduced locally but are fairly common on some hillsides forming significant stands in places. Historically, the changes in the composition of the grassland in this area were a function of the introduction and invasion of alien plant species and changes in livestock grazing and grazing patterns.

The composition of true native grasslands is unknown. However, based on examples of this community surviving today, the dominant perennial grasses of these areas were probably *Nassella pulchra* (purple needlegrass), *Nassella lepida* (slender needle-grass), *Danthonia californica* (California oat-grass), *Elymus glaucus* (wild blue-rye), *Muhlenbergia rigens* (deer grass), *Koeleria macrantha* (June grass), *M. elica californica* (California melic grass), and *M. elica imperfecta* (melic grasses). Associated with these perennial grasses is a mixture of annual and perennial forbs.

Forbs and non-graminoid monocots found in this habitat are similar to those listed above for Annual Grassland.

**Coastal Scrub.** This community is dominated by small to medium sized (3-6 feet tall) shrubs with an herbaceous understory. Both the density and the composition of the shrub cover vary from site to site, as does the herbaceous understory. In some places, the shrubs form a dense, almost impenetrable woody plant cover with a sparse understory while in other places the shrubby overstory is more open and has a well-developed herb layer. Most of the dominant shrubs in this plant community are comparatively soft-stemmed plants that undergo significant dieback during the summer drought. For this reason, coastal scrub is sometimes referred to as "soft chaparral" as opposed to the "hard chaparral" or "true chaparral".

The coastal scrub community occurs in several small to extensive patches on the steep, rocky hillsides on the Cal Poly campus. Coastal scrub usually forms a mosaic with grassland and also integrates with chaparral, coast live oak woodland, and to a lesser extent, riparian woodland. Some coastal scrub species extend into coastal live oak woodlands and riparian areas where they form part of the understory vegetation. In more favorable sites, coastal scrub is composed of a diversity of shrub species.

The relative species composition of the coastal scrub stands varies from site to site on campus. The most common species are listed below

- California sagebrush (*Artemisia californica*)
- Golden-yarrow (*Eriophyllum confertiflorum*)
- Saw-toothed goldenbush (*H. azardia squarrosa*)
- Bush monkeyflower (*M. imuls aurantius*)
- Redberry (*Rhamnus crocea*)
- Poison-oak (*Toxicodendron diversilobum*)
- Coyote bush (*Baccharis pilularis*)
- Climbing bedstraw (*Galium porrigens*)
- Deerweed (*Lotus scoparius*)
- Coffee-berry (*R. hhamnus californica*)
- Black sage (*Salvia mellifera*)

Within the coastal scrub there are often exposed, rock outcrops that support a different species composition than the surrounding coastal scrub. Rock outcrops provide specialized habitats for both plants and animals. Rock outcrops are mostly sparsely vegetated by extremely drought tolerant species on their surfaces and by moisture-requiring species in their crevices. The hillsides in the Santa Lucia Range on the Cal Poly campus have a large number of rock outcrops that support drought tolerant herbs and shrubs such as *Artemisia californica* (California sagebrush), *Eriogonum fasciculatum* (California buckwheat), *Yucca whipplei* (yucca), *Epilobium canum* (California fuchsia), *H. azardia squarrosa* (saw-toothed goldenbush), *Chlorogalum pomeridianum* (soap plant), *Dichelostemma pulchellum* (blue dicks), *Salvia columbariae* (Chia), *Phacelia distans* (phacelia) and *Astragalus curtipes* (locoweed). On the driest, rocky areas, yucca and California buckwheat along with *Selanginella bigelovii* (spikemoss) are dominant. Native bunch grasses are also common around some of the rock outcrops, especially the needlegrasses, *Nassella pulchra* and *Nassella lepida*.

Coastal scrub vegetation provides excellent cover, nesting sites, and foraging opportunities for a wide variety of amphibians, reptiles, birds, mammals, and other animals. Sticky monkeyflower provides abundant nectar resources for insects and hummingbirds, and dense shrubs provide protection for small mammals and birds.
Barren soil in patches among the shrubs indicates both rodent consumption of small herbs and grasses as well as an allelopathic effect of foliage and leaf litter. Insects rising from flowers and vegetative material in the coastal scrub and chaparral provide excellent food for insectivorous birds. Some common wildlife species of the coastal scrub and chaparral are listed below.

- Red-tailed hawk (*Buteo jamaicensis*)
- California quail (*Callipepla californica*)
- Allen's hummingbird (*Selasphorus sasin*)
- Cliff swallow (*Hirundo pyrrhonota*)
- Scrub jay (*Aphelocoma coerulescens*)
- Northern mockingbird (*Mimus polyglottos*)
- Whte-crowned sparrow (*Zonotrichia leucophrys*)
- Brewer's blackbird (*Euphagus cyanocephalus*)
- Southern alligator lizard (*Gerrhonotus multicarinatus*)
- Broad-handed mole (*Scapanus latimanus*)
- Western gray squirrel (*Sciurus griseus*)
- Botta's pocket gopher (*Thomomys bottae*)
- Coyote (*Canis latrans*)

**Chaparral.** Chaparral communities are dominated by stiffly branched, leathery-leafed (sclerophyllous) shrubs from 3 to 10 feet tall. These communities are normally extremely dense and form an almost impenetrable shrubby community with little understory in most areas. Chaparral is a very broad category and may be composed of a variety of different species. As a result, chaparral communities have been subdivided into several different types depending on location and dominant species. The soils of chaparral, like those of the coastal scrub, are generally shallow, infertile, rocky or gravelly in texture and have a low water holding capacity.

Chaparral stands occur only in small patches on the upper hillsides in some areas of campus sometimes associated serpentine soils. Some of the common species include *Ceanothus cuneatus* (buckbrush), *Adenostoma fasciculatum* (chamise), *Cercocarpus betuloides* (mountain mahogany), *Prunus ilicifolia* (holly-leafed cherry), *Holodiscus discolor* (creambush), *Quercus durata* (leather oak), *Mimulus aurantiacus* (sticky monkeyflower), *Heteromeles arbutifolia* (toyon), *Salvia mellifera* (black sage), *Toxicodendron diversilobum* (poison oak), and *Galium porrigens* (Climbing bedstraw).

Chaparral, like the coastal scrub, provides excellent cover, nesting sites, and foraging opportunities for a wide variety of amphibians, reptiles, birds, mammals, and other animals. Common wildlife species of the chaparral are like those of the coastal scrub discussed above.

**Coast Live Oak Woodland.** Coast Live Oak Woodland is one of the most characteristic and interesting vegetation types of California's central coast and the Cal Poly campus. Coast live oak woodland is typically composed of pure stands of *Quercus agrifolia* (coast live oak) although a few *Umbellularia californica* (California bay-laurel) are present. *Heteromeles arbutifolia* (toyon) is also common and sometimes attains the size of small oaks.

Coast live oak woodland is the climax vegetation type in this area and characteristically occupies the most mesic north facing slopes and canyon areas. Because of the heterogeneity of the habitats in these hills, the coastal live oak woodlands integrate with grassland in the valley and with coastal scrub and chaparral (on steep slopes with rocky, gravelly, dry soils). Coast live oaks are also a common to dominant component of the riparian community along many of the creeks found on campus.

Coast live oak woodlands often form a closed-canopied woodland composed of very old trees that typically vary from about 1 to 3 feet in trunk diameter; however, there are some smaller and larger trees present. Several very large sprawling trees with large branches occur locally. The understory is quite variable from place to place depending on the microhabitat conditions. In some places the understory may be composed of a relatively lush growth of ferns, shrubs, and shade tolerant herbs. In other places, the understory is sparse consisting of a thick...
layer of litter with scattered shrubs and herbs typical of adjacent coastal scrub and grasslands. Coast live oak woodland also forms more open woodland with a grassland understory on some of the campus hillsides.

Oak woodlands have vertical and horizontal structure that provide excellent cover, nesting sites, shelter, and foraging opportunities for a wide variety of amphibians, reptiles, birds, mammals, and other animals. The woodland also supports numerous insects and small mammals that are important food sources for other vertebrates in the area. Snags provide excellent roosts for raptors, and provide nesting cavities for owls, kestrels, woodpeckers, nuthatches, wrens, chickadees, and bluebirds. The woodland vegetation moderates environmental conditions; the community reduces wind and temperature variation compared to grassland and coastal scrub communities.

This vegetation type supports a rich and wide variety of vertebrate species. Common wildlife species are listed below.

- Turkey vulture (Cathartes aura)
- California quail (Callipepla californica)
- Common barn-owl (Tyto alba)
- Loggerhead shrike (Lanius ludovicianus)
- Northern flicker (Colaptes auratus)
- Blue-grey gnatcatcher (Polioptila caerulea)
- Western wood-pewee (Contopus sordidulus)
- Hutton’s vireo (Vireo huttoni)
- Scrub jay (Aphelocoma coerulescens)
- Chestnut-backed chickadee (Parus rufescens)
- Brown creeper (Certhia americana)
- Northern mockingbird (Mimus polyglottos)
- California towhee (Pipilo crissalis)
- Wbite-crowned sparrow (Zonotrichia leucophrys)
- Dark-eyed junco (Junco hyemalis)
- Western fence lizard (Sceloporus occidentalis)
- Southern alligator lizard (Gerrhonotus multicarinatus)
- Broad-handed mole (Scapanus latimanus)
- California ground squirrel (Spermophilus beecheyi)
- Botta’s pocket gopher (Thomomys bottae)
- Raccoon (Procyon lotor)
- Brush rabbit (Lepus californicus)
- California ground squirrel (Sciurus griseus)
- Coyote (Canis latrans)
- Mule deer (Odocoileus hemionus)

Red-tailed hawk (Buteo jamaicensis)
- Mourning dove (Zenaida macroura)
- Great-horned owl (Bubo virginianus)
- A corn woodpecker (Melanerpes formicivorus)
- Flycatcher (Empidonax spp.)
- Western bluebird (Sialia mexicana)
- (Regulus calendula)
- Plain titmouse (Parus inornatus)
- A merican crow (Corvus brachyrhynchos)
- Bushtit (Psaltriparus minimus)
- House wren (Trogodytes aedon)
- House finch (Carpodacus mexicanus)
- Song sparrow (M elospiza georgiana)
- English sparrow (Passer domesticus)
- Pacific treefrog (Pseudacris regilla)

Rock Outcrops. Rock outcrops provide specialized habitats for both plants and animals. Some species are restricted to the rock crevices or to the bare, dry rock surfaces. Rock outcrops are sparsely vegetated by extremely drought tolerant species on their surfaces and by moisture-requiring species in their crevices. In the case of the Cal Poly campus, many of the outcrops are serpentinite. Serpentinite is a metamorphic, magnesium silicate rock, often green in color and slippery to the touch. Serpentine and the soils derived from it have a number of traits inimical to plant growth. It is low in some essential nutrients, especially calcium, and high in magnesium. In addition, it is often high in toxic elements such as nickel and chromium. As a result of these unusual conditions, serpentine rock and soil support unusual, endemic floras including a large number of rare and endangered species. Some of the common plant species are Dudleya lanceolata (dudleya), Pellaea andromedifolia (coffee fern), Pentagramma triangularis (goldback fern), Selaginella bigelovii (clubmoss) Yucca whipplei (yucca), and Eriogonum fasciculatum (California buckwheat). In addition, several rare plants are found associated with serpentinite rock outcrops such as Calochortus obispoensis (San Luis mariposa lily). More information regarding sensitive plant species can be found on page 244.

Wildlife species found on rock outcrops include those listed for the grassland, chaparral and coastal scrub communities.
Anthropogenic Communities. Communities dominated by plants that have been introduced by humans and established or maintained by human disturbance are anthropogenic communities. Some of these are entirely artificial communities such as cultivated row crops, lawns, vineyards and ornamental plantings. Others are assemblages of weedy species that have invaded disturbed areas, sometimes in spite of human efforts to control them. Weed-dominated communities often represent the early stages of natural succession. In the absence of disturbance many weedy plants do not persist, but are gradually replaced by native vegetation. Anthropogenic communities on the campus that are wholly the result of human activity (lawns, orchards, vineyards, etc.) are not discussed here. Those that develop spontaneously can be divided into the three types: pastoral communities, ruderal communities, and plantations and urban mix communities.

Pastoral. The pastoral communities occur in upland pastures created from existing native bunchgrass grassland where repeated disturbance to the vegetation and soil by grazing animals maintains a plant community of only those species tolerant of this repeated disturbance regime. These assemblages are usually a mix of plant species, typically grasses, intentionally grown for grazing livestock to consume, and those capable of invading and tolerating the existing grazing regime. Some species are intentionally planted such as Dactylis glomerata (Orchardgrass), Festuca arundinacea (Tall fescue), Lolium perenne (Perennial ryegrass), and Phalaris aquatica (Harding grass). Annuals typical of southern valley grasslands, such as Avena spp. (Wild oats), Bromus spp. (bromes), Hordeum spp. (wild barley), Lolium spp. (ryegrasses), usually mix with these species. Other invaders of pastures are frequently Eurasian forbs, but some natives, such as Eremocarpus setigerus (Turkey mullein), or Lupinus spp. (lupines), are also able to persist in pastures.

Ruderal Communities. Ruderal communities occur where there are frequent disturbances such as along roadsides and trails. These communities are common in areas along most of the campus roads and other areas that have been subjected to ongoing or past disturbances (e.g., heavy grazing and trampling, cattle trails, hiking trails, vehicle activities, etc.). In these disturbed areas, assemblages of native and introduced weedy species have become established. A band of ruderal vegetation commonly borders the rural roadsides on campus. The components of the ruderal community vary from place to place, but most of the species are introduced weeds. These include various annual grasses and forbs of Eurasian origin, many of which also occur in the grasslands. Some of the common weeds are listed below.

### Alien Grasses
- Avena barbata
- Avena fatua
- Brachypodium distachyon
- Bromus diandrus
- Bromus hordeaceus
- Bromus madritensis
- Hordeum marinum
- Hordeum murinum
- Lolium multiflorum
- Lolium perenne
- Vulpia myuros
- Slender Wild Oats
- Common Wild Oats
- False Brome Grass
- Ripgut Brome Grass
- Soft Chess Brome Grass
- Red brome, Spanish Brome
- Mediterranean barley
- Foxtail barley
- Annual Ryegrass
- Perennial Ryegrass
- Rattrail Fescue

### Alien Forbs
- Anthemis cotula
- Brassica nigra
- Cirsium pycnocephalus
- Centaurea melitensis
- Centaurea solstitialis
- Dipsacus sativus
- Erodium botrys.
- Foeniculum vulgare
- Foeniculum vulgare
- Hirschfeldia incana
- Lactuca saligna
- Lactuca serriola
- Medicago polymorpha
- Picris echinodes
- Plantago lanceolata
- Plantago major
- Polygonum arenastrum
- Rumex crispus
- Sillybum marianum
- Sonchus asper
- Sonchus oleraceus
- Mayweed
- Black mustard
- Italian thistle
- Tocotyle
- Yellow star-thistle
- Teasel
- Storkbill filaree
- Fennel
- Perennial Mustard
- Slender lettuce
- Prickly lettuce
- Bur-clover
- Bristly ox-tongue
- English plantain
- Common plantain
- Kne-weed
- Curly dock
- Milk Thistle
- Prickly sow-thistle
- Common sow-thistle
Plantations and Urban Mix communities include plantations, windbreaks, and ornamental plantings comprised of mostly non-native trees such as Eucalyptus sp. as well as other exotic species that have been planted or have escaped from cultivation and become part of the local vegetation. Native species may also be a component of these human-influenced communities. On the Cal Poly campus there are several areas where ornamental trees have been planted along roads, highways, agricultural fields, athletic fields, and pastures. The most extensive of these man-made forests are composed of large plantings of Eucalyptus spp., mostly Eucalyptus globulus (blue gum). Some of these plantations are characterized by having pure, dense stands of blue gum trees that grow tall and straight and form wind breaks and provide screening. Other common trees planted in various locations include: Acacia melanoxylon (Blackwood acacia), Casuarina sp. (She-oak), Grevillea robusta (Silky-oak), Olea europaea (olive), Phoenix dactylifera (date palm), Pistacia atlantica (pistachio), Prunus dulcis (almond), Prunus spp. (cherry, apple), Schinus molle (Peruvian pepper-tree), and various species of Eucalyptus. Many of these exotic trees are successfully reproducing themselves and are invading some of the surrounding native communities.

Some planted species are native to California but not to the Cal Poly campus such as Pinus radiata (Monterey pine), Cupressus macrocarpa (Monterey cypress), and Juglans californica (black walnut). In some areas the native and exotic trees occur as windrows, in other areas they form man-made forest communities, and in still other areas they mix with native species and form what is sometimes referred to as an "urban mix". The urban mix is common in several areas on campus and along some of the drainages and creek areas where these planted trees mix with willows and other natives.

In addition to trees there are many shrubs and perennials such as Agave americana (century plants), Opuntia spp. (prickly-pear cactus), Cortaderia jubata (pampas grass), and Genista monspessulana (French broom) that are also common. Ornamental vines such as Aesculus parasperago (garden-similax), Hederas helix (English ivy), Lonicer japonica (Japanese honeysuckle), and Vinca major (periwinkle) often spread from developed areas into adjacent undeveloped areas on campus, including the riparian vegetation along creeks.

There are really no native wildlife species that are exclusively found in anthropogenic plant communities. There are wildlife species that are associated with such communities and these include primarily grassland species. Grassland species present in these areas might include: meadow voles, pocket gophers, brush rabbits, hares, and a diversity of commensal species such as house mice and introduced rats. Also associated with grasslands would be a diversity of seed eating birds (sparrows, finches, towhees, and juncos) as well as insectivorous and carnivorous predators (shrikes, kingbirds, phoebes, swallows, egrets, owls, hawks, lizards and snakes). Specific list of possible species includes:

- Turkey vulture (Cathartes aura)
- American kestrel (Falco sparverius)
- Black phoebe (Sayornis nigricans)
- Barn swallow (Hirundo rustica)
- W estern bluebird (Sialia mexicana)
- Savannah sparrow (Passerculus sandwichensis)
- Dark-eyed junco (Junco hyemalis)
- W estern meadowlark (Sturnella neglecta)
- M eadow vole (Microtus californicus)
- Desert cottontail (Sylvilagus audobonii)
- Coyote (Canis latrans)
- Red-tailed hawk (Buteo jamaicensis)
- Loggerhead shrike (Lanius ludovicianus)
- Cliff swallow (Hirundo pyrrhonota)
- A merican crow (Corvus brachyrhynchos)
- California towhee ( Pipilo crissalis)
- W hite-crowned sparrow (Zonotrichia leucomelas)
- Brewer's blackbird (Euphagus cyanocephalus)
- W estern fence lizard (Sceloporus occidentalis)
- Botta's pocket gopher (Thomomys bottae)
- J ack rabbit (Lepus californicus)
- Mule deer (Odocoileus hemionus)

Eucalyptus and other plantations can offer significant wildlife habitat. On the Cal Poly campus the most important use of plantations by wildlife is for nesting by several raptor species such as Great horned owl, Barn owl, Red-shouldered hawks and red tailed hawks. Portions of the eucalyptus plantations may also be used for roosting by monarch butterflies. Plantations that are composed principally of pines can be very important habitat for trunk foraging species such as red-breasted nuthatch, and brown creepers. Those plantations that are older and contain dead trees or limbs may be extremely important to woodpeckers and a variety of cavity-nesting birds. In general there are no specialists on plantations since these trees are imported. Rather, birds
that use plantations extensively would be found in any wooded area. They generally respond to the presence of
trees rather than to the species composition of the tree stand.

**Sensitive Species and Habitats**

Special-status species are plants and animals that are listed as either endangered or threatened under the
Federal or California Endangered Species Acts, or rare under the California Native Plant Protection Act. They
may also be considered rare (but not formally listed) by resource agencies, professional organizations (e.g.,
Audubon Society, California Native Plant Society (CNPS), The Wildlife Society), and the scientific community.
For the purposes of this Master Plan, special-status species are defined as shown in Table 6.4.

The Federal Endangered Species Act (ESA) of 1973 (50 CFR 17) provides legal protection for plant and animal
taxa that are in danger of extinction, and classified as either threatened or endangered under the ESA. The
ESA requires Federal agencies to make a finding on all Federal actions, including the approval by an agency of a
public or private action, such as the issuance of a Corps permit under Section 404 of the Clean Water Act, as to
the potential to jeopardize the continued existence of any listed species potentially impacted by the action.
Section 9 of the ESA prohibits the “take” of any member of a species listed as threatened or endangered.

A search was conducted of the California Native Plant Society's Inventory of Rare and Endangered Vascular Plants
of California database and the most recent California Department of Fish and Game Natural Diversity Database
(CNDDB) was obtained for all rare or endangered plant species found on the campus quadrangles. The rare
and endangered plants listed below have either been revealed in the data base search, have been observed by
staff of the Biology Department, or have been reported from the areas on or near the campus.

Based on information obtained through the CNDDB search, CNDDB List of Special Plants (July 2000), IUCN
Red List and review of existing literature, a special-status species list was compiled that includes species that
have potential to occur in the vicinity of the areas proposed for development in the Master Plan. Table 6.5
identifies the name and legal status of special-status plant species either reported from or expected to occur on
the campus based on the presence of suitable habitat. Table 6.6 identifies the common name and legal status of
special-status wildlife species either reported from or expected to occur on the campus based on the presence of
suitable habitat. The distribution, preferred habitats, and any known occurrences of various identified special-
status species are described following the tables.

**Table 6.4. Definitions of Special-Status Species**

<table>
<thead>
<tr>
<th>Special-Status Plant Species</th>
<th>Special-Status Animal Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plants listed or proposed for listing as threatened or endangered under the Federal Endangered Species Act (50 CFR 17.12 for listed plants and various notices in the Federal Register for proposed species).</td>
<td>Animals listed or proposed for listing as threatened or endangered under the Federal Endangered Species Act (50 CFR 17.11 for listed animals and various notices in the Federal Register for proposed species).</td>
</tr>
<tr>
<td>Plants that are Category 1 candidates for possible future listing as threatened or endangered under the Federal Endangered Species Act (55 CFR 6184, February 21, 1990).</td>
<td>Animals that are Category 1 candidates for possible future listing as threatened or endangered under the Federal Endangered Species Act (54 CFR 554).</td>
</tr>
<tr>
<td>Plants that meet the definitions of rare or endangered species under the CEQA (State CEQA Guidelines, Section 15380).</td>
<td>Animals that meet the definitions of rare or endangered species under the CEQA (State CEQA Guidelines, Section 15380).</td>
</tr>
<tr>
<td>Plants considered by the CNPS to be “rare, threatened, or endangered” in California (Lists 1B and 2 in Skinner and Pavlik, 1994).</td>
<td>Animals listed or proposed for listing by the State of California as threatened and endangered under the California Endangered Species Act (14 CCR 670.5).</td>
</tr>
<tr>
<td>Plants listed by CNPS as plants about which we need more information and plants of limited distribution</td>
<td>A nimal species of special concern to the CDFG (Remsen, 1978 for birds; Williams, 1986 for</td>
</tr>
</tbody>
</table>
Cal Poly Master Plan

### Special-Status Plant Species

(Lists 3 and 4 in Skinner and Pavlik, 1994).
- Plants listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (14 C C R 670.5).
- Plants listed under the California Native Plant Protection Act (California Fish and Game Code 1900 et seq.).
- Plants considered sensitive by other federal agencies (i.e., U.S. Forest Service, Bureau of Land Management), state and local agencies or jurisdictions.
- Plants considered sensitive or unique by the scientific community or occurring at the limits of its natural range.
- Plants listed on the IUCN Red List.

### Special-Status Animal Species

- Mammals that are fully protected in California (California Fish and Game Code, Section 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).
- Animal Species listed on the IUCN Red List.
- Animals considered sensitive by other federal agencies (i.e., U.S. Forest Service, Bureau of Land Management), state and local agencies or jurisdictions.

Table 6.5. Special-Status Plant Species and Communities with Potential to Occur on Cal Poly Lands

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Legal Status Federal/State/CNPS/IUCN ¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bishop or San Luis manzanita</td>
<td>Arctostaphylos obispoensis</td>
<td>--/--/4/--</td>
</tr>
<tr>
<td>Brewer’s calandrinia</td>
<td>Calandrinia breweri</td>
<td>--/--/4/--</td>
</tr>
<tr>
<td>Club-haired mariposa lily</td>
<td>Calochortus clavatus ssp. clavatus</td>
<td>--/--/4/--</td>
</tr>
<tr>
<td>San Luis mariposa lily</td>
<td>Calochortus obispoensis</td>
<td>--/SSC/1B/V</td>
</tr>
<tr>
<td>Cambria morning glory</td>
<td>Calystegia subacaulis var. episcopalis</td>
<td>C2/--/1B/E</td>
</tr>
<tr>
<td>San Luis Obispo sedge</td>
<td>Carex obispoensis</td>
<td>--/SSC/1B/V</td>
</tr>
<tr>
<td>Dwarf soaproot</td>
<td>Chorizanthe breweri</td>
<td>--/--/1B/--</td>
</tr>
<tr>
<td>Brewers spineflower</td>
<td>Chorizanthe palmeri</td>
<td>--/--/4/--</td>
</tr>
<tr>
<td>Palmer’s spineflower</td>
<td>Chorizanthe palmeri</td>
<td>--/--/4/--</td>
</tr>
<tr>
<td>Chorro Creek bog thistle</td>
<td>Cirsium fontinale var. obispoensis</td>
<td>E/E/1B/E</td>
</tr>
<tr>
<td>San Luis serpentine dudleya</td>
<td>Dudleya abramsii ssp. bettina</td>
<td>--/SSC/1B</td>
</tr>
<tr>
<td>San Luis dudleya</td>
<td>Dudleya abramsii ssp. murina</td>
<td>--/--/4/V</td>
</tr>
<tr>
<td>Blochman’s dudleya</td>
<td>Dudleya blochmaniae ssp. blochmania</td>
<td>--/SSC/1B/V</td>
</tr>
<tr>
<td>Ojai fritillary</td>
<td>Fritillaria ojaiensis</td>
<td>--/SSC/1B</td>
</tr>
<tr>
<td>San Benito fritillary</td>
<td>Fritillaria viridea</td>
<td>--/SSC/1B/R</td>
</tr>
<tr>
<td>Congdon’s tarplant</td>
<td>Hemizonia parryi ssp. congdonii</td>
<td>C1/--/1B/R</td>
</tr>
<tr>
<td>Jones layia</td>
<td>Layia jonesii</td>
<td>--/SSC/1B/E</td>
</tr>
<tr>
<td>Small-leaved lomatium</td>
<td>Lomatium parvifolium</td>
<td>--/--/4/--</td>
</tr>
<tr>
<td>Palmer’s monardella</td>
<td>Monardella palmeri</td>
<td>--/--/4/--</td>
</tr>
<tr>
<td>Pringle’s yampah</td>
<td>Perideridia pringlei</td>
<td>--/--/4/R</td>
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<tr>
<td>Michael’s rein orchid</td>
<td>Piperia michellii</td>
<td>--/--/4/--</td>
</tr>
<tr>
<td>Hoffman’s sanicle</td>
<td>Sanicula hoffmannii</td>
<td>--/--/4/--</td>
</tr>
<tr>
<td>A dobe sanicle</td>
<td>Sanicula maritima</td>
<td>--/SSC/1B/V</td>
</tr>
<tr>
<td>Rayless groundsel</td>
<td>Senecio aphanactis</td>
<td>--/--/2/--</td>
</tr>
<tr>
<td>Cuesta Pass checkerbloom</td>
<td>Sidalcea hickmanii ssp. anomala</td>
<td>--/SSC/1B/E</td>
</tr>
</tbody>
</table>

**Sensitive Habitats/Communities**

- California Native Grassland (Serpentine Bunchgrass)
- Coastal and Valley Freshwater Marsh
- Wet Meadow/Freshwater Seep
- Riparian/Om Water and associated habitat
<table>
<thead>
<tr>
<th>Federal Codes</th>
<th>State Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>E: Endangered</td>
<td>E: Endangered</td>
</tr>
<tr>
<td>C1: Category 1 candidate species</td>
<td>SSC: Species of Special Concern</td>
</tr>
<tr>
<td>C2: Category 2 candidate species</td>
<td></td>
</tr>
</tbody>
</table>

**CNPS Codes**

1B: Plants rare, threatened or endangered in California and elsewhere
2: Plants rare, threatened or endangered in California but more common elsewhere
4: Plants of limited distribution, a watch list

**IUCN Codes:**

E: Endangered  V: Vulnerable  R: Rare

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**Sensitive Habitat/Communities**

**California Native Grassland.** Native grasslands are discussed under “Common Vegetation Communities,” above.

**Coastal and Valley Freshwater Marsh.** Freshwater marsh is discussed above under “Common Vegetation Communities.”

**Wet Meadow/ Freshwater Seep.** Freshwater seeps and seasonal marshes are discussed above under “Common Vegetation Communities” as wetland.

**Riparian/Open Water.** Riparian and open water communities are discussed under “Common Vegetation Communities.”

**Sensitive Plant Species**

**Bishop manzanita** (*Arctostaphylos obispoensis*) is endemic to northern San Luis Obispo County and southern Monterey County where it is mostly restricted to serpentine or serpentine-derived soils. It extends from Cuesta Grade north to Monterey County and is often locally abundant where it occurs. Bishop manzanita is common on serpentine soils on hillsides of the Cuesta Grade west of Highway 101 and extends onto Cal Poly lands in some places.

**Brewer's calandrinia** (*Calindrinia brewerii*) occurs mostly after burns or in disturbed sites in chaparral and coastal scrub. It ranges from Sonoma and Mariposa Counties southward to Baja California but is widely scattered and uncommon throughout its range. It has been observed to be locally common after recent chaparral burns in San Luis Obispo County on and around the Cal Poly campus.

**Club-haired mariposa lily** (*Calochortus clavatus ssp. clavatus*) is restricted to San Luis Obispo County and Santa Barbara County in the western portion of the Coast Ranges, mostly on soils derived from serpentinite parent material. In San Luis Obispo County, it is known from several locations in the Santa Lucia and San Luis Ranges. Four other rare subspecies occur to the north and south of subspecies clavatus. It is known from several sites in the area. Club-haired mariposa lily has been documented in Poly Canyon and on the Pennington Creek Biological Reserve.
San Luis mariposa lily (Calochortus obispoensis). San Luis mariposa lily is restricted to central San Luis Obispo County where it occurs only on the hills and mountains in the vicinity of San Luis Obispo. It generally occurs within chaparral habitats, but may also be found in coastal scrub and valley and foothill grassland habitats within San Luis Obispo County (Hickman, 1993; Skinner and Pavlik, 1994). It is a component of the California native grassland community on the Cal Poly campus. Within these habitats, this species primarily occurs in dry, serpentine soils (Hickman, 1993). San Luis mariposa lily has been documented north of the Cal Poly campus on hillsides located adjacent to Brizzolara Creek (NDDB, 1996), in Poly Canyon, near the “P”, and in the Pennington Creek Biological Reserve.

Cambria morning glory (Calystegia subacaulis var. episcopalis), at present is known only from San Luis Obispo and northern Santa Barbara counties. In San Luis Obispo County it ranges from the Hearst Ranch in the northwestern corner of the county south to the vicinity of San Luis Obispo where it usually occurs in grassy sites with clay-rich soils often in association with serpentine parent material. It has been observed on the proposed Poly Canyon North and Poly Canyon South housing sites, in the vicinity of Smith Reservoir, and in the Pennington Creek Biological Reserve.

San Luis Obispo sedge (Carex obispoensis). San Luis Obispo sedge is a perennial herb that occurs in coastal scrub, valley and foothill grasslands, coastal prairie, chaparral and closed-cone conifer forest communities. This species primarily occurs in dry, serpentine soils (Hickman, 1993). It is threatened by grazing. San Luis Obispo sedge is known from southwestern Monterey County to the vicinity of San Luis Obispo. No populations of this species have been documented from the Cal Poly campus, but not all areas of suitable habitat on campus have been examined for its presence.

Dwarf soaproot (Chlorogalum pomeridianum var. minus). Dwarf soaproot is a perennial herb that grows mostly in grassy areas or openings in chaparral, coastal scrub, and coastal live oak woodland. It occurs from the Coast Ranges north of the San Francisco Bay region to the vicinity of San Luis Obispo. Around San Luis Obispo it occurs mostly on soils derived from serpentine. On the Cal Poly campus dwarf soaproot is known to occur in Poly Canyon and the Pennington Creek Biological Reserve and is probably present elsewhere as well.

Brewer’s spineflower (Chorizanthe brewerii). Brewer’s spineflower is an annual herb known from about twenty occurrences in the vicinity of San Luis Obispo. This species occurs in coastal scrub, closed-cone conifer forest, chaparral and cismontane woodland communities. Brewer’s spineflower primarily occurs in dry, serpentine soils (Hickman, 1993). Brewer’s spineflower has been documented from Poly Canyon and from the Pennington Creek Biological Reserve.

Palmer’s spineflower (Chorizanthe palmeri) is known definitely from Monterey and San Luis Obispo counties and may occur as well in San Benito and Santa Barbara counties. Most occurrences are on serpentine or serpentine-derived soils. In San Luis Obispo County it occurs in the Santa Lucia and San Luis Ranges from the northwestern corner of the county to the serpentine hills around San Luis Obispo and the Cal Poly campus. On campus Chorizanthe palmeri occurs in stony areas of serpentine grassland and in openings in the serpentine chaparral. It has been documented from Poly Canyon.

Chorro Creek bog thistle (Cirsium fontinale var. obispoense). Chorro Creek bog thistle is a perennial herb restricted to San Luis Obispo County where it occurs from the drainage of San Simeon Creek to the hills and mountains around San Luis Obispo. This species is known from fewer than ten occurrences and grows primarily in serpentine soils (Hickman, 1993). It is a component of the seasonal freshwater marsh/seep communities located in grassland, chaparral and woodland communities. It is threatened by grazing, development and water diversions. One of the healthiest populations of this species occurs in Cal Poly’s Pennington Creek Biological Reserve and there are unverified reports of its occurrence on some of Cal Poly’s agricultural lands.

San Luis serpentine dudleya (Dudleya abramsii ssp. bettinae). San Luis serpentine dudleya is restricted to west-central San Luis Obispo County where it occurs from the vicinity of San Luis Obispo to near Cayucos. It is
San Luis Obispo dudleya (Dudleya abramsii ssp. murina). San Luis Obispo dudleya is endemic to San Luis Obispo County and it is apparently limited to stony serpentine soils and serpentine rock outcrops, usually associated with California native grassland. Its range is limited to the hills bordering the San Luis Valley in the foothills of the Santa Lucia Mountains from Chorro Creek to Corral de Piedra Creek and in the San Luis Range from upper Prefumo Canyon to the Froom Ranch and the hills south of Broad Street. San Luis Obispo dudleya is known to occur in Poly Canyon and in the Pennington Creek Biological Reserve and is to be expected in similar habitats elsewhere on campus.

Blochman’s dudleya (Dudleya blochmaniae ssp. blochmaniae). Blochman’s dudleya is a perennial herb that occurs from northern Baja California to San Luis Obispo County. In San Luis Obispo County it grows on clay soils (usually derived from serpentine) from the hills near Cayucos to the western part of the San Luis Valley in San Luis Obispo County. It usually grows in grassland communities or openings in chaparral or coastal scrub. Blochman’s dudleya has not been documented to occur on the Cal Poly campus but areas of suitable habitat occur here. It has been observed at Camp San Luis Obispo, on the grounds of the County Educational Facility at Rancho El Chorro, and at El Chorro Regional Park.

Ojai fritillary (Fritillaria ojaiensis). Ojai fritillary is a perennial herb that occurs in Ventura, Santa Barbara, and San Luis Obispo Counties. In San Luis Obispo County this species occurs on serpentine soils in chaparral, coastal live oak woodlands, and Sargent cypress forests. It is known in the county from Reservoir Canyon and from Cypress Mountain (near Cambria). Similar habitats occur on the Cal Poly campus. Ojai fritillary seldom flowers and is very easily overlooked. It is closely related to the San Benito fritillary, described in the following paragraph.

San Benito fritillary (Fritillaria viridea). San Benito fritillary is a perennial herb that occurs in serpentine soils of San Luis Obispo and San Benito counties. This species grows in chaparral communities on serpentine soils (Hickman, 1993). Vehicles and expansion of mining threatens the San Benito fritillary in part of its range. A 1964 collection from the ridge northwest of Cuesta Pass (a short distance north of the Cal Poly campus) is the only verified collection from San Luis Obispo County. Habitats similar to where this species was collected occur on the campus. The taxonomy of California Fritillaria species is in need of further study.

Congdon’s tarplant (Hemizonia parryi ssp. congdonii). Congdon’s tarplant is an annual herb that formerly occurred from Alameda and Sacramento counties south to San Luis Obispo County. It has been eliminated from much of its former habitat by agriculture and development. It grows primarily in seasonally wet grassland containing alkaline soils (Hickman, 1993). This subspecies is documented by the NDDB as occurring in grassland communities located within the Chorro and Los Osos Valleys, and near Laguna Lake. Observations during the past few years place it in several locations around San Luis Obispo from the valleys near Bishop Peak to the Union Oil property on tank Farm Road. It has not been documented to occur on the Cal Poly campus, but suitable habitats may exist in campus agricultural areas.

Jones layia (Layia jonesii). Jones layia is an annual herb that occurs in Monterey and San Luis Obispo counties. It grows in chaparral and California native grassland communities, primarily on open serpentine or clay slopes (Hickman, 1993). Within San Luis Obispo County this species occurs from the San Luis Obispo area to coastal hills north of Cayucos and the vicinity of Cypress Mountain. It occurs locally in Poly Canyon and may be expected in suitable habitats elsewhere on the Cal Poly campus.

Small-leaved lomatium (Lomatium parvifolium). Small-leaved lomatium is a perennial herb that occurs from Santa Cruz County to Santa Barbara County in the western portion of the Coast Ranges, mostly on soils derived from serpentine parent material. It is a component of coastal scrub, chaparral, California native grassland, and
rock outcrop communities. It is known from several sites in the San Luis Obispo area. On the Cal Poly campus it has been documented from Poly Canyon, Serrano Canyon, and the Pennington Creek Biological Reserve. It is likely to occur elsewhere on campus where suitable habitat exists.

**Palmer’s monardella** (*Monardella palmeri*). Palmer’s monardella is a perennial herb that occurs in Monterey and San Luis Obispo counties. It usually occurs in areas of serpentine soils associated with chaparral, Sargent cypress woodlands, coastal scrub, California native grasslands, and rock outcrop communities. Within San Luis Obispo County it occurs in widely scattered locations from Rinconada Mine (south of Santa Margarita) to the See Canyon-Prefumo Canyon summit and the Hearst Ranch (in the northwestern corner of the county). It has not been documented from the Cal Poly campus, but it grows a short distance to the north on the ridge northwest of Cuesta Pass. Similar habitats occur on the campus.

**Adobe yampah** (*Perideridia pringlei*). Adobe yampah is a perennial herb that is known to occur in coastal locations from Monterey to Los Angeles counties and in the interior from Nevada to Kern counties. In San Luis Obispo County it has been documented from a few widely scattered locations: serpentine soils in the vicinity of San Luis Obispo, from dry hills east of Creston, and the summit of the Caliente Range. It grows in California native grasslands, open shrub-dominated communities, and rock outcrop communities. On the Cal Poly campus Adobe yampah has been documented from Poly Canyon and may be expected in areas with serpentine soils elsewhere on campus.

**Michael’s rein orchid** (*Piperia michaelii*). Michael’s rein orchid is a perennial herb that occurs in the Coast Ranges from Humboldt to San Luis Obispo counties. It grows in undisturbed coastal scrub and woodland vegetation, usually protected by shrubs or trees, but occasionally is also found in grassy vegetation dominated by a dense herbaceous cover. In San Luis Obispo County it occurs in widely scattered sites from Los Osos to Creston. The plants seldom flower and are easily overlooked. This species has not been documented to occur on the Cal Poly campus.

**Adobe sanicle** (*Sanicula maritima*). Adobe sanicle is a perennial herb that occurs within variety of communities including, chaparral, coastal prairie, wet meadows, and valley foothill grassland. Within these communities, the adobe sanicle occurs primarily on seasonally wet serpentine-derived soils or soils with a high clay content (Skinner and Pavlik, 1994). This species is also often found along the margins of salt marshes. Within the San Luis Obispo Quadrangle, the adobe sanicle is documented by the N D D B as occurring on slopes associated with Cerro Romauldo, approximately 4 miles away from the Cal Poly campus (N D D B, 1996), and from Laguna Lake Park. It is a component of seasonal marsh/seep communities and has the potential to occur on habitats of this kind on campus.

**Rayless groundsel**. *Senecio aphanactis* is an inconspicuous annual that occurs in vernally moist openings in low elevation coastal scrub on the mainland from Solano County south to northern Baja California, and on Santa Rosa, Santa Cruz, and Santa Catalina Islands. It usually occurs in sparsely vegetated areas with shallow stony soil. In San Luis Obispo County, it is known from a few widely scattered sites from Montaña de Oro State Park to Creston. On the Cal Poly campus it has been documented from serpentine soils of hills west of Poly Canyon. It is easily mistaken for the much more common weedy *Senecio vulgaris* (common groundsel).

**Cuesta Pass checkerbloom** (*Sidalcea hickmanii ssp. anomala*). Cuesta Pass checkerbloom is a perennial herb restricted to San Luis Obispo County. Until recently it was known from only three occurrences on the Cuesta Ridge in Los Padres National Forest. A population was recently documented from the Hearst Ranch near San Simeon Creek Road. This species lives on serpentine soils in chaparral and closed-cone conifer forest dominated by Sargent cypress (Hickman, 1993). Although it has not been documented from the Cal Poly campus, Cuesta Pass checkerbloom has the potential to occur on campus. After the Highway 41 fire in 1994 a mass germination of long-dormant seeds of these plants resulted in a flush of new plants. Seeds from this event may have dispersed to upland sites on campus.
Special-Status Wildlife Species

Based on review of NDDB documentation, other pertinent literature, and results of the field surveys, the following special-status animals were determined to potentially occupy or frequent the campus and ranches. The species present are listed in Table 6.6. The special-status wildlife species identified as occurring on Cal Poly property are described briefly in the following section.

Table 6.6. Special Status Wildlife Known or Likely to Occur on Cal Poly Lands

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Status Federal/State/IUCN</th>
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</thead>
<tbody>
<tr>
<td>Cooper's hawk</td>
<td>Accipiter cooperi</td>
<td>--/SSC/--</td>
</tr>
<tr>
<td>Sharp-shinned hawk</td>
<td>Accipiter striatus</td>
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</tr>
<tr>
<td>Tricolored blackbird</td>
<td>Agelaius tricolor</td>
<td>--/SSC/--</td>
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<tr>
<td>Black legless lizard</td>
<td>Anniella pulchra</td>
<td>FSC/SSC/NE</td>
</tr>
<tr>
<td>California tiger salamander</td>
<td>Ambystoma tigrinum</td>
<td>E/SSC/NE</td>
</tr>
<tr>
<td>Pallid bat</td>
<td>Aedonius pallidus</td>
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</tr>
<tr>
<td>Golden eagle</td>
<td>Aquila chrysaetos</td>
<td>--/SSC/--</td>
</tr>
<tr>
<td>Great blue heron (rookery)</td>
<td>Ardeas herodias</td>
<td>CDFSC</td>
</tr>
<tr>
<td>Burrowing owl</td>
<td>Athene cunicularia</td>
<td>--/SSC/--</td>
</tr>
<tr>
<td>American bittern</td>
<td>Botaurus lentiginosus</td>
<td>MNBMC</td>
</tr>
<tr>
<td>Canada goose (wintering)</td>
<td>Branta canadensis</td>
<td>FT/--/--</td>
</tr>
<tr>
<td>Ferruginous hawk</td>
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<tr>
<td>Northern harrier</td>
<td>Circus cyaneus</td>
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</tr>
<tr>
<td>Southwestern pond turtle</td>
<td>Ciemmys marmorata pallida</td>
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</tr>
<tr>
<td>Monarch butterfly</td>
<td>Danaus plexippus</td>
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</tr>
<tr>
<td>Yellow warbler</td>
<td>Dendroica petechia brewsteri</td>
<td>--/SSC/--</td>
</tr>
<tr>
<td>White-tailed kite</td>
<td>Elanus caeruleus</td>
<td>--/SSC/--</td>
</tr>
<tr>
<td>Willow flycatcher</td>
<td>Empidonax traillii</td>
<td>--/SE/--</td>
</tr>
<tr>
<td>Merlin</td>
<td>Falco columbarius</td>
<td>--/SSC/--</td>
</tr>
<tr>
<td>Peregrine falcon</td>
<td>Falco peregrinus</td>
<td>FE/SE/--</td>
</tr>
<tr>
<td>Loggerhead shrike</td>
<td>Lanius ludovicianus</td>
<td>--/SSC/--</td>
</tr>
<tr>
<td>Monterey dusky-footed woodrat</td>
<td>Nesotoma fuscipes (luciana)</td>
<td>FSC/SSC/DD</td>
</tr>
<tr>
<td>San Diego desert woodrat</td>
<td>Nesotoma lepida intermedia</td>
<td>FSC/SSC/DD</td>
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<tr>
<td>Central California Coast steelhead</td>
<td>Oncorhynchus mykiss</td>
<td>FT/SSC/--</td>
</tr>
<tr>
<td>California brown pelican</td>
<td>Plecanus occidentalis</td>
<td>FT/--/--</td>
</tr>
<tr>
<td>Double-crested cormorant (rookery)</td>
<td>Phalacrocorax auritus</td>
<td>--/SSC/--</td>
</tr>
<tr>
<td>Coast horned lizard</td>
<td>Phrynosoma coronatum</td>
<td>FSC/SSC/--</td>
</tr>
<tr>
<td>Townsend's western big-eared bat</td>
<td>Plecoctous townsendii</td>
<td>--/SSC/VUA2c</td>
</tr>
<tr>
<td>California red-legged frog</td>
<td>Rana aurora draytonii</td>
<td>FT/SSC/--</td>
</tr>
<tr>
<td>Bank swallow</td>
<td>Riparia riparia</td>
<td>--/ST/--</td>
</tr>
<tr>
<td>Western spadefoot toad</td>
<td>Scaphiopus hammondii</td>
<td>FSC/SSC/--</td>
</tr>
<tr>
<td>Coast Range newt</td>
<td>Taricha torosa</td>
<td>--/SSC/--</td>
</tr>
<tr>
<td>American badger</td>
<td>Taxidea taxus</td>
<td>--/SSC/--</td>
</tr>
<tr>
<td>Two-striped garter snake</td>
<td>Thamnophis hammondii</td>
<td>--/SSC/DD</td>
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</tbody>
</table>
### Notes:

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Status Federal/State/IUCN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooper’s hawk.</td>
<td>Accipiter cooperi</td>
<td>FT: Federally threatened, CE: Candidate, endangered, FSC: Federal species of concern</td>
</tr>
<tr>
<td>Sharp-shinned hawk.</td>
<td>Accipiter striatus</td>
<td>E: Federal Endangered, SSC: Species of Special Concern</td>
</tr>
<tr>
<td>Tricolored blackbird.</td>
<td>Agelaius tricolor</td>
<td>DE: Data deficient, CDFSC: California Department of Forestry Species of Special Concern, MNBMC: Fish and Wildlife Service, Migratory non-game bird of management concern</td>
</tr>
<tr>
<td>Black legless lizard.</td>
<td>Anniella pulchra nigra</td>
<td>NE: Not evaluated</td>
</tr>
<tr>
<td>California tiger salamander.</td>
<td>Ambystoma tigrinum</td>
<td>DD: Data deficient</td>
</tr>
<tr>
<td>Pallid bat.</td>
<td>Antrozous pallidus</td>
<td></td>
</tr>
<tr>
<td>Golden eagle.</td>
<td>Aquila chrysaetos</td>
<td></td>
</tr>
</tbody>
</table>

**Cooper's hawk.** The nesting lifestage of the Cooper's hawk (Accipiter cooperi) is considered sensitive by CDFG, primarily due to the loss of riparian nesting habitat. Suitable nesting habitat is present along Stenner Creek. This species is an uncommon transient and winter visitor throughout most of San Luis Obispo County. Suitable foraging habitat occurs within Annual Grassland habitats on campus.

**Sharp-shinned hawk.** The nesting lifestage of the sharp-shinned hawk (Accipiter striatus) is considered sensitive by CDFG. This species is an uncommon transient and winter visitor within San Luis Obispo County (Audubon Society, 1984). Winter foraging habitat for sharp-shinned hawk may occur within Annual Grassland.

**Tricolored blackbird.** The tricolored blackbird (Agelaius tricolor) occurs in flocks within grasslands and freshwater marsh habitats containing cattails and tulles (Robbins et al., 1983). This species is considered an uncommon resident of San Luis Obispo County (Audubon Society, 1984). Tricolored blackbirds have been observed near Shepard and Smith Reservoirs.

**Black legless lizard.** The form in the San Luis Obispo area (Anniella pulchra nigra) is listed as a Species of Special Concern by the state. These lizards are adapted for burrowing in sandy or loamy soils and through leaf litter. As such, they spend much of their time underground or beneath duff. Legless lizards may be active on the surface at night, remaining in subsurface moisture horizons during the day. The movement of this small limbless lizard appears to be primarily determined by soil temperature and moisture gradients (Jennings and Hayes 1994). Their behavior can be characterized as desiccation avoidance. Preferred soil temperatures are in the range of 21-28°C (Bury and Balgooyen 1976). This lizard can be found on the soil surface when the surface temperature is warm (>21°C), or near the soil surface during periods of high activity (morning and evening) (Jennings and Hayes 1994). Outside of abiotic factors, the movement ecology of this species is not well understood. It appears that in the short term they exhibit high site fidelity.

**California tiger salamander.** The tiger salamander (Ambystoma tigrinum) requires moist grassy areas near a water source. In San Luis Obispo County, the tiger salamander is often found in low-lying agricultural areas near ponds. Suitable habitat for the salamander may exist near campus reservoirs and other wet areas.

**Pallid bat.** The pallid bat (Antrozous pallidus) lives in a variety of communities throughout California, including coastal conifer and broad-leaved forests, oak and conifer woodlands, and grasslands. Pallid bats typically roost in caves and structures and forage in grassland habitats. Suitable foraging habitat for this taxon occurs within grassland habitats.

**Golden eagle.** The nesting lifestage and wintering habitat for the golden eagle (Aquila chrysaetos) is considered sensitive by CDFG. This species is an uncommon, permanent resident and migrant throughout California and San Luis Obispo County. Habitats include oak woodlands, coastal scrub communities, and open grassland.
Nests are constructed on cliffs and in large trees in open areas. Suitable foraging habitat for the golden eagle occurs throughout Annual Grassland.

**Great blue herons** typically nest in colonies in the tops of large secluded snags or the tallest available live trees within a given area, often near shallow-water feeding areas (Zeiner et al., 1990). This species is known to nest in the vicinity of the Cal Poly campus. Great blue herons are highly sensitive to human disturbance and have been known to abandon existing nests following significant disturbance (Zeiner et al., 1990).

**Burrowing owl.** The burrowing owl (Athene cunicularia) is documented as an uncommon-to-common permanent resident of the interior valleys and plains of San Luis Obispo County, and an uncommon winter visitor to the coastal regions of the county (Audubon Society, 1984; Morro Group, 1994). This species is primarily associated with extensive grassland habitats and agricultural areas, and is typically dependent on existing burrows of other mammals.

The **American Bittern** is a common winter visitor to coastal marshes that contain some Typha vegetation cover. Since this bird is mostly associated with fresh water as well as brackish water habitats it could occur on the Cal Poly campus where there are habitats that have extensive reed cover.

**Canada geese** are winter transients and visitors that are common in the fresh and brackish waters near the coast. This is a species that forages widely from shoreline to inland habitats and has been observed on campus as well as Laguna Lake. Its occurrence near Cal Poly is best correlated with open water rather than with any particular upland foraging localities or habitats. Impacts on this species would be primarily through habitat conversion.

**Ferruginous hawk.** Wintering habitat for the ferruginous hawk (Buteo regalis) is considered sensitive by CDFG. The ferruginous hawk is an uncommon winter resident and migrant along the Coast Ranges and in San Luis Obispo County (Audubon Society, 1984). This species does breed in California. Foraging habitat for the Ferruginous hawk includes open, dry terrain such as grassland and scrub. This hawk may occasionally use Annual Grassland habitats on campus for foraging during the winter months.

**Northern harrier.** The nesting lifestage of the northern harrier (Circus cyaneus) is considered sensitive by CDFG. This species is a common transient and winter visitor within much of San Luis Obispo County (Audubon Society, 1984). The northern harrier nests on the ground near freshwater and salt marshes. Open areas, such as grasslands and coastal scrub, provide foraging habitat for this species. Potential nesting habitat for the northern harrier occurs adjacent to the two reservoirs and suitable foraging habitat occurs in grassland communities.

**Southwestern pond turtle.** The southwestern pond turtle (Clemmys marmorata pallida) prefers quiet waters of ponds, small lakes, streams, and marshes. It is found to inhabit the largest and deepest pools along streams with large amounts of basking sites, including fallen trees and boulders. Pond turtles also congregate in areas of streams with abundant underwater cover or places of escape beneath the water surface such as undercut banks, tangles of roots, and submerged logs (Hunt, 1994).

**Monarch butterfly.** Overwintering habitat for the Monarch butterfly (Danaus plexippus) is considered sensitive by the CDFG. Monarch Butterfly typically uses dense Eucalyptus stands for this purpose.

**Yellow warbler.** The yellow warbler (Dendroica petechia brewsteri) is known as a summer visitor of the San Luis Obispo County region (Audubon Society, 1984). This species breeds primarily in riparian woodland habitats.

**White-tailed kite.** The nesting lifestage of the white-tailed kite (Elanus caeruleus) is considered sensitive by CDFG. The White-tailed kite occurs in coastal and valley lowlands, usually associated with agricultural lands and open fields, throughout California. Nests are typically constructed in treetops with dense foliage. This species is considered an uncommon resident of most of San Luis Obispo County. Suitable foraging habitat occurs throughout Annual Grassland, while suitable nesting habitat may occur within cottonwoods and other tall trees.
**Willow flycatcher.** The nesting lifestage of the willow flycatcher (*Empidonax traillii*) is considered sensitive by CDFG. Within San Luis Obispo County, this species is documented as a rare but regular spring transient and an uncommon fall migrant (Audubon, 1984). Appropriate habitat for willow flycatcher breeding exists in the form of dense willow-dominated riparian vegetation.

**Merlin.** The merlin (*Falco columbarius*) is a winter migrant throughout the western portion of the state in grassland to woodland habitats, but does not breed in California (Audubon Society, 1984). The Merlin may occasionally occur on campus in Annual Grassland and riparian scrub habitats during the winter months.

**Loggerhead shrike.** The loggerhead shrike (*Lanius ludovicianus*) occurs in lowlands and foothills throughout most of California. This species is considered a common resident of most of San Luis Obispo County (Audubon Society, 1984). Preferred habitats for loggerhead shrike include woodland, chaparral, coastal sage scrub and grassland with perches such as fences, posts, and scattered trees. This species has been observed foraging on campus.

**The Monterey dusky-footed wood rat** (*Neotoma fuscipes luciana*) has a range that extends into northern San Luis Obispo County. This species is generally found in dense vegetation, thick shrubbery, and in oak woodlands. Their presence is usually determined through the observation of a woodrat house (packrat midden). In this species, the houses are piles of interlaced stick several feet in diameter. The houses afford protection and a place for the woodrat to hide. The house itself need not be hidden. It is expected that this species occurs in willow thickets or dense vegetation on campus.

**The San Diego desert woodrat** (*Neotoma lepida intermedia*) is one of several subspecies of desert woodrat that occurs in California. This subspecies has a range that extends from Baja California into Northern San Luis Obispo County (Hall 1981). California's coastal scrub habitat harbor large populations of desert woodrats (Wilson and Ruff eds. 1999), especially in Southern California. Yet, relative to the dusky-footed woodrat the desert woodrat is associated with arid and semiarid conditions.

In San Luis Obispo County these two woodrat species are separated ecologically. Desert woodrats are restricted to rocky outcroppings. Occasionally, they extend out of these outcroppings into diverse plant communities, but only in association with patches of prickly pear cactus (*Opuntia*). Desert woodrats in coastal California are larger than interior woodrats. This species overall is larger than the dusky-footed woodrat. As such, they will generally displace dusky-footed woodrats from rocky outcroppings and cactus patches. Desert woodrats build complex stick nests either in crack and rock crevices, or in clumps of cactus. The desert woodrat's nest is made up of a collection of sticks, leaves and other debris that are placed in what seems to be a random fashion. Shiny objects such as pieces of metal or bone are often collected and placed on the nest. These stick piles are easily identified and are considered active if fresh green material is mixed in with older debris.

**Southern steelhead.** Steelhead (*Oncorhynchus mykiss*) are known as the anadromous form of rainbow trout. Steelhead have been documented as occurring in Chorro, Stenner and Brizziolari Creeks (CDFG, 1973). Optimal habitat for steelhead can be generally characterized by clear, cool water with abundant instream and riparian cover and relatively stable stream flow (Raleigh et al., 1984).

**The California brown pelican** is a common late summer and fall bird in Coastal San Luis Obispo County. Preferred habitats include offshore islets, beaches, inshore waters, and off shore waters near the coast. Feeding occurs mainly in shallow waters. Morro Bay residents would be post-breeding season visitors to the campus.

**Double-crested cormorants** are known residents of inshore waters at Morro Bay but they could extend inland to the Cal Poly campus. Morro Rock represents the primary breeding locality in this area. This species is a year round resident, with population densities increasing during the non-breeding winter months (due to the southward migration of birds that breed to the north).
Coast horned lizard. Listed by the state as a Species of Special Concern, the coast horned lizard, Phrynosoma coronatum, is a species that is found in California from the tip of Baja northward to the Sacramento Valley (Brattstrom 1997). This species has been found in various places in the county, including various localities around Cal Poly within its range it can be found in a variety of habitats that include coniferous forests and broadleaf woodland (Stebbins, 1966). Along the coast of California this lizard is often associated with shrublands and grasslands. In addition to being found in sandy washes, they are found in areas with a substrate of fine loose soil. Horned lizard diet consists of ants and other insects (Stebbins, 1966). In some regions of California it is thought that exotic ant species, that have displaced and reduced numbers of native ants, are unpalatable to horned lizards and have reduced the lizard’s abundance.

Townsend’s western big-eared bat. The Townsend’s western big-eared bat (Plecotus townsendii townsendii) lives in a variety of communities throughout California, including coastal conifer and broad-leaved forests, oak and conifer woodlands, and grasslands. Townsend’s Western big-eared bats typically roost in caves and structures and forage in grassland habitats. Suitable foraging habitat for this taxon occurs within grassland habitats.

California red-legged frog. The California red-legged frog (Rana aurora draytonii) prefers aquatic habitats with little or no flow, the presence of surface water to at least early June, surface water depths of at least 2.3 feet, and the presence of fairly sturdy underwater supports such as cattails (Federal Register 59(22): 4888). The largest densities of this subspecies are typically associated with dense stands of overhanging willows and an intermixed fringe of sturdy emergent vegetation (Federal Register 59(22): 4888). The Fish and Wildlife Service is currently proposing critical habitat for this species that does not include Cal Poly property. Site assessments for the campus dated February 18, 1997 and June 26, 2000 (Andoli and Ingamells, respectively) have found limited suitable habitat on campus, restricted generally up and down stream of the developed core along Brizzolara Creek.

Bank swallows are uncommon within the county and are usually seen as migrants. This species generally forages and nests near fresh water (lakes, streams and rivers). There are no known current nesting sites within the county. Historical nesting sites are known to occur in the Morro Bay and San Luis Obispo areas.

Western spadefoot toad’s geographic range extends through San Luis Obispo County. This toad is found in a diversity of habitats though always proximate to some body of water (temporary or seasonal). Aestivating toads would be most likely found close to the creek or seeps, though one cannot rule out their occurrence almost anywhere on the campus.

California newts breed (Dec-May) in streams and permanent standing water. During non-breeding periods individuals are found beneath leaf or other vegetative litter. Occurrence of this species in a particular habitat can generally only be determined through directed census during non-breeding seasons (i.e.: pit or can traps).

American badger. The American badger (Taxidea taxus) requires friable soil for burrowing and foraging areas with rodent populations. This species is generally found in grassland areas.

The two-striped garter snake has a geographic distribution from Monterey Bay into Northern Baja. This species is primarily aquatic. It is most common along streams, flooded ditches, or in the vicinity of almost any permanent source of water. It is most frequently found where streamside and streamed rocks are abundant, or in areas where streams pass through chaparral, or oak and pine woodlands (Bartlett and Tennant 2000). This species (Thamnophis hammondii) was previously considered a subspecies of Thamnophis couchii.

Regulatory Setting

Regulations and agencies governing biological resources in the campus area are described below.

Clean Water Act of 1977. Regulatory protection for water resources throughout the United States is under the jurisdiction of the Army Corps of Engineers (A CO E). Section 404 of the Clean Water Act prohibits the
discharge of dredged or fill material into waters of the United States without formal consent from the ACOE. Delineation of wetlands and other waters of the United States is required to determine acreage affected by dredge spoil or fill disposal. The U.S. Fish and Wildlife Service assess impacts to biological resources as part of the permit process. Policies relating to the loss of wetlands generally stress the need to compensate for wetland acreage losses by creating wetlands from non-wetland habitat on at least an acre-for-acre basis.

Section 7 or Section 10 of the United States Endangered Species Act. The United States Endangered Species Act provides legislation to protect federally listed plant and animal species. Impacts to listed species resulting from the implementation of a project require that the responsible agency consult the United States Fish and Wildlife Service (USFWS). Formal consultations must take place with the USFWS pursuant to Section 10 of the Endangered Species Act, with the USFWS then making a determination as to the extent of impact to a particular species. If the USFWS determines that impacts to a species would likely occur, alternatives and measures to avoid or reduce impacts must be identified. Section 7 also requires determination of environmental impacts, and thorough biological assessment. Section 7 applies to projects in which a federal agency is involved, either through financial support or project leadership.

The Endangered Species Act also designates threatened or endangered species and where appropriate, critical habitat for such species. Species are also listed as candidates for listing. Federal candidate species are assigned to one of two categories depending on the current state of knowledge of the species and its biological appropriateness for listing. Federal Category 1 candidate species (FC1) include taxa for which the USFWS currently has compiled substantial information on biological vulnerability and potential threats in order to support the appropriateness of proposing to list the taxa as endangered or threatened species.

State of California Endangered Species Act. The State of California Endangered Species Act mandates that in instances where impacts to a state-listed endangered species would occur, the lead or responsible agency must contact the California Department of Fish and Game and enter into formal consultation. Impacts to the state-listed species would be evaluated and identification of mitigation measures would likely be required.

In addition to formal endangered and threatened listings, the State of California also list Species of Special Concern based on limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value. These species are not afforded the same legal protection as listed species, but may be added to official lists in the future. There are two general categories of species of special concern:

1) Those species that are candidates for official federal or state listing as threatened or endangered; and
2) Those species that are not candidates, but that have been unofficially identified as a species of special interest by private conservation organizations or local government agencies.

The State of California also maintains lists for Candidate-Endangered Species (SCE) and Candidate-Threatened Species (SCT).

California Department of Fish and Game Code, Chapter 6. This code governs state-designated wetlands, including riparian and stream habitat, and mandates that mitigation be implemented to replace wetland extent and value lost to development. A Section 1603 (Fish and Game Code) Agreement is required for any alteration to a stream or lake, as well as to their associated riparian habitats.

State Regional Water Quality Control Board - Basin Plan. The Regional Water Quality Control Board Basin Plan provides management guidelines for maintaining water quality and associated beneficial uses of streams and rivers within the central coast region of California. Water quality objectives are set forth to maintain optimum habitat for various aquatic species.
Significance Thresholds

Determination of biological significance thresholds is based on the State CEQA Guidelines. Using these guidelines, the Master Plan would have a significant impact on biological resources if it would:

- Conflict with applicable regulations and policies protecting biological resources
- Substantially affect, either directly or through habitat modification, any species identified locally, by the state or federally as candidate, sensitive, or special status species
- Substantially affect any riparian habitat or other sensitive natural community identified locally, or at the state or federal level
- Substantially affect federally protected wetlands as defined by Section 404 of the Clean Water Act
- Interfere substantially with the movement of any resident or migratory fish or wildlife species, or with established corridors

Plant or animal taxa are considered locally important if they meet any of the following criteria:

- Taxa (species, subspecies, or varieties) that are limited in distribution in the county or region, or are endemic (limited to a specific area) in the region;
- Taxa that are at the extremes of their range or are separated from the known range for the taxon;
- Taxa whose habitat requirements make them susceptible to local extinction as a consequence of development, the introduction of barriers to movement, and/or accompanying increases in human activity;
- Populations of a particular species that exhibit unusual adaptation or are quality examples of the species; and
- Taxa that are considered sensitive by recognized monitoring groups (e.g., Audubon Society, CNPS, CDFG).

Based on these guidelines, as well as pertinent state and federal policies and regulations, the following thresholds of significance will be applied to Master Plan-related impacts to biotic resources:

- Loss of individuals of or habitat for special-status species.
- Loss of sensitive vegetation/habitat types, including wetlands such as Freshwater Marsh, Wet Meadow/Freshwater Seep, and Central Coast Riparian Scrub.
- Loss of raptor nests.
- Introduction of invasive exotic species.
- Disruption of existing wildlife corridors

Impacts

The following is a discussion of the impacts expected from the implementation of the proposed Master Plan. Assessment of impact is limited to those areas proposed for development or redevelopment under the Plan where sensitive species are expected to be in close proximity.
Beneficial Impacts

Implementation of policies in the Master Plan that include measures for natural resource protection will have a beneficial impact on the environment. A thorough investigation and inventory of sensitive plant and animal species and communities on the property will provide a better understanding of the resources present. Impacts are beneficial (Class IV).

Policies that propose inclusion of ecological sensitivity in the grazing land management program will benefit plant and animal species currently impacted by grazing activities (Class IV). Finally, management for ecological value could help maintain proper vegetation cover, and reduce impacts to banks and beds of riparian areas.

Grand Avenue and Slack Street (Housing and Visitor’s Center)

Biological surveys performed on site did not reveal the presence of any sensitive plant species (the full text of the studies may be found in Appendix C) within the boundaries of the proposed development. Care must be taken to avoid populations of _Calochortus obispoensis_ on the northeastern hillsides. Use of the site by special-status wildlife is most likely limited to foraging habitat. Impacts are considered less than significant (Class III). Impacts to waters of the U.S. and other ACOE jurisdictional areas are discussed under “Construction Impacts.”

Goldtree

Preliminary analysis of the Goldtree site shows that it is unlikely that sensitive plant or animal species are present on site (refer to study, Appendix B). In fact, vegetation on site is largely a mix of weedy and noxious species that are unpalatable to livestock. Serpentine soils are present in some areas but do not appear to support sensitive plant species. Impacts are considered significant, but mitigable, due to the lack of information during the appropriate season (Class II); a spring plant survey is recommended. Cumulative loss of grasslands is addressed below.

Creek Corridors (General)

Although enhancement of riparian corridors is designed to result in overall improvements to biologic and hydrologic quality, immediate impacts of excavation, vegetation removal, and other activities may be adverse. These impacts are discussed in “Construction Impacts” towards the end of this chapter. After completion, the enhancement projects will result in a net benefit to riparian vegetation and fisheries habitats (Class IV).

Chorro Creek

Operation of the Bull Test facility may have adverse effects on resources associated with Chorro Creek. The creek serves as a tributary to the Morro Bay National Estuary, and provides habitat for steelhead, red-legged frog, and numerous migratory bird species. Operation of the facility may impact the creek through runoff and direct disturbance from cattle. Mitigation is proposed to reduce impacts to a less than significant level (Class III).

Sensitive Species

Reservoir Maintenance. Some reservoirs and other water impoundment on campus have developed wetland characteristics. Periodically, they may also serve as nesting and/or foraging habitat for animal species. Maintenance of these water bodies is essential to the operation of the campus irrigation and agricultural programs. Mitigation located at the end of this section is recommended to reduce impacts to a less than significant level.
Poly Canyon

Design Village. The policies guiding future development in the Design Village are implicit in their consideration of biological resources during planning. However, the site is constrained by potential wetland areas, serpentine soils and associated rare plants, and floodplains associated with Brizzolara Creek. Mitigation located at the end of this section is recommended to reduce the significance of potential impacts.

Trails. Through proper establishment and management of trails sensitive populations could be maintained where trails avoid sensitive habitats, and where visitors are properly educated as to the sensitivity of the resource. Because the trails policy is clear in its aim to protect such resources, impacts are considered less than significant (Class III).

H-1 and H-2 Housing. Occupancy of the H-1 and H-2 student housing project may result in adverse impacts to special-status plant species. The project site borders populations of Calochortus obispoensis (CNPS List 1B). Although the project is designed to remain within currently disturbed areas, student occupancy of the area may result in increased foot traffic and disturbance in these areas. Impacts are significant, but mitigable (Class II).

Grasslands

Development of the eastern portions of the H-1 and H-2 housing complex and the Goldtree facility would result in the loss of suitable grassland habitat for resident special-status birds, potentially including loggerhead shrike, golden eagle, and white-tailed kite. This impact is less than significant (Class III).

The above-listed species are not expected to breed on-site; impacts would be limited to loss of potential foraging habitat. The southern slopes of the Santa Lucia Mountains provide many square miles of higher quality habitat associated with no or lesser intensity grazing. Therefore, the loss of foraging habitat is not expected to substantially affect the fecundity or survival of the local breeding population of these species. Impacts to special-status wildlife species are considered less than significant (Class III).

An analysis of the cumulative loss of grasslands associated with the Master Plan is located towards the end of the section.

Open Space and Wildlife Corridors

Occupancy of the H-1 and H-2 housing complexes and the Goldtree facility would extend existing human-related disturbance (human presence, noise, dust, and lighting) nearer to open space areas.

The H-1 and H-2 site is located 150 feet from Brizzolara Creek, and is bordered by native grasslands on the northeastern edge. The housing project will not encroach upon these sensitive habitats, and foot traffic will be directed to specified areas (refer to mitigation for biological resource impacts below). Because of mitigation included in the project, human-related disturbance impacts are considered less than significant (Class III). The Goldtree site has been sited away from the Stenner Creek corridor. Impacts are considered less than significant (Class III).

Highland Drive

Slopes and cutbanks associated with the realignment of Highland Drive will be in closer proximity to Brizzolara Creek. Runoff from the roadway and its slopes may adversely impact steelhead trout and other sensitive species inhabiting the creek. Impacts are significant, but mitigable (Class II).
Mitigating Measures

Goldtree

A springtime site-specific survey will be completed prior to construction. Areas supporting sensitive plant species shall be avoided; disturbed populations will be replanted in a suitable area at a ratio deemed appropriate by a qualified biologist.

Chorro Creek

Drainage Plan. Prior to construction of the Bull Test facility, a construction and operational drainage plan will be drafted with contingencies for storm events and system failures. The plan will address ground disturbance associated with construction and potential for erosion, as well as operational drainage patterns and systems. Areas disturbed by construction will be revegetated as soon as possible. Cattle stalls and holding areas will be bermed and runoff will be routed away from the creek to settling ponds.

Limitation of Cattle Access. Cattle will not be allowed to enter the creek.

Sensitive Species

Maintenance Scheduling and Approval. Maintenance activities should be scheduled outside of the nesting and breeding periods of sensitive species that may inhabit the area. Maintenance of reservoirs should be approved by regulatory agencies where necessary prior to action.

Poly Canyon

Further development at the Design Village will be restricted to areas not limited by the following environmental constraints:

- Serpentine Soils
- Army Corps jurisdictional wetlands encompassing more than 1/10th of an acre
- Other areas populated by sensitive plant species, unless impacts to plants can be mitigated by repopulation elsewhere

Prior to planning of any future development in this area, a site-specific biological resource study and wetlands delineation will be completed to assess the presence or absence of the above, and the jurisdictions of agencies.

Plant Population Restoration. Suitable habitat exists on campus for replanting of *Calochortus*. Any populations or individuals of *Calochortus* disturbed by project construction will be replanted in suitable areas at ratios deemed suitable by a qualified biologist.

Pedestrian Restriction. The northern and eastern portions of the H-1 and H-2 projects will be designed to prevent direct pedestrian access to the native grassland and biological preserve (Exhibit I). In general, access to buildings and recreation areas will be oriented towards the main campus and away from sensitive areas to the north and east. Pedestrian traffic in the area of Brizzolara Creek will be designed in accordance with the “Goals and Guidelines for the Cal Poly Creek Management and Enhancement Plan” included as Appendix F. Signs will be posted to indicate the sensitivity of the area.

Open Space and Wildlife Corridors

Plans for the H-1 and H-2 housing units will include pedestrian systems which are sensitive to the Brizzolara Creek corridor, and which limit access to open space areas to the east of the proposed project site.
Highland Drive

The Highland Drive realignment shall be designed with drainage systems sensitive to the creek corridor. Drainage shall incorporate silt and grease traps and/or vegetative buffer strips to prevent pollution and sedimentation of the creek. Landscaping shall consider native vegetation compatible with the riparian area where it is appropriate. Inlets that drain to the creek will be marked accordingly.

Cumulative Impacts

Grassland Loss

The Master Plan (including Goldtree and the Bull Test at Chorro ranch) is expected to result in the conversion of approximately 100 acres of currently grazed grassland. This represents approximately 1.5% of Cal Poly's land holdings, which as a whole generally exhibit grassland characteristics. City and County development trends have focused on conversion of grasslands because they are readily accessible and generally easier to develop. However, the County has witnessed the commitment of an average 200 acres of grazing land per year since 1992, less than 0.03% of the County total. In light of the relatively low rate of conversion countywide, the Master Plan would not result in a cumulatively considerable impact to grassland foraging habitat. The plan is otherwise designed to prevent impacts to biological resources and enhance them where necessary. Impacts are less than significant (Class III).

Commenters have noted (Ashley) that prior EIRs for Cal Poly have identified the loss of grassland foraging habitat as a Class I cumulative impact. These EIRs were prepared prior to the development of the comprehensive data base for the Master Plan. This information identified these grasslands, and perhaps more importantly, designated this land as either Outdoor Teaching and Learning, or Natural Environment, which protects it from development unless a modification is made to the Master Plan. With the adoption of the Master Plan, the loss of acreage on a campus-wide level for Cal Poly will be established, and the cumulative impact will no longer be speculative. Because the Master Plan provided this protection, the impact was considered to be mitigated, and no longer appropriate to be considered Class I.

Residual Impacts

Impacts to biological resources are less than significant because of mitigation incorporated into the project.
AGRICULTURE

The following section analyzes the impacts of the Master Plan to prime and important farmland.

Existing Conditions

Cal Poly has a long history of excellence in agricultural education. Classroom education in agriculture is augmented with hands-on learning at the various livestock facilities, pastureland, rangeland, and cropland that exist on campus. Cal Poly has 320 acres in livestock facilities, cropland, pastureland, and rangeland production in the main campus farm and west of Stenner Creek Road. Further information on farming facilities and ranches can be found in the proposed Master Plan.

The University's College of Agriculture may base at least part of its success on the rich agricultural soils found on campus. Much of the soil can be classified as Class I, or “prime” for irrigated agricultural production. The Master Plan includes a policy to preserve the remaining undeveloped prime farmland on campus for productive use. Therefore, none of the projects proposed in the Plan will result in development of prime farmland. Graphics depicting prime agricultural land on campus may be found in the “Existing Conditions” section in the Master Plan.

Significance Thresholds

The State CEQA Guidelines consider impacts to agricultural resources significant if the project will:

a) Convert prime farmland, unique farmland, or farmland of statewide importance
b) Conflict with agricultural zoning or Williamson Act contracts
c) Result in the indirect conversion of agricultural land.

The Master Plan specifically identifies prime agricultural soils on campus, and states that no further development of such lands will take place. The Master Plan is otherwise not expected to have an impact on prime agricultural resources.

Impacts

Beneficial Impacts

Currently undeveloped prime agricultural land will be retained in agricultural use, and ranches will be preserved. This impact is beneficial (Class IV). The policy also requires that where agricultural uses occur in environmentally sensitive areas, they will be managed to protect or enhance environmental quality, sustainability and productivity of these sensitive areas. This will constitute a beneficial impact to such areas (Class IV).

Unique Farmland and Farmland of Statewide Importance

The H-1, H-2 and H-3 housing sites overlie designated Unique Farmland and Farmland of Statewide Importance. One stipulation of designation as “Statewide Important” is that “the land must have been used for production of irrigated crops at some time during the four years prior to the mapping date.” The site currently supports grazing cattle, and has since at least 1949 (per aerial photo review). Therefore, the property in question does not meet the criteria for designation. Similarly, criteria for Unique Farmland include that the land is used for “production of the state's major crops.” This land is “usually irrigated, but may include nonirrigated fruits and vegetables.” The property in question is not used for production of such crops, therefore, impacts are considered less than significant (Class III). Important Farmland Maps are largely based on review of
Cal Poly Master Plan

aerial photos; it is likely that pasture was misidentified as crops leading to the map change. The site did not show any “Statewide Important” farmland in 1996 maps (Robert Hopkins, Deputy Agricultural Commissioner, pers. comm.).

**Cumulative Impacts**

Under the proposed Master Plan, approximately 100 acres of currently grazed land will be converted. This is approximately 1.5 percent of Cal Poly's total local agricultural land. Cal Poly controls use of their land; cumulative development in the City and County of San Luis Obispo will not impact their operations.

Because grazed land proposed for development under the Master Plan is only a fraction of Cal Poly's agriculturally viable land holdings, and because prime farmland will not be impacted, impacts are considered less than significant (Class III).

**Residual Impacts**

Impacts are less than significant (Class III).
Cultural and Historic Resources

The following section analyzes impacts of the Master Plan to cultural and historic resources.

Setting

Prehistory

The campus lies within the historic territory of the Native American Indian group known as the Chumash. The Chumash occupied the region from San Luis Obispo County to Malibu Canyon on the coast, inland as far as the western edge of the San Joaquin Valley, and the four northern Channel Islands (Grant 1978). The Chumash are further divided into factions based on six distinct dialects: Barbareño, Ventureño, Purisimeño, Ynezeno, Obispeño, and Island. The Obispeño were the northernmost Chumash group, occupying much of San Luis Obispo County, including the Cal Poly area. The name Obispeño is derived from the mission with local jurisdiction, San Luis Obispo de Tolosa.

The archaeological record indicates that sedentary populations occupied the coastal regions of California more than 9,000 years ago. Several chronological frameworks have been developed for the Chumash region including Rogers (1929), Wallace (1955), Harrison (1964), Warren (1968), and King (1990). King postulates three major periods -- Early, Middle and Late. Based on artifact typologies from a great number of sites, he was able to discern numerous style changes within each of the major periods. The Early Period (8000 to 3350 Before Present [B.P.]) is characterized by a primarily seed processing subsistence economy. The Middle Period (3350 to 800 B.P.) is marked by a shift in the economic/subsistence focus from plant gathering and the use of hard seeds, to a more generalized hunting-maritime-gathering adaptation, with an increased focus on acorns. The full development of the Chumash culture, one of the most socially and economically complex hunting and gathering groups in North America, occurred during the Late Period (800 to 150 B.P.).

The Chumash aboriginal way of life ended with Spanish colonization. As neophytes brought into the mission system they were transformed from hunters and gatherers into agricultural laborers and exposed to diseases to which they had no resistance. By the end of the Mission Period in 1834, the Chumash population had been decimated by disease and declining birthrates. Population loss because of disease and economic deprivation continued into the next century. Today many people proudly claim Chumash ancestry and take an active interest in promoting their culture and protecting archaeological evidence of their ancestors.

History

In 1769 Gaspar de Portola and Father Junipero Serra departed the newly established San Diego settlement and marched northward toward Monterey with the objective to secure the port and establish five missions along the route. The Portola expedition passed through present day San Luis Obispo County that same year. The closest mission to Cal Poly is Mission San Luis Obispo de Tolosa founded in 1772 (Krieger 1985).

In 1822, Mexico gained its independence from Spain, and in 1834, the Missions were secularized (separated from the restrictions imposed by the Catholic Church) and their lands granted as rewards for loyal service or in response to an individual’s petition. During Mexican rule, missions declined in influence and large cattle ranches (called ranchos) came into dominance in the San Luis Obispo area. California families received the vast majority of the 35 Mexican land grants within present-day San Luis Obispo County (Krieger 1990). The Mexican Period ended with the signing of the Treaty of Guadalupe Hildago on February 2, 1848, which transferred control of California, New Mexico, Texas, and other western properties to the United States.

During the early American Period, the Rancho lands were sold off and cattle ranching continued to be the major economic activity in the Cal Poly region. Only with the coming of the Southern Pacific Railroad in 1894 did San Luis Obispo begin to experience significant population growth.
In 1901, a vocational school that would become Cal Poly was founded. Myron Angel, a driving force behind the establishment of the school, inspired the institution to "teach the hand as well as the head so that no young man or woman will be sent off in the world to earn their living as poorly equipped as I was when I landed in San Francisco in 1849" (Krieger 1990). The concept of teaching the hand as well as the mind manifested itself as the Cal Poly approach to education. Today Cal Poly provides an undergraduate and graduate curriculum that emphasizes "learning by doing" as part of the system of state universities.

**Known Resource Sites**

A records search was conducted at the Central Coast Information Center (CCIC), housed at the University of California, Santa Barbara, for archaeological sites on campus lands. The search revealed a relatively high density of archaeological resources on Cal Poly property, although approximately 90% of the property has not yet been surveyed. Forty-seven cultural resources studies have been conducted within a one-half mile radius of the Plan area, with ten archaeological investigations occurring within the Cal Poly area. Seventy-five archaeological sites are located within a ½-mile radius of Cal Poly and its ranches, twenty-eight of which are located within the Plan area. Three additional archaeological sites are located immediately adjacent to the study area's boundaries. The majority of these sites have not been subject to subsurface surveys and/or have not been evaluated for listing on the National Register of Historic Place (NRHP).

The Old Powerhouse Building located on Cuesta Avenue is listed on the National Register of Historic Places. Eight other structures were identified as appearing eligible for listing. No California State Landmarks were identified. The southwestern area of campus is recognized as having several structures that represent an earlier period of Cal Poly's architectural style. These are shown on Exhibit 6.5. The integrity of these structures has been compromised over the years due to extensive interior renovations and remodeling. However, the Master Plan includes policies that would guide the design of future development in the area to reflect this early California architecture. The renovation of the Business and Education Building incorporates this style and serves as an anchor for establishing the character of the area.

**Significance Thresholds**

CEQA Guidelines Section 15064.5 provides the definition and guidance for the determination of the significance of a cultural or historical resource. According to these guidelines, a significant resource is defined as:

- A resource listed in or determined eligible for listing in the California Register of Historical Places.
- A resource included in a local register, or deemed significant in a local meeting, unless the preponderance of evidence demonstrates otherwise.
- Anything deemed significant in the annals of California provided there is substantial evidence.

A resource is also considered significant if it:

- Is associated with events that have made a significant contribution to broad patterns of California history and cultural heritage.
- Is associated with the lives of persons important to our past.
- 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.
- Has yielded, or is likely to yield, information important in history or prehistory.

According to these guidelines, a project may have a significant impact on such a resource if it would:

- Cause a substantial adverse change in the significance of a historical or cultural resource through demolition, destruction, relocation or alteration of factors that make it significant.
If potential development would disturb a cultural resource site, and the significance of a site is unknown, this analysis assumes that it is significant for the purpose of this EIR. An impact would also be considered significant if it disturbed a unique paleontologic site.

**Impacts**

**Historic Structures**

The development of housing and Parking Structure II in the southwestern portion of campus will necessitate the removal of buildings deemed potentially eligible for listing on the NRHP, specifically Jespersen, Chase and Heron Halls and the President’s Residence. The loss of these buildings will affect the overall historic nature of this area, however, the integrity of these buildings has already been compromised due to past interior remodeling. Impacts are significant, but mitigable (Class II).

**Known Resource Sites**

At least one known archaeological site is eligible for listing on the NRHP and may be impacted by the Master Plan; mitigation is recommended to reduce potential impacts.¹

**Unknown Resource Sites**

Discovery of buried cultural resources is governed by County and State policy, which require reporting to proper authorities and work cessation pending resolution. Given the number of sites, mitigation is recommended to reduce the likelihood of accidental disturbance.

**Mitigating Measures**

**Historic Structures**

Buildings deemed potentially eligible for listing on the NRHP will be studied to determine their significance. If they are determined to be significant, Cal Poly will undertake proper documentation of the resource. Given the number of buildings on campus that are over 50 years old, determination of historical significance shall be made by a historic architect (with a historic preservation background) prior to removal or substantial remodeling of any such structure.

**Known Resource Sites**

Prior to design, Phase II archaeological studies will be completed at known sites; determination of significance will be made, and appropriate mitigation measures followed, as suggested by the archaeologist.

**Known Resource Sites**

Where soil surfaces are undeveloped and visible and where no previous survey has been completed, Phase I archaeological surveys will take place prior to construction.

¹ To protect the integrity and ensure proper documentation and handling of archaeological resources, locations of known archaeological sites are confidential.
Residual Impacts

Residual impacts are less than significant.
CIRCULATION

The following information is excerpted in large part from the Parking and Traffic Study prepared by ATE for the Master Plan Update (full text is included as Appendix C; full text and technical appendices are available for viewing at the Facilities Planning Office at Cal Poly).

Terminology

Principal arterials consist of freeways, expressways or other principal roads that connect major population centers and other points of traffic generation. Access to principal arterials is strictly controlled; they are not intended for local trips. Highway 101 is the principal arterial in the campus area.

Arterials carry traffic between principal arterials and between population centers, or they may carry large volumes of traffic within urban or rural areas. They are not intended to provide primary access to residences and are best used for controlled access to areas of retail and service commercial uses, industrial facilities and major community facilities.

Collector roads enable traffic to move to and from local roads, arterial roads and activity centers. They are principal roads of residential areas and carry relatively high volumes of traffic.

Local roads are used primarily for access to adjacent properties.

The efficiency and adequacy of a roadway or intersection is often described in terms of Level of Service, or LOS. LOS is a measure of the ratio of motor vehicle traffic volumes to the capacity of the roadway or average delay at an intersection. Motor vehicle traffic volumes are most often expressed in terms of Average Daily Traffic, or ADT, which is the number of vehicle trips passing a given point in each travel direction. The capacity of a street segment or intersection is based largely on the design or functional classification as described above. Based on the volume to capacity ratio, or the delay at an intersection, LOS A through F are applied, with LOS A indicating very good operating conditions and LOS F indicating poor conditions. LOS D has been established as the minimum acceptable level of service for roadway segments and intersections in the San Luis Obispo area.

The following table provides the standard definitions of LOS for signalized intersections and roadway segments.

<table>
<thead>
<tr>
<th>LOS</th>
<th>Flow</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Unobstructed flow</td>
<td>No delays and all signal phases sufficient in duration to clear all</td>
</tr>
<tr>
<td></td>
<td></td>
<td>approaching vehicles</td>
</tr>
<tr>
<td>B</td>
<td>Stable flow</td>
<td>Very little delay, a few phases are unable to handle all</td>
</tr>
<tr>
<td></td>
<td></td>
<td>approaching vehicles</td>
</tr>
<tr>
<td>C</td>
<td>Stable flow</td>
<td>Delays are low to moderate, full use of peak directional signal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>phase is experienced</td>
</tr>
<tr>
<td>D</td>
<td>Nearing Unstable flow</td>
<td>Delays are moderate to heavy, significant signal time deficiencies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>are experienced for short durations during the peak traffic period.</td>
</tr>
<tr>
<td>E</td>
<td>Unstable flow</td>
<td>Delays are significant, signal phase timing is generally</td>
</tr>
<tr>
<td></td>
<td></td>
<td>insufficient, and congestion exists for extended duration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>throughout the peak period.</td>
</tr>
<tr>
<td>F</td>
<td>Forced flow</td>
<td>Travel speeds are low and volumes are well above capacity. This condition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>is often caused when vehicles released by an upstream signal are unable to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>proceed because of back-ups from a downstream signal.</td>
</tr>
</tbody>
</table>
Setting

Roadways

U.S. Highway 101, located one-half mile south of the University, is a multi-lane freeway that serves as a major arterial within the City of San Luis Obispo and is the principal inter-city route along the Central Coast. Near the campus, U.S. 101 is a four-lane freeway generally following an east-west alignment.

State Route 1 (SR 1) - Santa Rosa Street. State Route 1 extends north south through the City of San Luis Obispo as Santa Rosa Street. West of Cal Poly, Santa Rosa Street is a four-lane major arterial that provides regional access to the college via Highland Drive. The Santa Rosa Street/Highland Drive and Santa Rosa Street/Foothill Boulevard intersections are controlled by traffic signals.

Highland Drive is a two-lane arterial that serves the residential neighborhood west of Santa Rosa Street and serves as one of the primary entrances to Cal Poly east of Santa Rosa Street. The City of San Luis Obispo classifies Highland Drive as an arterial from Ferrini Road (just west of Santa Rosa Road) to the Union Pacific railroad tracks within the campus.

Foothill Boulevard is a four-lane undivided arterial street with signalized intersection control at major street crossings. Foothill Boulevard serves as a major route to Cal Poly, via California Boulevard, from locations south and west of the campus.

California Boulevard is a two-lane arterial that serves the residential neighborhood east of the Union Pacific railroad tracks and serves as one of the primary entrances to Cal Poly. The City of San Luis Obispo classifies California Boulevard as a residential arterial from Taft Street (near U.S. Highway 101) to the edge of the University north of Foothill Boulevard; and an arterial from Taft Street across U.S. Highway 101 to Monterey Street.

Perimeter Road is a two-lane roadway that is the main roadway for on-campus vehicular travel. Perimeter Road is U-shaped, starting at College Avenue in the southwest part of campus and then curving north-south around the University’s administrative buildings, eventually curving back in an east-west alignment along the north core of the campus where it terminates at Dexter Drive near the library.

Grand Avenue serves as one of the primary entrances to Cal Poly. From U.S. Highway 101, Grand Avenue is a four-lane roadway and follows a north-south alignment to its intersection with Slack Street, which is controlled by all-way stop signs. North of Slack Street, Grand Avenue narrows to a two-lane roadway and curves in a northwest-southeast alignment towards its intersection with South Perimeter Road, which is also controlled by all-way stop signs. The City of San Luis Obispo Circulation Element classifies Grand Avenue as a residential arterial south of Slack Street to U.S. Highway 101.

Slack Street is a two-lane local street that follows an east-west alignment along the southern perimeter of the University between Grand Avenue and Hathaway Avenue. Slack Street intersects with Longview Lane, which is controlled by a four-way stop. Pacheco Way, a one-way roadway southbound, is stop sign-controlled at its intersection with Slack Street.

Existing Volumes and Level of Service

Roadway. Existing average daily traffic (ADT) volumes for the study-area roadways are illustrated in Exhibit 6.6. ADT volumes for the street segments included in the study area were obtained from traffic counts conducted by ATE in 2000. LOS were determined based on roadway capacity standards in the City of San Luis Obispo Circulation Element.
Because traffic flow on urban arterials is most constrained at intersections, a detailed analysis of traffic flow must examine the operating conditions of critical intersections during peak travel periods. Levels of service for the signalized and unsignalized study-area intersections were calculated using the operational methodology outlined in the Highway Capacity Manual.\(^2\)

Table 6.8 lists the A.M. and P.M. peak hour levels of service for each of the study-area intersections. Calculation worksheets are contained in the technical appendix available at the Cal Poly Facilities Planning Office.

Table 6.8. Existing Intersection Levels of Service (2000)

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Control Type</th>
<th>A.M.</th>
<th></th>
<th>P.M.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Delay</td>
<td>LOS</td>
<td>Delay</td>
<td>LOS</td>
</tr>
<tr>
<td>Santa Rosa Street (SR 1)/Highland Drive</td>
<td>Signal</td>
<td>13.8 SEC</td>
<td>LOS B</td>
<td>11.8 SEC</td>
<td>LOS B</td>
</tr>
<tr>
<td>Santa Rosa Street (SR 1)/Foothill Blvd.</td>
<td>Signal</td>
<td>16.6 SEC</td>
<td>LOS B</td>
<td>26.2 SEC</td>
<td>LOS C</td>
</tr>
<tr>
<td>California Boulevard/Foothill Boulevard</td>
<td>Signal</td>
<td>14.512.2 SEC</td>
<td>LOS B</td>
<td>29.521.7 SEC</td>
<td>LOS C</td>
</tr>
<tr>
<td>California Boulevard/Taft Street</td>
<td>One-way stop</td>
<td>12.7 SEC</td>
<td>LOS B</td>
<td>16.5 SEC</td>
<td>LOS C</td>
</tr>
<tr>
<td>California Boulevard/U.S. 101 NB Ramps</td>
<td>One-way stop</td>
<td>13.8 SEC</td>
<td>LOS B</td>
<td>18.7 SEC</td>
<td>LOS C</td>
</tr>
<tr>
<td>So. Perimeter Road/Grand Avenue</td>
<td>All-way stop</td>
<td>9.4 SEC</td>
<td>LOS A</td>
<td>17.1 SEC</td>
<td>LOS C</td>
</tr>
<tr>
<td>Grand Avenue/Slack Street</td>
<td>All-way stop</td>
<td>11.0 SEC</td>
<td>LOS B</td>
<td>12.7 SEC</td>
<td>LOS B</td>
</tr>
<tr>
<td>Grand Avenue/U.S. 101 SB On-Ramp-Loomis</td>
<td>One-way stop</td>
<td>11.7 SEC</td>
<td>LOS B</td>
<td>12.7 SEC</td>
<td>LOS B</td>
</tr>
<tr>
<td>Grand Avenue/U.S. 101 NB On-Ramp-Abbot</td>
<td>One-way stop</td>
<td>14.1 SEC</td>
<td>LOS B</td>
<td>18.3 SEC</td>
<td>LOS C</td>
</tr>
<tr>
<td>Grand Avenue/Monterey Street</td>
<td>Signal</td>
<td>12.2 SEC</td>
<td>LOS B</td>
<td>11.6 SEC</td>
<td>LOS B</td>
</tr>
</tbody>
</table>

The data presented in Table 6.8 indicate that the study-area intersections currently operate at acceptable levels of service based on the Highway Capacity Manual calculations during normal operations. Vehicle delay data collected at the South Perimeter Road/Grand Avenue intersection during the A.M. peak hour shows that an acute level of congestion occurs during the peak 15 to 20 minute surge period when the majority of school classes begin. Both vehicular and pedestrian traffic flows cause this congestion. The University staffs one to two Public Safety Services personnel during this peak to control the intersection operations and distribute right-of-way between vehicular and pedestrian traffic through the intersection.

The Grand Avenue/Slack Street intersection also experiences very sharp directional traffic flows each weekday morning and evening, due to University employee and staff arrivals and departures via Grand Avenue. The reported level of service (LOS B), which is considered relatively good, was validated by field observations. Many vehicles roll through the stop signs in groups of up to four vehicles.

Highland Drive is also subject to congestion during the A.M. peak hour. As data indicate above, levels of service remain above acceptable levels.

Certain university events, such as commencement and the first day of class, often result in extraordinary traffic conditions, with area roadways slowed considerably and intersections under heavy stress. University Police have a Draft Event Management Plan to address acute traffic levels associated with these events; further mitigation is not practicable for these sporadic activities.

"Baseline" Traffic Volumes

"Baseline" traffic volumes were forecast to provide a point of comparison for measuring the effects of the additional traffic that would be generated by implementation of the Master Plan. The Baseline forecasts assume implementation of the roadway extensions and realignments proposed in the initial phases of Master Plan development. These roadway projects, which will change the traffic patterns in the Cal Poly area, are listed below:

- Highland Drive Extension. Highland Drive will be extended easterly to form a new perimeter road section in the northern portion of the campus.
- California Boulevard Extension. California Boulevard will be extended northerly to connect with Highland Drive.
- South Perimeter Road Closure. The section of South Perimeter Road west of Slack Street will be closed to vehicular through traffic.

Table 6.9 compares the existing campus distribution pattern and the campus distribution pattern associated with implementation of the Master Plan roadway projects. Baseline traffic volumes are presented in Exhibit 6.7.

Table 6.9. Existing & Master Plan Traffic Patterns

<table>
<thead>
<tr>
<th>Origin/Destination</th>
<th>Direction (to/from)</th>
<th>Existing Distribution Percentage</th>
<th>Master Plan Distribution Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Boulevard</td>
<td>South</td>
<td>28%</td>
<td>40%</td>
</tr>
<tr>
<td>Highland Drive</td>
<td>West</td>
<td>28%</td>
<td>20%</td>
</tr>
<tr>
<td>Grand Avenue</td>
<td>Southeast</td>
<td>39%</td>
<td>35%</td>
</tr>
<tr>
<td>Surrounding areas</td>
<td>Local</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Parking

Parking conditions on campus are summarized in Table 6.10. The interim phase refers to the spaces available including the Grand Avenue parking structure.

Table 6.10. Existing Parking Conditions Summary

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Spaces Supplied</th>
<th>Peak Occupancy</th>
<th>Percent Occupancy</th>
<th>Reserve Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Conditions</td>
<td>5,802</td>
<td>5,692</td>
<td>98.1%</td>
<td>110</td>
</tr>
<tr>
<td>Interim Phase</td>
<td>6,733</td>
<td>5,969</td>
<td>88.7%</td>
<td>764</td>
</tr>
</tbody>
</table>

Significance Thresholds

City of San Luis Obispo Circulation Element standards will be used to determine the significance of Master Plan-generated traffic impacts for this study. The City's Circulation Element has adopted LOS D as the minimum service level for roadway and intersection operations. Consequently, mitigation would be required for operations at LOS E or worse.
Transit impacts would be significant if ridership increases resulted in diminished levels of service for City and CCAT buses.

Parking impacts would be significant if demand exceeded supply.

**Impacts**

**Beneficial Impacts**

Designation and improvement of the campus pedestrian system should reduce conflicts with vehicles. Development of a more efficient campus bicycle system, improved physical access to public transit and provision of a campus area shuttle may reduce vehicle traffic by providing a convenient alternative. Clearly marked bike and pedestrian paths and separation from other modes of travel will improve circulation. These impacts are beneficial (Class IV).

Careful study and design of important intersections will benefit circulation (Class IV), as will designation of clearly defined ADA routes and loading zones.

**Campus Vehicular Circulation (Baseline + Project)**

The Baseline + Project analysis adds the traffic generated by enrollment growth and additional faculty and staff to the realigned roadway system.

**Regional**

Exhibit 6.8 illustrates the Baseline + Project ADT volumes. Table 6.11 presents the results of the Baseline and Baseline + Project roadway analyses.

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Roadway Type</th>
<th>Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Baseline ADT</td>
</tr>
<tr>
<td>Grand Ave</td>
<td>4-Lane Res. Art.</td>
<td>12,200 ADT</td>
</tr>
<tr>
<td>California Blvd</td>
<td>2-Lane Res. Art.</td>
<td>14,800 ADT</td>
</tr>
<tr>
<td>Highland Dr</td>
<td>2-Lane Arterial</td>
<td>6,500 ADT</td>
</tr>
<tr>
<td>Foothill Blvd</td>
<td>2-Lane Arterial</td>
<td><strong>9,500,20,600</strong> ADT</td>
</tr>
<tr>
<td>Santa Rosa - North</td>
<td>4-Lane Highway</td>
<td>24,600 ADT</td>
</tr>
<tr>
<td>Santa Rosa - South</td>
<td>4-Lane Arterial</td>
<td><strong>33,000,30,400</strong> ADT</td>
</tr>
</tbody>
</table>

All of the Cal Poly-area roadways are forecast to operate at acceptable levels of service under Baseline and Baseline + Project operating conditions.

**Campus Roads**

**South Perimeter Road.** The closure of South Perimeter Road, as identified for the later phase of the Master Plan, would displace approximately 5,000 ADT. Phasing of the Master Plan will ensure that the extension of California Boulevard and realignment of Highland Drive are completed prior to the closure of South Perimeter Road. The closure of South Perimeter Road will be successful as long as the California Boulevard and Highland Drive projects take place first (Class III). Impacts are less than significant (Class III).
### Intersection Operations

Table 6.12 compares the Baseline and Baseline + Project levels of service for the A.M. and P.M. peak hour periods.

#### Table 6.12. Baseline and Baseline + Project Intersection Levels of Service

<table>
<thead>
<tr>
<th>Intersection</th>
<th>A.M. Peak Hour</th>
<th>P.M. Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline Delay/LOS</td>
<td>Baseline + Project Delay/LOS</td>
</tr>
<tr>
<td>Santa Rosa Street (SR 1)/Highland Drive</td>
<td>7.4/LOS A</td>
<td>7.6/LOS A</td>
</tr>
<tr>
<td>Santa Rosa Street (SR 1)/Foothill Boulevard</td>
<td>16.0/LOS B</td>
<td>16.5/LOS B</td>
</tr>
<tr>
<td>California Boulevard/Foothill Boulevard</td>
<td>17.8/LOS B</td>
<td>18.3/LOS B</td>
</tr>
<tr>
<td>California Boulevard/Taft Street</td>
<td>14.0/LOS B</td>
<td>14.2/LOS B</td>
</tr>
<tr>
<td>California Boulevard/U.S. 101 N B Ramps</td>
<td>15.5/LOS C</td>
<td>15.9/LOS C</td>
</tr>
<tr>
<td>So. Perimeter Road/Grand Avenue</td>
<td>8.8/LOS A</td>
<td>9.1/LOS A</td>
</tr>
<tr>
<td>Grand A venue/Slack Street</td>
<td>10.2/LOS B</td>
<td>10.5/LOS B</td>
</tr>
<tr>
<td>Grand A venue/U.S. 101 N B Off-Ramp-Cбот</td>
<td>12.7/LOS B</td>
<td>13.2/LOS B</td>
</tr>
<tr>
<td>Grand A venue/Monterey Street</td>
<td>12.5/LOS B</td>
<td>12.3/LOS B</td>
</tr>
</tbody>
</table>

*a* Levels of service based on average seconds of delay per vehicle.

The data presented in Table 6.12 indicate that all of the Cal Poly-area intersections are forecast to operate at acceptable levels based on City criteria. The Master Plan roadway network changes would also improve operations at the South Perimeter Road/Grand Avenue intersection and at the Grand Avenue/Slack Street intersection. The intersections in the California Boulevard corridor are forecast to operate at acceptable levels of service with the forecast volumes (Class III).

#### Public Transit

Currently most on-campus bus stops are located on South Perimeter Road and Grand Avenue. The expected closure of South Perimeter would necessitate alternative shuttle or bus stop locations. It is recommended that on-campus transit facilities operate from centralized hub locations, preferably at the primary campus centers (primary campus activity center, Northwest Satellite Center, Northeast Satellite Center and the Residential Centers). The Master Plan specifies continued work with SLO Transit (City operated local bus service) and CCAT (Central Coast Area Transit) to develop the transit plan for the campus.

According to the city, buses serving off-campus residential areas are often beyond capacity and must leave riders at the curb. Because proposed enrollment increases associated with the Master Plan would be housed on-campus, ridership during peak hours is not expected to increase substantially. Staff and faculty increases will be addressed by policies contained in the Master Plan (mentioned above), which specify that the University will develop long and short range plans for transit service to the University. Given that enrollment will increase gradually over the next ten years, transit modifications can be put in place.

Any reduction in financial incentives for the student and staff use of bus services will have a negative effect on the use of transit.

The Master Plan identifies the need for a shuttle service that would provide frequent on-campus service between housing and instructional areas. The traffic engineer further recommends that the shuttle provide access to and from the off-campus areas within a one-mile radius (approximate) in order to make the Master
Plan traffic and parking reduction strategies successful. Impacts to transit from the Master Plan are considered less than significant (Class III).

Parking

Master Plan Parking Supply

Table 6.13 summarizes the parking supply statistics proposed in the Master Plan. The spaces lost by the campus redevelopment are shown as a negative number. The table has been modified to reflect the completion of Parking Structure I.

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Parking Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Surface Parking Spaces</td>
<td>5,802</td>
</tr>
<tr>
<td>Current Parking Structure 1</td>
<td>+ 931</td>
</tr>
<tr>
<td>Lost Spaces</td>
<td>-3,185</td>
</tr>
<tr>
<td>Absorbed Redevelopment Areas</td>
<td>+ 700</td>
</tr>
<tr>
<td>Absorbed Housing Areas</td>
<td>+ 300</td>
</tr>
<tr>
<td>Parking Structure P1</td>
<td>+ 1,236</td>
</tr>
<tr>
<td>Parking Structure P2</td>
<td>+ 700</td>
</tr>
<tr>
<td>Surface Lots</td>
<td>+ 700</td>
</tr>
<tr>
<td><strong>Total Future Supply</strong></td>
<td><strong>7,184</strong></td>
</tr>
<tr>
<td><strong>Net Increase</strong></td>
<td><strong>1,382</strong></td>
</tr>
</tbody>
</table>

Master Plan Parking Demands

Table 6.14 shows the parking demand analysis completed for the Master Plan. The parking demands were forecast assuming the increase in students, faculty and staff proposed under the Master Plan. The data presented in the table also accounts for the decrease in existing and future parking demands associated with implementation of the policies and TDM trip reductions provided for in the Master Plan. These policy guidelines include implementation of on-campus parking restrictions for resident freshman (limiting permits issued to freshman), commuter control measures restricting parking permits for students that live within a certain distance of the campus; implementation of a transit/shuttle service or another alternative transportation mode to serve key campus areas and continuation of the successful faculty/staff incentives already in-place to promote car-pooling, van-pooling, bicycle use, telecommuting, etc. for new campus personnel. Parking supply and demand calculation worksheets are included in the Appendix for reference.
**Table 6.14. Master Plan Parking Demands**

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Parking Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Demands</td>
<td>5,692</td>
</tr>
<tr>
<td>Interim Dorms/Structure Projects</td>
<td>+277</td>
</tr>
<tr>
<td>Future Upper division students (80% Permits)</td>
<td>+2,000</td>
</tr>
<tr>
<td>Future Freshman (60% Permits)</td>
<td>+300</td>
</tr>
<tr>
<td>Future Faculty/Staff (85% Peak Demand)</td>
<td>+425</td>
</tr>
<tr>
<td><strong>Subtotal Future Demand</strong></td>
<td>8,694</td>
</tr>
<tr>
<td>Freshman Restrictions</td>
<td>-1,200</td>
</tr>
<tr>
<td>Commuter Students</td>
<td>-650</td>
</tr>
<tr>
<td>Faculty/Staff TDM Measures</td>
<td>-150</td>
</tr>
<tr>
<td><strong>Subtotal Future Reductions</strong></td>
<td>-2,000</td>
</tr>
<tr>
<td><strong>TOTAL FUTURE DEMAND</strong></td>
<td>6,694</td>
</tr>
</tbody>
</table>

Table 6.15 summarizes the future parking supply and demand forecasts for the Master Plan. As shown, the Master Plan parking supply is forecast to accommodate future demands. Therefore, parking impacts would be less than significant (Class III).

**Table 6.15. Future Parking Conditions Summary**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Spaces Supplied</th>
<th>Peak Demand</th>
<th>Percent Occupancy</th>
<th>Reserve Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Conditions</td>
<td>5,802</td>
<td>5,692</td>
<td>98.1%</td>
<td>110</td>
</tr>
<tr>
<td>Existing + Parking Structure I</td>
<td>6,733</td>
<td>5,969</td>
<td>88.7%</td>
<td>764</td>
</tr>
<tr>
<td>Master Plan</td>
<td>7,184</td>
<td>6,694</td>
<td>93.2%</td>
<td>490</td>
</tr>
</tbody>
</table>

**Cumulative Traffic Analysis**

ATE analyzed cumulative traffic levels as part of the Parking and Traffic Study. The study incorporated traffic expected from approved and pending development in the City of San Luis Obispo and enrollment increases at Cuesta College into projected traffic levels resulting from the implementation of the Master Plan. The list of pending development can be found in Appendix C, projects is outlined in Table 6.16.

**Table 6.16. Pending Projects Included in Cumulative Analysis**

<table>
<thead>
<tr>
<th>(Planning Log #) - Project Description</th>
<th>ADT</th>
<th>A.M. Trips</th>
<th>P.M. Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. (1-00) SLO Senior Housing - 19 unit complex</td>
<td>66</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2. (9-00) Apple Farm - 58 room hotel</td>
<td>477</td>
<td>33</td>
<td>36</td>
</tr>
<tr>
<td>3. (11-99) SLO Housing - 11-unit apartments</td>
<td>73</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>4. (12-98) 8,437 SF office project</td>
<td>93</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>5. (17-98) a Gas station remodel w/new convenience mart</td>
<td>169</td>
<td>92</td>
<td>122</td>
</tr>
<tr>
<td>6. (21-00) 2-Story 14.5 KSF commercial building</td>
<td>590</td>
<td>55</td>
<td>62</td>
</tr>
<tr>
<td>7. (32-00) a 2,047 SF am/pm w/6 pump stations</td>
<td>1,259</td>
<td>41</td>
<td>46</td>
</tr>
<tr>
<td>8. (38-00) 4,319 SF office/retail building</td>
<td>113</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>9. (75-00) Expand exist. Motel by 15-units</td>
<td>123</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>10. (90-99) 9,925 SF Office building</td>
<td>109</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>11. (93-99) Child care center - 6,240 SF</td>
<td>203</td>
<td>36</td>
<td>39</td>
</tr>
<tr>
<td>12. (97-99) New 20 KSF office building</td>
<td>220</td>
<td>31</td>
<td>30</td>
</tr>
</tbody>
</table>
### Table 6.17 - Project Description

<table>
<thead>
<tr>
<th>Project Description</th>
<th>A.M. Trips</th>
<th>P.M. Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. (114-99) 5,300 SF Expansion school facilities</td>
<td>290</td>
<td>19</td>
</tr>
<tr>
<td>14. (120-98) 6,000 SF Bank Building</td>
<td>939</td>
<td>24</td>
</tr>
<tr>
<td>15. (138-98) Gas station w/convenience Store - 12 pumps</td>
<td>2,604</td>
<td>82</td>
</tr>
<tr>
<td>16. (146-98) 10-Single Family Homes</td>
<td>96</td>
<td>8</td>
</tr>
<tr>
<td>17. (152-99) New 7,876 SF Office Building</td>
<td>91</td>
<td>14</td>
</tr>
<tr>
<td>18. (153-98) Mall Redevelopment - Replace 150 KSF Retail Space (assume 70% existing vacancy rate)</td>
<td>4,270</td>
<td>0</td>
</tr>
<tr>
<td>19. (156-98) New Motel - 74 Units</td>
<td>609</td>
<td>41</td>
</tr>
<tr>
<td>20. (165-98) 8,750 SF Office Complex</td>
<td>96</td>
<td>14</td>
</tr>
<tr>
<td>21. (176-97) 13 KSF Car Dealership</td>
<td>488</td>
<td>29</td>
</tr>
<tr>
<td>22. (192-99) Housing complex - 8 apartments - 8 double-occ. du?</td>
<td>107</td>
<td>8</td>
</tr>
<tr>
<td>23. (207-98) New Hotel - 25 rooms</td>
<td>206</td>
<td>14</td>
</tr>
<tr>
<td>24. (067-121-022) Marketplace Project - 500 KSF Retail</td>
<td>16,202</td>
<td>389</td>
</tr>
<tr>
<td>25. Cuesta College - 2,300 student enrollment increase</td>
<td>3,680</td>
<td>115</td>
</tr>
<tr>
<td>26. (217-98) 1,787 SF Convenience store to replace existing pumps (3-bays removed)</td>
<td>618</td>
<td>15</td>
</tr>
</tbody>
</table>

* Pass-by reduction included in calculations

Table 6.17 shows the Cumulative and Cumulative + Project traffic volume forecasts and levels of service. The data presented in the table show that all of the Cal Poly-area roadway segments are forecast to operate within their respective design capacities with Cumulative and Cumulative + Project traffic except for Santa Rosa - South. The levels of service shown for the southern segment of Santa Rosa Street and the section of Foothill Boulevard adjacent to the campus are forecast at LOS E based on standard engineering design capacities, which are “rules-of-thumb” influenced by many factors. Intersections are the primary controlling factor on arterial roadways such as Santa Rosa Street and Foothill Boulevard. The cumulative intersection analysis below finds that intersections within these corridors are forecast to operate at LOS C - D or better during peak periods, indicating relatively good operations for the roadway. Cumulative roadway impacts would therefore be less than significant (Class III).

### Table 6.17 - Cumulative Roadway Volumes

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Roadway Type</th>
<th>Cumulative ADT</th>
<th>Project Added ADT</th>
<th>Cumulative + Project ADT</th>
<th>Roadway LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grand Ave</td>
<td>4-Lane Res. A rt.</td>
<td>14,100 ADT</td>
<td>1,485 ADT</td>
<td>15,735 ADT</td>
<td>LOS A</td>
</tr>
<tr>
<td>California Blvd</td>
<td>2-Lane Res. A rt.</td>
<td>17,100 ADT</td>
<td>1,870 ADT</td>
<td>18,970 ADT</td>
<td>LOS D</td>
</tr>
<tr>
<td>Highland Dr</td>
<td>2-Lane Arterial</td>
<td>6,900 ADT</td>
<td>935 ADT</td>
<td>7,835 ADT</td>
<td>LOS A</td>
</tr>
<tr>
<td>Foothill Blvd</td>
<td>2-Lane Arterial</td>
<td>10,700 ADT</td>
<td>21,800 ADT</td>
<td>11,635 ADT</td>
<td>LOS A</td>
</tr>
<tr>
<td>Santa Rosa - North</td>
<td>4-Lane Highway</td>
<td>27,500 ADT</td>
<td>390 ADT</td>
<td>27,890 ADT</td>
<td>LOS A</td>
</tr>
<tr>
<td>Santa Rosa - South</td>
<td>4-Lane Arterial</td>
<td>38,100 ADT</td>
<td>755 ADT</td>
<td>38,855 ADT</td>
<td>LOS B</td>
</tr>
</tbody>
</table>

### Cumulative Intersection Operations

Table 6.18 summarizes the Cumulative and Cumulative + Project level of service forecasts. As shown, two of the Cal Poly-area intersections are forecast to operate below acceptable levels (based upon City Standards) under Cumulative + Project conditions. Both the California Boulevard/Taft Street and California Boulevard/U.S. 101 northbound ramps intersections are forecast to operate at LOS E during the P.M. peak hour under Cumulative + Project conditions. Mitigation is recommended to reduce these impacts.
Table 6.18. Cumulative and Cumulative + Project Intersection Levels of Service

<table>
<thead>
<tr>
<th>Intersection</th>
<th>A.M. Peak Hour</th>
<th>P.M. Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cumulative</td>
<td>Cumulative</td>
</tr>
<tr>
<td></td>
<td>Delay/LOS A</td>
<td>Delay/LOS A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>plus LOS A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>plus LOS C</td>
</tr>
<tr>
<td>Santa Rosa Street (SR 1)/Highland Drive</td>
<td>7.8/LOS A</td>
<td>7.9/LOS A</td>
</tr>
<tr>
<td></td>
<td>12.9/LOS B</td>
<td></td>
</tr>
<tr>
<td>Santa Rosa Street (SR 1)/Foothill Boulevard</td>
<td>16.8/LOS B</td>
<td>16.8/LOS B</td>
</tr>
<tr>
<td>California Boulevard/Foothill Boulevard</td>
<td>19.216.3/LOS B</td>
<td>16.819.8/LOS B</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>California Boulevard/Taft Street</td>
<td>15.0/LOS B</td>
<td>15.3/LOS C</td>
</tr>
<tr>
<td>California Boulevard/U.S. 101 north bound</td>
<td>18.1/LOS C</td>
<td>18.5/LOS C</td>
</tr>
<tr>
<td>Ramps</td>
<td>36.5/LOS E</td>
<td></td>
</tr>
<tr>
<td>So. Perimeter Road/Grand A venue</td>
<td>8.4/LOS A</td>
<td>8.7/LOS A</td>
</tr>
<tr>
<td>Grand A venue/Slack Street</td>
<td>10.4/LOS B</td>
<td>10.6/LOS B</td>
</tr>
<tr>
<td>Off-Ramp-A bbott</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grand A venue/Monterey Street</td>
<td>12.1/LOS B</td>
<td>11.8/LOS B</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Levels of service based on average seconds of delay per vehicle.

Mitigating Measures

Although campus-area roadways and intersections are forecast to operate at acceptable levels under implementation of the Master Plan, the following recommendations by the traffic engineer are included in the Master Plan to increase efficiency:

**Mount Bishop Road/Highland Drive.** This location will need to have all-way stop-control removed at some time prior to full implementation of the Master Plan. The delay on Highland Drive will increase due to directional peak traffic flows as future volumes are realized. Further study would need to be completed at this location to determine the appropriate traffic control measure for implementation. Implementation of traffic signals or possibly a roundabout at this location would be dependent upon roadway slopes, intersection geometry and future traffic volumes.

**California Boulevard/Highland Drive.** The extension of California Boulevard to Highland Drive would result in a new at-grade three-way intersection. Monitoring the intersection’s operation during the course of Master Plan implementation will be required to determine the appropriate traffic control device. The A.M. and P.M. peak hour traffic volumes associated with the Baseline + Project scenarios, as well as the intersection geometrics (T-configuration) suggest a likely location for traffic signal control.

**Via Carta/Highland Drive.** Via Carta north of its intersection with Highland Drive will need to be widened to Master Plan specifications to accommodate vehicular and pedestrian traffic associated with the new residential and parking areas. The new intersection, with the extension of Highland Drive, should be monitored during the course of Master Plan implementation to determine if signalization is necessary. Due to the slope of Via Carta, a roundabout design at this location would not be recommended.

The following mitigation measure has been added to reinforce the need for improved transit and reduced parking:
Cal Poly will institute the following measures, or measures achieving equivalent results, in order to meet its stated policy of 2,000 parking space reduction, in addition to improving circulation on local streets.

**Managing Parking and Vehicle Trips on Campus**

<table>
<thead>
<tr>
<th>Freshmen restrictions</th>
<th>Bike/pedestrian enhancement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geographic controls</td>
<td>Continued bus subsidy</td>
</tr>
<tr>
<td>Car/vanpools</td>
<td>Faculty/Staff incentives</td>
</tr>
<tr>
<td>Parking Fee increases</td>
<td>Entertainment/services on campus</td>
</tr>
<tr>
<td>On-campus shuttle</td>
<td>Modified enrollment scenarios</td>
</tr>
<tr>
<td>City transit improvements</td>
<td>Remote parking</td>
</tr>
</tbody>
</table>

**Cumulative Impacts**

**California Boulevard/Taft Street.** The peak hour traffic forecasts meet traffic signal warrants (signal warrant calculations are provided in the technical appendix). Installation of traffic signals would provide for LOS B-C operations during the P.M. peak hour under Cumulative + Project conditions (LOS calculations are provided in the technical appendix for reference).

**California Boulevard/U.S. 101 north bound Ramps.** The peak hour traffic forecasts meet warrants for consideration of traffic signals (signal warrant calculations are provided in the technical appendix). Installation of traffic signals would provide LOS B-C operations during the P.M. peak hour under Cumulative + Project conditions (LOS calculations are provided in the technical appendix for reference).

**Residual Impacts**

Residual impacts would be less than significant (Class III).
AIR QUALITY

The following section analyzes the impacts to air quality associated with the implementation of the Master Plan.

Existing Conditions

Meteorology

Airflow plays an important role in the movement and dispersion of air pollutants in the San Luis Obispo region. The speed and direction of local winds are controlled by 1) the location and strength of the Pacific High pressure system and other global patterns, 2) topographical factors, and 3) circulation patterns resulting from temperature differences between the land and sea.

During the spring and summer, when the Pacific High attains its greatest strength, onshore winds from the northwest generally prevail during the day. As evening approaches, onshore winds die down, and the wind direction reverses with weak winds flowing down the coastal mountains and valleys to form light easterly breezes.

In the fall, onshore surface winds decline and the marine layer grows shallow, allowing an occasional reversal to a weak offshore flow. This along with the diurnal alteration of land-sea breeze circulation can sometimes produce a “sloshing” effect. Under such conditions, pollutants may accumulate over the Pacific Ocean and subsequently be carried back onshore with the return of sea breezes.

In the atmosphere, air temperatures normally decrease as altitude increases. At varying distances above the earth’s surface, however, a reversal of this temperature gradient can occur. Such a condition, which is called an inversion, is simply a warm layer of air over a layer of cooler air. Inversions can have the effect of limiting the vertical dispersion of air pollutants, trapping them near the earth’s surface.

Several types of inversions are common to the San Luis Obispo area. Weak surface inversions are caused by radiational cooling of air in contact with the cold earth surface at night. In valleys and low-lying areas, this condition is intensified by the addition of cold air flowing down from hills and pooling on valley floors. Surface inversions are common throughout the County during winter months, particularly on cold mornings. As the morning sun warms the earth and air near the ground, the inversion lifts, gradually dissipating throughout the day.

During the summer, subsidence inversions can occur when the summertime presence of the Pacific high-pressure cell can cause the air mass aloft to sink. As the air descends, compressional heating warms the air to a higher temperature than the air below. This highly stable atmospheric conditioning can act as a nearly impenetrable lid to the vertical mixing of pollutants. Subsidence inversions can persist for one or more days, causing air stagnation and the buildup of pollutants.

Effects of Air Pollution

The primary chemical compounds that are considered pollutants emitted into or formed in the atmosphere include ozone ($O_3$), oxides of nitrogen ($NO_x$), sulfur dioxide ($SO_2$), hydrocarbons (HC), carbon monoxide (CO), and respirable particulate matter (PM or PM$_{10}$).

Ozone is formed in the atmosphere through a complex series of chemical reactions generally requiring light as an energy source. Ozone is a pungent, colorless gas that is strong irritant and attacks the respiratory system. Respiratory and cardiovascular diseases are aggravated by exposure to ozone. A healthy person exposed to high concentrations of ozone may experience nausea, dizziness, and burning in the chest. Ozone also damages crops and other vegetation.
Oxides of nitrogen that are considered pollutants include nitric oxide (NO) and nitrogen dioxide (NO$_2$). NO is colorless and odorless and is generally formed by combustion processes combining atmospheric oxygen and nitrogen. NO$_2$ is a reddish-brown irritating gas formed by the combination of NO and oxygen in the atmosphere or at the emission source. Both NO and NO$_2$ are considered ozone precursors because they react with hydrocarbons and oxygen to produce ozone. Exposure to NO$_2$ may increase the potential for respiratory infections in children and cause difficulty in breathing even among healthy persons and especially among asthmatics.

Sulfur dioxide is a colorless, pungent, irritating gas that affects the upper respiratory tract. Sulfur dioxide may combine with particulate matter and settle in the lungs, causing damage to lung tissues. Sulfur dioxide may combine with water in the atmosphere to form sulfuric acid that may fall as acid rain, damaging vegetation.

Hydrocarbons include a variety of compounds containing hydrogen and carbon. Many hydrocarbons, known as reactive organic compounds (ROC), react with NO and NO$_2$ to form ozone. Generally, ambient hydrocarbon concentrations do not cause direct adverse health effects, but result in ozone formation.

Carbon monoxide is a colorless, odorless gas generally formed by incomplete combustion of hydrocarbon-containing fuels. Carbon monoxide does not irritate the respiratory tract, but does interfere with the ability of blood to carry oxygen to vital tissues.

Particulate matter consists of a variety of particle sizes and composition. Generally, particles less than 10 microns (PM$_{10}$) are considered to be pollutants because they accumulate in the lung tissues and may contain toxic materials which can be absorbed into the system.

**Regulatory Setting**

Air pollution control in San Luis Obispo County is administered on three governmental levels. The United States Environmental Protection Agency (EPA) has jurisdiction under the Federal Clean Air Act to develop Federal air quality standards and require individual states to prepare State Implementation Plans (SIPs) to attain these standards.

The California Environmental Protection Agency, Air Resources Board (ARB) has jurisdiction under the California Health and Safety Code and the California Clean Air Act to develop California air quality standards. They also require regional plans to attain these standards, and coordinate the preparation of plans by local air districts. ARB is also responsible for the development of state emission standards for mobile and stationary emission sources.

The San Luis Obispo County Air Pollution Control District (APCD) shares responsibility with the ARB for ensuring that all State and Federal ambient air quality standards are attained within the County. The APCD has jurisdiction under the California Health and Safety Code to develop emission standards for the County, issue air pollution permits, and require emission controls for stationary sources in the County. The APCD is also responsible for the attainment of State and Federal standards in the County.

**Air Quality Standards**

Air quality standards are specific concentrations of pollutants that are used as thresholds to protect public health and the public welfare. The U.S. Environmental Protection Agency (EPA) has developed two sets of standards; one to provide an adequate margin of safety to protect human health and the second to protect the public welfare from any known or anticipated adverse effects. At this time, sulfur dioxide is the only pollutant for which the two standards differ.
ARB has developed air quality standards for California, which are generally lower in concentration than the Federal standards. California standards exist for O$_3$, CO, PM$_{10}$, visibility, sulfates, lead, hydrogen sulfide and vinyl chloride.

In July 1997, EPA implemented new health-based ozone and PM standards. The new Federal ozone standard is based on a longer averaging period (8-hour vs. 1-hour), recognizing that prolonged exposure is more damaging. The new Federal PM standard is based on finer particles (2.5 microns and smaller vs. 10 microns and smaller), recognizing that finer particles may have a higher residence time in the lungs and cause greater respiratory illness. The U.S. Court of Appeals for the District of Columbia has since reached a decision to prohibit EPA from enforcing the 8-hour ozone standard. Table 6.19 lists the applicable State and Federal standards.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Average Time</th>
<th>State Standard</th>
<th>Federal Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>1-Hour</td>
<td>0.09 ppm</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>8-Hour</td>
<td>--</td>
<td>0.08 ppm</td>
</tr>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>1-Hour</td>
<td>20 ppm</td>
<td>35 ppm</td>
</tr>
<tr>
<td></td>
<td>8-Hour</td>
<td>9.0 ppm</td>
<td>9.0 ppm</td>
</tr>
<tr>
<td>Nitrogen Dioxide (NO$_2$)</td>
<td>1-Hour</td>
<td>0.25 ppm</td>
<td>--</td>
</tr>
<tr>
<td>Inhalable Particulate Matter (PM$_{2.5}$)</td>
<td>24-Hour Annual Arithmetic Mean</td>
<td>--</td>
<td>50 ug/m$^3$</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15 ug/m$^3$</td>
</tr>
<tr>
<td>Inhalable Particulate Matter (PM$_{10}$)</td>
<td>24-Hour Annual Geometric Mean Annual Arithmetic Mean</td>
<td>50 ug/m$^3$</td>
<td>150 ug/m$^3$</td>
</tr>
<tr>
<td>Sulfur Dioxide (SO$_2$)</td>
<td>24-Hour</td>
<td>0.04 ppm</td>
<td>0.14 ppm</td>
</tr>
</tbody>
</table>

**Air Quality Management**

The 1988 California Clean Air Act (CAA) requires all air pollution control districts and air quality management districts in the state to adopt and enforce regulations to achieve and maintain air quality that is within the State air quality standards. Based on a design value of 0.10 ppm ozone (1-hour), San Luis Obispo County has been declared a “moderate” nonattainment area for the State ozone standard. The County did not meet the December 31, 1997 deadline to attain the State 1-hour ozone standard; therefore, it should have reclassified as a “serious” nonattainment area. However, the ARB determined that a change in classification would not result in a more expeditious attainment of the standard. The County is also considered a nonattainment area for the State PM$_{10}$ standard.

In response to the requirements of the CAA, the San Luis Obispo County A PCD prepared the 1991 Clean Air Plan (CAP) to provide a framework for the attainment of State air quality standards by the earliest practicable date. The CAP is a comprehensive document, intended to facilitate attainment and maintenance of the State ozone standard. The 1995 CAP was developed as a comprehensive update to the 1991 CAP and was expected to bring the County into attainment of the State ozone standard by the end of 1997.

The 1995 CAP described the pollutants that effect County air quality, the sources of those pollutants, and future year emissions that are anticipated under current growth trends. Based on this information, the 1995 CAP also provides a control strategy for reducing emissions of ozone precursors. Included in the 1995 CAP are a number of land use and circulation management policies and programs that have already been implemented to reduce vehicular emissions. Additional measures recommended for adoption include trip reduction programs and telecommuting.

A second update to the 1991 CAP was developed in 1998, as a continuation of the 1995 CAP. The 1998 CAP proposes no adoption of new control measures. The 1998 CAP is expected to bring the County into attainment with the State 1-hour ozone standard by 2003.
Overall, full implementation of the control measures contained in the 1995 CAP will result in a 33 percent reduction in ROG emissions and a 45 percent reduction in NO\textsubscript{x} emissions compared to 1991 levels. These reductions are in excess of those required by the CAA, but appear to be necessary to attain the State ozone standard by the year 2003.

San Luis Obispo County is in attainment of the Federal standards and is not subject to the planning requirements of the Federal Clean Air Act.

**Baseline Air Quality**

San Luis Obispo County has been identified as a non-attainment area for both ozone (1-hour standard) and PM\textsubscript{10} by the ARB (California state air quality standards are generally stricter than federal standards). Draft recommendations as to the attainment status of the County relative to the Federal 8-hour ozone standard were issued by the ARB on April 28, 1999. San Luis Obispo County is considered “too close to call” by ARB, and the air quality monitoring results of the 1999 ozone season will determine the attainment status. Maximum concentrations of other criteria pollutants are currently within federal and state standards.

Air quality in San Luis Obispo County is currently monitored at eight public agency and private sector monitoring stations located throughout the County. The nearest station is located on Marsh Street in the City of San Luis Obispo, approximately two miles south of campus. This station monitors ozone, CO, NO\textsubscript{2}, SO\textsubscript{2}, and PM\textsubscript{10} levels. Table 6.20 presents the maximum pollutant concentrations that were recorded at this station from 1996 through 1998. Maximum ozone levels have not exceeded the State standard at the San Luis Obispo station since 1989.

<table>
<thead>
<tr>
<th>Table 6.20. Air Quality Standards Exceedance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ozone (ppm)</strong></td>
</tr>
<tr>
<td>Worst Hour</td>
</tr>
<tr>
<td>Number of State Exceedances (Days &gt; 0.09 ppm)</td>
</tr>
<tr>
<td>Number of Federal Exceedances (Days &gt; 0.12 ppm)</td>
</tr>
<tr>
<td><strong>Carbon Monoxide (ppm)</strong></td>
</tr>
<tr>
<td>Worst Hour</td>
</tr>
<tr>
<td>Number of State Exceedances (Hours&gt;20 ppm)</td>
</tr>
<tr>
<td>Number of State Exceedances (8 hours&gt;9 ppm)</td>
</tr>
<tr>
<td><strong>Nitrogen Dioxide (ppm)</strong></td>
</tr>
<tr>
<td>Worst Hour</td>
</tr>
<tr>
<td>Number of State Exceedances (Hours&gt;0.25 ppm)</td>
</tr>
<tr>
<td><strong>PM\textsubscript{10} (micrograms/cubic meter)</strong></td>
</tr>
<tr>
<td>Worst Sample</td>
</tr>
<tr>
<td>Number of State Exceedances (Samples&gt;50)</td>
</tr>
<tr>
<td>Annual Geometric Mean (Standard is 30)</td>
</tr>
<tr>
<td>Annual Arithmetic Mean (Standard is 50)</td>
</tr>
</tbody>
</table>

Source: California Air Resources Board (www.arb.ca.gov)

There was an additional station installed as mitigation for the Grand Avenue Parking Structure in 1999, which has recorded baseline (ambient) CO levels for three months. The station will continue to monitor air quality for a year after the structure opens. Monthly high CO levels at this station were 2.1 ppm and 2.8 ppm for the months of November 1999 and December 1999, respectively, well within the APCD thresholds.
High ozone levels in San Luis Obispo County have occasionally been traced to air pollutants transported from other air basins, such as the South Coast Air Basin, the San Francisco Bay Area, and the San Joaquin Valley. The frequency with which long-range transport of pollutants affects local air quality has not been definitively established. However, most exceedances of the State ozone standard measured in the County are the result of local emissions and adverse meteorology.

**Significance Thresholds**

The San Luis Obispo Air Pollution Control District (APCD) sets standards and guidelines for the assessment of environmental impact from construction and operation of projects. The following analysis is consistent with guidelines and significance thresholds developed by the APCD and contained within the CEQA Air Quality Handbook (San Luis Obispo County APCD, 1995). Specifically, Master Plan emissions are considered significant impacts if any of the following thresholds are exceeded:

**Operational Impacts:**

- Reactive Organic Gases (ROG), NO\textsubscript{X}, SO\textsubscript{2}, PM\textsubscript{10}: 10 lbs/day
- CO: 50 lbs/day

The APCD requires more stringent environmental review requirements for projects exceeding 25 lbs/day of ROG, NO\textsubscript{X}, SO\textsubscript{2} and PM\textsubscript{10} emissions, or 550 lbs/day CO emissions.

**Consistency with the Clean Air Plan (CAP)**

Determining consistency with the adopted Clean Air Plan more appropriately assesses air quality impacts associated with the adoption of a plan or program. Projects deemed inconsistent with the CAP are considered significant.

**Impacts**

**Operational Impacts (General)**

The net new square footage and vehicle trips expected under the Master Plan were put into the URBEMIS7G air quality model to determine the potential operational emissions. Model calculation sheets and assumptions are attached as Appendix D.

<table>
<thead>
<tr>
<th>Unmitigated Operational Air Quality Emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unmitigated Emissions (lbs./day)</td>
</tr>
<tr>
<td>Operational (Vehicle)</td>
</tr>
<tr>
<td>Residential</td>
</tr>
<tr>
<td>Total (lbs./day)</td>
</tr>
<tr>
<td>Threshold</td>
</tr>
<tr>
<td>Significant?</td>
</tr>
</tbody>
</table>

| Stationary |
| Natural Gas | 0.83 | 10.7 | 4.6 | 0.002 |
| Landscaping | 0.27 | 0.01 | 1.79 | 0.01 |
| Total | 1.1 | 10.71 | 6.39 | 0.012 |
| Threshold | 10 | 10 | 50 | 10 |
| Significant? | No | Yes | No | No |
Mitigation incorporated into the Master Plan through specific policies and programs will reduce traffic-related impacts to a less than significant level. Examples of these policies include:

- Housing all new enrollment on campus
- Increasing student services on campus to reduce the need for off-campus trips
- Enhanced transit services
- Improved bike and pedestrian pathways
- Restricting freshman automobile use
- Improved parking efficiency

Mitigation is recommended to reduce stationary source emissions to a less than significant level (Class III). Mitigation has been added to the circulation section above to reinforce the Master Plan’s objectives for lowering vehicle trips and reducing parking demand. This mitigation will reduce air quality impacts as well.

Parking Structures

Components of the Master Plan most likely to result in operational air quality impacts are the parking structures. One of the significant impacts cited in the 1998 EIR for the first parking structure was air quality, specifically, potential emissions of carbon monoxide (CO) at levels in excess of current standards. Pursuant to mitigation prescribed in the EIR, air quality monitoring for CO levels is taking place at a station near the parking structure. Monitoring will continue for the first year of operation of the structure in order to evaluate compliance with air quality regulations.

Mitigation measures that modify the operations of the garages may be required to maintain the levels below the APCD thresholds. Data from the monitoring of the existing parking structure will be used to evaluate the likely performance and efficient design of the new structures.

Off-campus Housing

The APCD CEQA Handbook states that generally, a minimum of 35 units of single-family residential development is required before the emissions standards are exceeded. As many as 85 units can be developed with mitigation incorporated before impacts are unavoidable. PM10 thresholds are generally exceeded where greater than 4 acres of ground will be graded.

The type and size of the off-campus housing projects is not yet known. Standard measures identified in the Construction Impacts section would mitigate any potential construction impacts if size thresholds are exceeded. It is unlikely that the size of the project will generate operational emissions at a significant level. Residual impacts would likely be less than significant (Class III); however, studies should be completed for the off-campus housing projects prior to construction.

Corporation Yards

The corporation yards will have truck, tractor and other larger equipment activity. According to the APCD CEQA Handbook, light industrial uses such as the corporation yards generally require 9.8 acres in size before operational emissions reach significant levels. The proposal to relocate the corporation yards in the Master Plan, therefore, is considered less than significant (Class III).
**Consistency with the Clean Air Plan (CAP)**

Consistency with the CAP is determined by answering the following questions, which are provided in the APCD CEQA Handbook (1997):

- Are the population projections used in the plan equal to or less than those used in the most recent CAP for the same area?
- Is the rate of increase in vehicle trips and miles traveled less than or equal to the rate of population growth for the same area?
- Have all applicable land use and transportation control measures from the CAP been included in the plan to the maximum extent feasible?

**Master Plan Response.** The attainment planning projections contained in the CAP include population projections for the City of San Luis Obispo, on-campus student housing at Cal Poly and the county at large. Projected growth within the City of San Luis Obispo is governed by the General Plan, which designates a growth rate of 1% per year. Cal Poly, under the Master Plan, will grow over the next twenty years at a rate of approximately 1.5 percent per year.

The Master Plan projects population growth of 3,000 students and 465 staff over the next twenty years. Projected growth is based partially in response to estimated state growth rates and mandates of the California State University system to provide access to the top one-third of the students graduating from high school in the state. Therefore, growth at the University is largely a response to the University's fair share burden of growth statewide, as opposed to the University growing disproportionately to the rest of the community.

Because the District's attainment planning efforts include projections of future county-wide population levels, land use decisions with the potential to significantly exceed these projections may impede attainment of the State air quality standards or result in a reclassification of the County to a more severe attainment designation. The 1998 CAP projects a 33% increase in countywide population between 1990 and 2010, for an annual average increase of 1.6 percent per year. Under the Cal Poly Master Plan, campus growth will increase over the next twenty years at a rate of 1.5% per year. Since the university's population growth over the next twenty years is not anticipated to exceed countywide growth rates, the Cal Poly Master Plan is considered consistent with the latest CAP.

In addition, the Master Plan absorbs the growth by providing on-campus housing, reducing impacts to the community and reducing vehicle trips to campus. In response to the second criterion for consistency, therefore, the rate of vehicle miles traveled per student will decline under the Master Plan. The greater emphasis on a residential student body and provision of additional services on campus, along with parking permit restrictions, will enable the University to decrease the average vehicle ridership and trip rate.

In addition to parking restrictions and a shift to increased residents on campus, the Master Plan identifies several measures to reduce trips to and from campus. Improved physical access to transit and continued ridership, improved pedestrian walkways and bike access and freshman vehicle restrictions will all help to maintain Cal Poly's admirably high average vehicle ridership. Given the efforts of Cal Poly to absorb anticipated growth and reduce traffic impacts while emphasizing alternative transportation, this analysis finds the Master Plan consistent with the goals and policies of the CAP.

**Mitigating Measures**

**Construction**

Mitigation measures for construction related air quality impacts are contained in the last section of this chapter.
Operational Emissions

Stationary source emissions. Cal Poly shall implement the following or similar A PCD-approved energy-reducing measures to reduce stationary source emissions:

- Shade tree planting along the southern exposures of buildings
- Building orientation to take advantage of natural light and heating and cooling

Traffic

As discussed above, a number of policies in the Master Plan will reduce the potential for impacts to air quality.

Parking Structures

The following measure shall be implemented to reduce CO hotspot impacts to the extent feasible.

Design. The structures shall be designed with multiple exits in order to reduce the time required to vacate the cars after large events. Walls should be generally open allowing for free passage of outside air through the structure.

Parking Payment Options. Prepayment of parking fees should be considered to prevent vehicle queuing when leaving, which would reduce vehicle startup emissions within the parking structure and associated ambient CO concentrations. Parking fees could be collected through long-term or special event passes.

Reduction of Exit Time. The University shall incorporate the management strategies contained in Section 2 of the Cal Poly Parking & Commuter Services Event Parking Management Plan (Draft) event management for the structures.

Off-campus Housing

Prior to construction, specific air quality studies will be performed for the housing projects to determine their potential impact.

Cumulative Impacts

Implementation of the Master Plan will contribute to non-attainment of ozone precursors when viewed in light of other regional projects. The Master Plan is consistent with the Clean Air Plan and suggested mitigation measures have been incorporated into the plan. However, impacts will remain cumulatively significant (Class I).

Residual Impacts

Residual impacts are less than significant. Cumulative impacts are considered significant and unavoidable (Class I).
NOISE

This section analyzes the potential noise impacts associated with the implementation of the proposed Master Plan.

Existing Conditions

Measurement of Noise

Environmental noise is frequently measured in decibels (dB). The A-weighted decibel (dBA) refers to the human ear's sensitivity to sounds of different frequencies. On this scale, the sound level of normal talking is about 60 to 65 dBA.

Two other measurement scales are used in this EIR: L_{dn} and L_{eq}. L_{dn} refers to the equivalent energy (or energy average) sound level during a 24-hour day, obtained after addition of ten decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m. The L_{dn} is generally computed for annual average conditions. L_{eq} refers to the sound level containing the same total energy as a time varying signal over a given sample period. Thus, the L_{eq} is a single-valued level that expresses the time-averaged total energy of a fluctuating sound level. For example, if 64 dB is measured for 10 minutes, 68 dB is measured for 20 minutes and 73 dB is measured for 30 minutes, the 1-hour L_{eq} is about 71 dB. The L_{eq} is typically computed over 1, 8 and 24-hour sample periods.

Noise levels are shown on topographic maps by using noise contours (lines indicating a generally uniform level of noise). Generally, noise levels diminish as distance from the noise source increases. Some land uses are more sensitive to noise than others. Noise sensitive land uses are generally defined as residences, transient lodging, schools, hospitals, nursing homes, churches, meeting halls, office buildings, and mortuaries.

Health Effects of Noise

Excessive noise cannot only be undesirable but may also cause physical and/or psychological damage. The amount of annoyance or damage caused by noise is dependent primarily upon three factors: the amount and nature of the noise, the amount of ambient noise present before the intruding noise, and the activity of the person working or living in the noise source area. Noise impacts can be characterized as auditory or non-auditory. Auditory effects include interference with communication and, in extreme circumstances, hearing loss. Non-auditory effects include physiological reactions such as change in blood pressure or breathing rate, interference with sleep, adverse affects in human performance, and annoyance (see Exhibit 6.9).

Noise Standards

The County of San Luis Obispo sets appropriate noise levels for various noise-sensitive land uses in the General Plan Noise Element (1992). Noise sensitive uses are afforded reduced acceptable noise levels under the Noise Element.

3 County of San Luis Obispo General Plan, Noise Element, County of San Luis Obispo (1992)
4 Ibid.
Figure 6.9. Common Noise Levels

<table>
<thead>
<tr>
<th>PUBLIC REACTION</th>
<th>NOISE LEVEL (dBA)</th>
<th>COMMON INDOOR NOISE LEVELS</th>
<th>COMMON OUTDOOR NOISE LEVELS</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCAL COMMITTEE ACTIVITY WITH INFLUENTIAL OR LEGAL ACTION</td>
<td>110</td>
<td>Rock Band</td>
<td>Jet Flyover at 1,000 ft.</td>
</tr>
<tr>
<td>LETTERS OF PROTEST</td>
<td>100</td>
<td>Inside Subway Train</td>
<td>Gas Lawn Mower at 3 ft.</td>
</tr>
<tr>
<td>COMPLAINTS LIKELY</td>
<td>90</td>
<td>Food Blender at 3 ft.</td>
<td>Diesel Truck at 50 ft.</td>
</tr>
<tr>
<td>COMPLAINTS POSSIBLE</td>
<td>80</td>
<td>Garbage Disposal at 3 ft.</td>
<td>Noisy Urban Daytime</td>
</tr>
<tr>
<td>COMPLAINTS RARE</td>
<td>70</td>
<td>Shouting at 3 ft.</td>
<td></td>
</tr>
<tr>
<td>ACCEPTANCE</td>
<td>60</td>
<td>Vacuum Cleaner at 10 ft. Normal Speech at 3 ft.</td>
<td>Gas Lawn Mower at 100 ft. Commercial Area</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>Large Business Office</td>
<td>Heavy Traffic at 300 ft. Quiet Urban Daytime</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>Dishwasher Next Room</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>Small theater, Conference Room (Background)</td>
<td>Quiet Urban Nighttime Quiet Suburban Nighttime</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>Library</td>
<td>Quiet Rural Nighttime</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Bedroom at Night Concert Hall (Background)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>Broadcast and Recording Studio</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Threshold of Hearing</td>
<td></td>
</tr>
</tbody>
</table>
Significance Thresholds

Cal Poly has not established thresholds for noise exposure or generation on campus. Therefore, the Master Plan has been assessed utilizing the following criteria.

Overall Increase In Community Noise Levels

In assessing community noise (Ldn or CNEL), long-term increases in noise levels of greater than 3 dBA are identified as perceptible, while changes of less than 3 dBA are generally not discernible to local residents or sensitive land uses. For purposes of this EIR, an increase greater than 3 dBA is considered to result in a significant impact.

Impacts

Mustang Stadium

(Note: The likelihood of moving Mustang Stadium is uncertain; to date, there have been no noise studies completed which predict the noise that would be generated from the new stadium. Furthermore, no other component of the Master Plan would require the relocation of Mustang Stadium. The following section describes the potential conflicts on a program level, and relies on future environmental analysis which will be required if the stadium moves to determine the potential impacts. The 1997 EIR and a noise study completed for the existing sports complex by Jones & Stokes Associates after certification of the EIR serve as guidance for the following analysis.)

If Mustang Stadium is moved to the Sports Complex in the northwestern portion of campus at a future date, this change would present a difficult situation in terms of noise. On one hand, the stadium in its existing location is in very close proximity to a number of student and single-family residences. These residences are currently subject to noise during events at the stadium, which may temporarily exceed acceptable noise levels. Movement of the stadium and development of recreational fields will result in less periodic event noise in this area. On the other hand, the stadium, in the new location, may adversely affect noise sensitive residences across Highway 1.

Crowd and public address system noise associated with the Sports Complex was analyzed in the 1997 EIR. The EIR found that stadium noise would not be discernible to residential land uses along Highway 1, Bishops Peak, or the Cal Poly student residence halls. Assuming a worst-case scenario of full capacity of the baseball stadium (2,500 persons) with no attenuation due to the stadiums walls, the EIR found that maximum noise levels would be approximately 80 to 85 dB at 100 feet (including 5.7 dB adjustment factor for 2,500 fans). These noise levels, assuming a uniform 6 dB attenuation rate per doubling of distance, would result in noise levels of approximately 58 dBA (Lmax) in the area of the dormitories and in the residential areas along State Route 1 and Bishops Peak. These noise levels are essentially consistent with existing background noise levels (Ldn) due to traffic, campus and neighborhood activities. While the project's overall impact was considered less than significant, design measures to further reduce any potential noise impacts associated with the project were recommended. Similar mitigation measures are recommended for the Mustang Stadium should it be relocated. Because the stadium would be considerably larger than the baseball field, specific noise analysis and mitigation is recommended at a future date. It should be noted that the EIR found that the relocation of the stadium would have a beneficial impact on the neighborhood surrounding its current location (Class IV).

The Jones and Stokes study provides the following guidance for expected noise levels at the stadium location:

“The results of the sound level projection analysis and the simulation test indicate that crowd sound and public address sound at levels anticipated from the stadia will not measurably increase A-weighted background sound levels in the neighborhoods of concern under cool, calm, weather conditions with clear skies. They also indicate that sounds from these sources will be barely audible to audible depending on location. In addition, the results of the simulation test indicate that loud music (93-94 dBA and 100 feet) can be distinctly audible at locations...
that have a direct line of sight to the project site and can be barely audible at locations where there is intervening topography or structures. The test results also indicate that public address announcements at a level of 84 dBA at 100 feet can be audible at locations with a direct line of sight to the project site. The predominant winds out of the northeast will tend to increase sound transmission from the project site and could result in distinctly audible crowd and public address sound in the neighborhoods of concern. However, these types of conditions are usually unstable, intermittent, and short term in nature. In addition, temperature inversion conditions and the associated low cloud cover that would tend to increase sound transmission typically occur in July, August, and September and would not typically coincide with use of the stadia.”

**Highway 1**

At the off-campus housing and Goldtree sites, noise constraints to development stem from the highway. The following section describes the noise environment and potential impacts to proposed development from Highway 1 traffic noise.

**Off Campus Housing Facilities (North of Highland).** By 2005, the County Noise Element predicts that noise sensitive development within 644 feet of the centerline of Highway 1 will face noise levels in excess of acceptable thresholds. Proposed off-campus housing in this area should be sited at least 139 feet from the centerline of the roadway (the location of the 70 dB noise contour) so that noise is reasonably mitigable by building design.

**Off Campus Housing (Highland and Highway 1).** The County Noise Element (1992) states that by 2005, development within 384 feet of the centerline of Highway 1 at Highland Drive will experience noise exceeding 60 dB. This is the maximum acceptable noise level for outdoor spaces in residential areas. Noise at the proposed site would be diminished because of the grade separation between the roadway and the developable portion of the site. This grade differential could reduce noise at the site by as much as 5 dB.

Interior and exterior mitigation measures are available to reduce the noise level even further. Dual-pane windows, insulation, and building orientation can all effect a reduction in noise. The University should use project design to reduce impacts from noise. Mitigation is recommended to reduce impacts to a less than significant level (Class III).

**Operational Noise**

Noise associated with the occupancy and operation of most facilities proposed in the Master Plan are considered negligible, and well below thresholds of significance adopted by either the City or County of San Luis Obispo. Operational noise associated with the Master Plan will primarily be associated with vehicular traffic consisting of student-owned automobiles.

**Traffic Noise**

The main noise source on campus under the Master Plan will be vehicular traffic. The following section analyzes the potential impacts of traffic increases.

**Grand Avenue.** Additional traffic expected under the Plan on Grand Avenue totals 1,485 ADT, a 12% increase. This corresponds to a decibel increase of less than one, well below the threshold of human hearing; sensitive receptors will not perceive an increase.

**Highland Drive.** Additional traffic expected under the Plan on Highland Drive east of Highway 1 totals 935 ADT, a 14% increase. This corresponds to a decibel increase of less than one, well below the threshold of human hearing; sensitive receptors will not perceive an increase.
**California Boulevard.** Additional traffic expected under the Plan on California Boulevard totals 1,870 ADT, a 12% increase. This corresponds to a decibel increase of less than one, well below the threshold of human hearing; sensitive receptors will not perceive an increase.

Additional traffic expected under the Plan on Via Carta and other campus roadways has not been quantified; given increases expected on other streets, however, resulting noise is expected to be less than significant.

**Parking Structure**

The 1998 Parking Structure EIR found that although periodic annoyances such as horns and alarms create noise above acceptable standards, operation of the structure would not elevate usual ambient noise above acceptable levels. Impacts are therefore, less than significant (Class III).

**Cumulative Noise**

Cumulative noise impacts will be associated with operational activities, including regional traffic increases and increased activity on campus. Traffic is the quantifiable portion of this increase. Considering increased noise from traffic associated with other City projects and increased enrollment at Cuesta, cumulative noise levels from traffic will be as follows.

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Existing ADT</th>
<th>Cumulative ADT</th>
<th>Percent Change</th>
<th>Change in Decibels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grand Avenue</td>
<td>12,200</td>
<td>15,375</td>
<td>+26%</td>
<td>1</td>
</tr>
<tr>
<td>California Boulevard</td>
<td>14,800</td>
<td>18,970</td>
<td>+28%</td>
<td>&lt;1.5</td>
</tr>
<tr>
<td>Highland Drive</td>
<td>6,500</td>
<td>7,835</td>
<td>+21%</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Foothill Boulevard</td>
<td>9,500</td>
<td>12,625</td>
<td>+22%</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Santa Rosa - North</td>
<td>24,600</td>
<td>27,890</td>
<td>+13%</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td>Santa Rosa - South</td>
<td>33,000</td>
<td>38,855</td>
<td>+18%</td>
<td>&lt;0.5</td>
</tr>
</tbody>
</table>

*Source: ATE, Master Plan Parking and Traffic Study (Appendix C) and San Luis Obispo County Noise Element: Technical Reference Document (1992).*

Changes in noise associated with cumulative development would be below the level of hearing for human beings. Impacts are not considered significant.

**Mitigating Measures**

**Mustang Stadium.** A specific noise analysis and mitigation plan will be developed for the stadium at the time when the relocation is proposed. Preliminary design recommendations at this time include the following:

- **Public Address System.** In general, speakers should be oriented towards the interior of the stadium and/or directed downward. More speakers with a smaller output dispersed throughout the stadium would have less external noise impacts than a few, louder speakers.
- **Building Orientation.** The stadium should be designed to be oriented away from sensitive receptors. Design should minimize noise directed towards these areas.

**Building Noise Mitigation.** Off campus housing facilities should be sited to minimize noise and should incorporate acoustic design intended to reduce interior noise to acceptable levels.

**Residual Impacts**

Residual impacts are less than significant (Class III).
AESTHETICS

The following discussion identifies the visual impacts associated with implementation of the proposed Master Plan.

Setting

Regional and Community Visual Character

Scenic resources in the campus area include the Morros, especially Bishop's Peak, and the Santa Lucia foothills. These landmarks provide a dramatic backdrop to the university.

Sensitive Visual Corridors

Principal travel corridors are important to an analysis of aesthetics because they define the viewpoint for the largest number of viewers. This section describes the primary travel (viewing) corridors near the Cal Poly area.

Highway 1. Highway 1 is designated a scenic highway by the County of San Luis Obispo and Caltrans. The Morros and the Santa Lucia foothills are readily visible from this roadway. Portions of the campus visible from Highway 1 are limited to agricultural operations that occupy the foreground view for southbound vehicles and brief views of northern campus facilities, including the sports complex currently under construction. Further north, Cal Poly's ranch facilities and crops (e.g., Chorro, Escuela and Walters) are also visible.

Grand Avenue. Grand Avenue provides views of the mountain backdrop to the northeast of the existing dormitories. Views to the west of Grand Avenue are mostly urbanized, consisting of residential uses to the south of Slack Street, and surface parking areas, the Recreation Center and Performing Arts Center to the north. The City of San Luis Obispo's Circulation Element (1983) identifies the block of Grand Avenue just south of the entrance to campus as a roadway of “moderate scenic value.”

California Boulevard. Views from the campus portion of California Boulevard mainly consist of campus structures, the railroad, and palm and other trees. The campus portion of California Boulevard is considered a roadway of “moderate scenic value” in the City's Circulation Element.

Highland Drive. Highland Drive serves as the main access road for the campus from Highway 1. The roadway provides views of the campus and hillsides towards the east.

Regulatory Setting

The design and aesthetic qualities of all development on the Cal Poly campus are subject to discretionary review by the administration of the University and the trustees of the California State University System. The Cal Poly Campus Planning Committee first reviews development that may affect the visual qualities of the campus. If approved, a project is forwarded to the CSU Chancellor's office for final approval.

Development on Cal Poly land in areas along Highway 1 is subject to guidelines adopted by the County as part of the Scenic Highway designation by California Department of Transportation (Caltrans). Development in areas within 100 feet of this roadway must include sensitive design components to preserve scenic resources and views. County guidelines for this area generally include height and color restrictions as well as requirements for vegetative screening.
Significance Thresholds

The State CEQA Guidelines state that a project will normally have a significant impact on the environment if it will “conflict with adopted environmental plans and goals of the community where it is located.” Therefore, the Master Plan is considered to have a significant aesthetic impact if it can be reasonably argued that:

a) it would adversely affect a view from a public viewing area (such as diminish the character of the area from an identified park, roadway, or other publicly-accessible property); or

b) it would add new light and glare sources that substantially alter the nighttime environment.

Visual impacts from private residences are generally not considered significant, unless the project would overwhelm an existing view. New sources of light and glare have a significant impact when they create a nuisance, preventing people from using or enjoying their property (for example: new lighting sources interfere with a person’s ability to sleep). They are also significant when they pose a safety hazard, such as interfering with pedestrian visibility or driving.

Impacts

Beneficial Impacts

Development of additional greenspace, protected natural spaces, and unified landscaping designs will improve visual quality in the campus core. Enhancement of campus entrances such as Highland Drive and other campus corridors such as Grand Avenue and Highland Drive will improve views for pedestrians and motorists. Restriction of development from steep slopes will minimize adverse impacts to views from City residences. These impacts are considered beneficial (Class IV).

Lighting and Glare

Glare is generated when sunlight is reflected from surface materials at a developed site. Examples of glare sources include asphalt parking lots, glazed surfaces and metallic roofing surfaces. Introduced areas of concrete for expansive exterior walls and glazing would also create new sources of glare. Glare resulting from the implementation of the Master Plan is considered potentially significant. Mitigation measures are recommended to reduce potential impacts to a less than significant level.

Light from campus will be visible to area residences and public vantage points such as Highway 1. Light is not expected to be at a level sufficient to impair visibility for passing motorists or interfere with sleeping patterns; however increased development will result in an overall increase in lighting. Impacts are potentially significant, but mitigable (Class II).

Parking Structures. For security and visibility, parking structures are usually well lit and may adversely impact surrounding residences. This is particularly true for Parking Structure II, proposed for the southwestern corner of campus. Impacts are significant, but mitigable (Class II).

Mustang Stadium. It is unclear whether Mustang Stadium will be relocated to the Sports Complex area within the horizon of the Master Plan. An analysis of impacts from lighting and glare would be required when the stadium is proposed for relocation. Suggested mitigation is included at the end of this section.

Highway 1

Projects potentially impacting views from Highway 1 include the proposed off-campus faculty and staff housing north of Highland Drive, the proposed facilities at Goldtree, and the Bull Test. Impacts are significant, but mitigable (Class II).
**Grand Avenue**

Projects impacting views in the Grand Avenue area include the proposed ancillary facilities and low-density student housing near the intersection of Grand Avenue and Slack Street, and the recreational fields proposed to replace the current parking lot area. Removal of the parking lot is considered a beneficial impact; lighting and glare mitigation stated towards the end of this section will reduce impacts to neighborhoods to a less than significant level. Refer to the text of the Master Plan and the environmental consequences cited therein for more information.

**California Boulevard**

Implementation of the Master Plan would have a beneficial impact on the aesthetics of California Boulevard (Class IV).

**Highland Drive**

Implementation of the Master Plan would have a beneficial impact on the aesthetic quality of the Highland Drive Corridor (Class IV).

**Design Village**

If further development is proposed for this area, careful attention should be paid to visual character. This EIR does not attempt to assess visual impact of such development.

**TES Tank**

Locating the TES Tank on the campus has already been studied in a Mitigated Negative Declaration (1998), and as part of the Student Housing Project review process. Potential environmental impacts associated with the TES Tank are largely visual; eventual placement will require careful planning to minimize visual impacts. This EIR does not attempt to assess these impacts; eventual placement is not well understood.

**Mitigating Measures**

**Lighting and Glare**

**General.** All exterior lighting associated with proposed campus facilities shall be hooded. No unobstructed beam of light shall be directed toward sensitive uses (e.g., Brizzolara Creek, Drumm Reservoir, Environmental Horticultural Sciences (EHS), neighborhoods). The use of reflective materials in all structures shall be minimized (e.g., metal roofing, expanses of reflective glass on west-facing walls).

**Parking Structures.** All interior lighting associated with proposed parking structures shall be directed internally with lamp “cut-off shields.” Unobstructed beams of light shall not be directed toward land uses outside the structure and shall not interfere with vehicular traffic on nearby streets. Examples of specifications for minimizing light and glare include the following:

- All lights must be shielded to avoid glare and light spill-over onto adjacent areas and onto public right-of-way areas;
- Landscape illumination should be done with low level, unobtrusive fixtures;
- Parking structure lighting shall be designed to provide the minimum safe lighting levels. Per IES standards, this is 6 foot-candles (fc) maintained throughout internal to the structure, and 1 fc minimum on the roof;
- The use of reflective materials on the exterior of all structures shall be minimized;
- Internal lightwells will be provided to maximize the amount of natural light;
- Light fixtures will include a vertical component to create an even distribution of light;
Solid rails shall be included around the perimeter to block light spillage from headlights on cars within the structure; and

A ll roof light fixtures shall be located on the interior columns to keep light from spilling out on to adjacent areas, and will include “cut-off” shields.

**Mustang Stadium.** If Mustang Stadium were to be moved, design shall include measures to reduce light and glare visible to area residents. **The stadium will be redesigned from that which is shown in the Heery Plan in order to accomplish the following measures:** Examples of specifications include the following:

- All lights must be shielded designed to avoid glare and spillover onto adjacent areas and onto public right of way areas and minimize impacts to adjacent neighborhoods
- The use of reflective materials will be minimized
- Landscape illumination will be accomplished with low-level, unobtrusive fixtures
- Minimum safe lighting levels will be used in adjacent parking and other facilities.

A n analysis of the lighting and glare impacts would be required as part of future environmental review for this project.

**Highway 1 (Gateway to the City of San Luis Obispo)**

**City Consultation.** Prior to design finalization, the University shall consult with the City regarding the visual impact of the proposed off-campus housing on the City gateway.

**Compliance with County Guidelines.** If the proposed facilities lie within 100 feet of Highway 1, the bull test and Goldtree facility will comply with County Guidelines for design near scenic highways. In any case, the University shall consult with the County regarding reduction of visual impacts to sensitive areas such as the Highway 1 corridor.

**Cumulative Impacts**

Cumulative effects of development will vary among areas of campus. Cumulative impacts associated with development proposed in the Master Plan will manifest in both overall lighting and glare levels, and building density.

**Building Density**

The campus core will be denser, but because it is already largely developed, increases in density should not be as noticeable from a distance. Minimal development is proposed for the outlying ranches; coordination with the City and County regarding off-campus development is recommended in the EIR to reduce impacts.

The extended campus area will experience the most significant and noticeable change. Some previously undeveloped agricultural land, visible from Highway 1 and area residences, will be developed with a variety of campus facilities, and some existing development will increase in height. The net effect of this development will be to alter the existing landscape, while retaining views of the hillsides.

Future development in the City will not impact views of the hills and other landscapes surrounding Cal Poly, because most of this property is in University ownership. Development in the City is subject to discretionary review, which includes an analysis of aesthetic impact. Because views of the hillsides will be retained, and because future development will be consistent with existing campus character and the relatively “built-out” City environment, impacts from building density will be less than significant (Class III).
Lighting and Glare

Cumulative development under the Master Plan will result in an increase in light levels near the City of San Luis Obispo. This will contribute to overall nighttime glow in the area, and may increase the level of light visible to area residences. Glare could also increase as more buildings are developed in the extended core.

The University is situated north and east of the City of San Luis Obispo, a developed urban environment. Because of the dense nature of urban development, nighttime skies are subject to light intrusion and “glow.” Cumulative projects within the City and at the University are expected to increase these light conditions.

Glare can also be a concern; buildings and paved surfaces can cause light reflection, which can be a nuisance to area residents and can impair driving safety.

Mitigation included in the EIR reduces the impacts of the lighting and glare to the extent feasible. Impacts are less than significant (Class III).

Residual Impacts

Residual impacts are less than significant (Class III).
PUBLIC SERVICES AND UTILITIES

The following section analyzes impacts to area resources and services.

Existing Conditions

Fire

Until several years ago, the University had its own on-campus fire department. Recently, the University concluded that a more cost-effective approach was to contract for fire protection services with the City of San Luis Obispo Fire Department and the California Department of Forestry (CDF). Cal Poly's contract with the City covers all structures on campus as well as grassland fire suppression up to 450 feet in elevation. Fires that may occur above this elevation fall under the jurisdiction of CDF/San Luis Obispo County Fire Department. Cal Poly retains a Fire Marshall on campus who is responsible for providing fire prevention information.

The City of San Luis Obispo Fire Department has a staff of approximately 48 firefighters. The City's Insurance Service Office rating is 2 on a scale of 1 to 10, with 1 being highest (Student Housing Project Final EIR, 1999). The City's high rating is a reflection of the quick response time for fire protection and adequate fire flows.

The Department has four stations strategically located throughout the City to provide the most efficient fire protection coverage. Station No. 1 is located near the intersection of Santa Barbara Street, Broad Street and South Street. Station No. 2 is located near Foothill Boulevard and Chorro Street. Station No. 3 is located at the corner of Laurel Lane and Augusta Street. Station No. 4 is at Los Osos Valley Road and Madonna Road. Station No. 2 would provide the first response in case of a fire occurring on campus; current response times are 2 to 2.5 minutes, followed by Station No. 1 with a response time of 3 to 3.5 minutes. These response times indicate time to the campus core. Response times to outlying buildings are expected to be slightly longer. The two CDF stations, which are available to offer backup service through a mutual aid agreement, are located at Highway 1 and Highland Avenue, and at the Airport south of the City.

Police

The University Police Department is responsible for the protection of lives and property within the boundaries and jurisdiction of the Cal Poly campus. In addition, University Police serve a unique role as public safety educators. University police officers are vested with full enforcement capabilities and responsibilities in accordance with the California Penal Code. Current staffing includes one police chief, two sergeants, three corporals and ten officers. The University Police Department also has a Community Service Officer (CSO) program. The CSO Program consists of approximately 30 unsworn student employees who perform numerous routine duties that would normally be handled by patrol officers. The net result of the CSO Program is an increase in the number of patrol hours by police officers. In addition, the Public Safety Department includes parking personnel that may be called upon to perform such services as crowd and traffic control.

The Cal Poly Police Department has a mutual aid agreement with the City of San Luis Obispo Police Department and the County Sheriff's Department. Either of these agencies may be called upon for back-up assistance. If additional aid is needed, the California Highway Patrol can be called in.

The California State University system has a Critical Response Unit (CRU) in place to provide additional law enforcement services. The CRU is comprised of officers from the CSU system throughout the state that can be dispatched to a given campus when a major emergency takes place. CRU can also be brought in when advance notice of an event is provided. Information regarding the University Police Department can be found on the web at: http://www.afd.calpoly.edu/Police/.

A number of factors influence the police staffing needs of the University, including:
The rural setting of the campus.

Cal Poly is located in a semi-rural setting with a relatively low crime rate. Crime levels tend to mimic those in the surrounding community.

The types of crimes occurring on campus and in the surrounding community, and the incidence of crime.

Historically, most crimes associated with on-campus student housing involve burglary and petty theft. Crime statistics for the years 1995 through 1998 are summarized in Table 6.22. Cal Poly has one of the lowest crime rates of the entire CSU system. For a comparison of universities in California and throughout the United States, see http://www.campussafety.org/information/crimestats/UCR/index.html

Student enrollment and demographics.

The number of students living on campus and the level of involvement by support services such as the CSO and Residence Hall staff.

Currently, the majority of on-campus residents are freshmen living in a residence hall with significant residence hall programmatic involvement. This level of involvement helps minimize problems that require campus police intervention.

Whether alcohol is allowed on campus.

Some universities have adopted a standard of 1.7 sworn police officers per 1,000 students. However, in consideration of the factors described above, Cal Poly has determined that there are an adequate number of sworn officer positions for the current student population (approximately 1.1 officer per 1,000 students).


<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Murder/non-negligent manslaughter</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Forcible Rape</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Robbery</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Aggravated Assault</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td><strong>Violent Crimes (Totals)</strong></td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Burglary</td>
<td>41</td>
<td>32</td>
<td>33</td>
<td>40</td>
</tr>
<tr>
<td>Larceny/Theft</td>
<td>464</td>
<td>354</td>
<td>252</td>
<td>250</td>
</tr>
<tr>
<td>Vehicle Theft</td>
<td>3</td>
<td>7</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Arson</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>Property Crimes (Totals)</strong></td>
<td>508</td>
<td>393</td>
<td>292</td>
<td>292</td>
</tr>
</tbody>
</table>

Source: FBI Uniform Crime Reports (http://www.campussafety.org/information/crimestats/UCR/index.html)

Water

Cal Poly derives its water from groundwater sources and through surface water entitlements. For domestic (non-agricultural) use, the University owns entitlement to 33% of the water in Whale Rock Reservoir or
approximately 13,707 acre-feet. This amount is not available for continuous consumption because a certain level of water must be maintained in the reservoir to avoid a deficit.

The City of San Luis Obispo, which shares the reservoir with Cal Poly, has developed a computer model that assigns allowable yearly withdrawals based on worst-case weather cycle conditions. The model shows that during the 27-year cycle from 1942-1969, approximately 1,384 acre-feet per year (AF/Y) would have been available to the University, and would have drained Cal Poly's allocation during that 27-year period. This allocation does not account for losses due to sedimentation of the reservoir over time; however, this loss of capacity is relatively minor (estimated 2 AF/Y) and has not been documented. This is remains a very conservative lower limit on consumption. The City of San Luis Obispo's water use from Whale Rock regularly exceeds their worst-case allocation.

Water from Whale Rock reservoir is treated at the Stenner Canyon water treatment facility owned and operated by the City of San Luis Obispo. A portion of the entitlement is diverted prior to treatment for use in landscape and turf irrigation. Peak treatment capacity has been recently expanded to 16 million gallons per day (mgd). Since water is conveyed to the University through the City's treatment plant and distribution system, the actual source of drinking water arriving at the campus may be either Whale Rock Reservoir or Salinas Reservoir. No matter the source, Cal Poly's allotment is still based upon its Whale Rock share.

Agricultural operations on campus derive their water from a number of sources, depending on location. Untreated Whale Rock water is supplied to the Sports Complex, and all agricultural operations east of Mount Bishop Road, via the reservoir system on campus. Agricultural operations west of Mount Bishop Road are supplied by groundwater, namely two shallow wells fed by Stenner Creek. Agricultural operations on the Chorro Creek watershed ranches are supplied by three groundwater wells. The University's understanding and documentation of their water supply is limited to their allocation from Whale Rock; none of the groundwater supplies have been documented.

Two deep water agricultural wells north of Brizzolara Creek supply an additional 450 AF/Y for agricultural irrigation. Irrigation water is stored in three reservoirs on campus with a combined holding capacity of approximately 40 AF. The reservoirs are used to collect rainwater as well as to hold water from Whale Rock until it is needed.

The Sports Complex EIR placed total agricultural allocations at 900 AF/Y because it assumed 449 AF/Y of Whale Rock water was allocated specifically for irrigation and 450 AF/Y was available from other sources. Cal Poly does not currently allocate Whale Rock water in this fashion. Therefore, domestic and agricultural water users compete equally for Whale Rock water. Other sources, as mentioned above, have not been documented, although the well have never run dry or hampered agricultural operations. For the purposes of this EIR, analysis is limited to impacts on the Whale Rock supply, as it is the only known quantity. It is strongly suggested that Cal Poly study their total agricultural water supply prior to expansion or intensification of irrigated agricultural operations.

In recent years, use of Whale Rock water has been split almost equally between agricultural and domestic users. The following table illustrates this division.

### Table 24. Use of Water From Whale Rock

<table>
<thead>
<tr>
<th>Year</th>
<th>Total AF</th>
<th>Percentage/AF Domestic</th>
<th>Percentage/AF Agricultural</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999-2000</td>
<td>1,130</td>
<td>52%/587</td>
<td>48%/544</td>
</tr>
<tr>
<td>1998-1999</td>
<td>918</td>
<td>57%/525</td>
<td>43%/393</td>
</tr>
<tr>
<td>1997-1998</td>
<td>824</td>
<td>63%/552</td>
<td>37%/272</td>
</tr>
</tbody>
</table>

Source: Ed Johnson, Cal Poly Facilities Planning
Current (2000) domestic water use by the University (for non-agricultural purposes) is **568,587 A/F/Y**, and agricultural use is currently **460,544 A/F/Y**, including and the sports complex. The and housing project will add **129,565 A/F/Y**, for a total of **1,028,117 A/F/Y**. Water demand varies considerably; records have shown total consumption as high as **1,228,113 A/F/Y (1997-1998)**, and as low as 792 A/F/Y (1992-1993). The year 1999-2000 is considered the worst-case scenario for the purposes of this analysis.

Cal Poly and the City of San Luis Obispo are currently working on a project to recycle wastewater for irrigation of the Sports Complex. The development of this system would reduce demands on the domestic system, which is currently irrigating the Complex at a rate of approximately 73 A/F/Y.

**Wastewater**

The City of San Luis Obispo provides wastewater collection and treatment services to the University through a contractual arrangement. Consequently, Cal Poly owns an equity share of the City's sewer collection and treatment infrastructure. The entire campus ties into a sewer main located near the intersection of California Street and Foothill Boulevard. The City meters wastewater flows and charges the University accordingly.

The City's wastewater treatment plant is located on Prado Road near U.S. Highway 101. Existing plant capacity is 5.1 million gallons per day (mgd). Total citywide flow averages 4.2 mgd, leaving a remaining capacity of approximately 0.9 mgd. By 2015, the City plans to increase the capacity of the treatment plant to 5.8 mgd during dry weather flows and 6.2 mgd during wet weather flows.

**Solid Waste**

The San Luis Garbage Company provides solid waste disposal service to the Cal Poly campus. Solid waste is disposed of at the Cold Canyon Landfill located approximately 7 miles south of the City of San Luis Obispo on State Route 227.

The landfill recently reached its capacity. To address this problem, the California Integrated Waste Management Board approved an expansion of the facility and construction is currently underway. When completed, the landfill is expected to have sufficient capacity for the County (including the University) for the next 15 years. In the meantime, Cal Poly is required to achieve a 50% reduction in their waste stream through recycling or other means. Cal Poly has been successful at reaching this goal, and plans to continue recycling programs on campus.

**Significance Thresholds**

**Fire and Police**

Police and fire protection is evaluated based on the ability of local departments to provide service to the campus. Impacts would be considered significant if the demand created by the Master Plan requires additional facilities or personnel.

**Water**

Water service impacts are evaluated based on the demands for water created by the Master Plan and the supply available. A significant impact would occur if the amount of water required by the Master Plan would require expansion of existing facilities or construction of new facilities which would have adverse effects on the environment.

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These last two figures were adjusted to include the anticipated 129 A/F/Y from the Sports Complex, which was under construction at the time of this analysis, and the Student Housing Project, which was being permitted.
Wastewater

Impacts to wastewater service are considered significant if either 1) Master Plan implementation would cause the City of San Luis Obispo’s wastewater treatment capacity to be exceeded or 2) if sewage conveyance infrastructure is inadequate to handle Master Plan-related demands, and expansion would have an adverse impact on the environment.

Solid Waste

Impacts to solid waste are considered significant if the garbage-collecting agency would not be able to service the campus or if the amount of garbage generated by the campus would substantially reduce landfill capacity. Impacts are also considered significant if flows would exceed state mandates for waste stream reduction.

Impacts

Beneficial Impacts

The University is currently working with the City to establish a system using reclaimed water to irrigate the Sports Complex. Use of reclaimed water would have a beneficial impact on Cal Poly’s domestic water supply.

Continuation of the Cal Poly recycling program, which has been successful at meeting state mandates, will continue to be beneficial in its reduction of the waste stream.

Fire

Facilities proposed in the Master Plan would place additional structures, life and property at risk for damage or destruction from wildland fires. This applies particularly to development proposed along the eastern edge of campus adjacent to grassland areas.

Implementation of the plan is not expected to require additional fire protection equipment or personnel to maintain fire safety. The recent installation of the campus Utilidor has greatly improved fire protection capabilities, and the requirement for fire sprinklers in all new construction further reduces the risk of fire. This impact is considered less than significant (Class III).

Implicit in this conclusion is that adequate access for fire fighting equipment and personnel are provided to the campus and that adequate fire flow (hydrant production) is available. To adequately address access for fire protection, projects proposed in the plan must be designed consistent with emergency access requirements of the CDF. The Master Plan specifically addresses emergency access in the Circulation Improvement Element. Impacts are less than significant (Class III).

Police

General. Implementation of the Master Plan would increase the demand for police protection. More student residents will require police protection and deterrence. To maintain the current ratio of police officers to student residents, approximately 3.3 additional officers would be required. The campus police are currently working on a Master Service Plan that addresses current deficiencies in the department. Currently, there are no plans to hire new additional staff. Mitigation is required to maintain acceptable service levels.

Personal Safety. The Master Plan will result in an increased need for personal safety services and facilities. Personal safety facilities include lighting, telephones, and other design features that provide for the personal safety needs of students. Policies in the Master Plan specifically state that all proposed development will include consideration of personal safety in design. This impact is considered less than significant (Class III).
**Goldtree.** The development of this site will require the extension of campus police service into a previously unserved area. Careful coordination will be required during the planning phase of this project to determine impacts to this and other public services.

**Water**

The Master Plan is expected to result in an additional 3,000 student residents and 465 additional faculty and staff. The Plan will also result in approximately eleven acres of additional recreational fields, and approximately nine acres of green space (non-athletic turf). Water demand factors from apartment-style housing facilities at the University of California Santa Barbara campus were used to project water demand in the residence halls. City and County water demand factors were used to calculate staff (office) demand. Water demand for landscape irrigation was based on current per acre usage at the University. Total projected demand, compared with existing use and the University's total domestic Whale Rock water allocation is summarized in Table 6.25 below.

<table>
<thead>
<tr>
<th>Use</th>
<th>Number</th>
<th>Water Demand Factor</th>
<th>Total Water Usage (AF/Y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Domestic Usage (Agricultural, Domestic, and Sports Complex)</td>
<td>568</td>
<td>1,130</td>
<td>6681.130</td>
</tr>
<tr>
<td>Sports Complex &amp; Student Housing Project</td>
<td>129</td>
<td>129800</td>
<td></td>
</tr>
<tr>
<td>Projected Usage under the Master Plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Future Resident Students (Apartments, Landscaping + Laundry)</td>
<td>3,000 persons</td>
<td>0.09 AF/Y</td>
<td>263</td>
</tr>
<tr>
<td>Future Staff/Faculty</td>
<td>465 persons</td>
<td>20 gpd</td>
<td>10.4</td>
</tr>
<tr>
<td>Future Recreation Fields</td>
<td>11 acres</td>
<td>29 in1.4 AF/yr/acre</td>
<td>26.515.4</td>
</tr>
<tr>
<td>Future Greenspace (Lawns)</td>
<td>9 acres</td>
<td>29 in1.4 AF/yr/acre</td>
<td>2212.6</td>
</tr>
<tr>
<td>Future Facilities (Off campus - estimate)</td>
<td>70</td>
<td></td>
<td></td>
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<tr>
<td>Total Master Plan Domestic Demand</td>
<td></td>
<td></td>
<td>1,0891.557</td>
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<tr>
<td>Agriculture</td>
<td>460</td>
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<tr>
<td>Total Master Plan Demand</td>
<td></td>
<td></td>
<td>1,549</td>
</tr>
<tr>
<td>Total (Worst-case) Supply</td>
<td></td>
<td></td>
<td>1,384</td>
</tr>
<tr>
<td>Remaining Water Entitlement (Deficit)</td>
<td></td>
<td></td>
<td>(165)(173)</td>
</tr>
</tbody>
</table>

Source: Ed Johnson, Utilities Coordinator, Cal Poly, 2000 and City of San Luis Obispo Water Demand Factors

City of San Luis water supply models show that during worst-case weather cycle conditions, Cal Poly demand would exceed supply. During normal rain years, it is likely that considerably more water would be available to Cal Poly; impacts are significant, but mitigable (Class II).

**Off-campus facilities.** The Goldtree facility and off-campus housing could use approximately 70 AF/Y. Impacts to services associated with these projects will need to be assessed at such time that more information is available.

**Wastewater**

The Master Plan would increase wastewater generation on campus and could adversely impact the wastewater collection system serving the University. The Master Plan could also impact the capacity of the City's wastewater treatment plant.

The potential increase in wastewater associated with the Master Plan could reach 0.159 million gallons per day, based on 3,000 student residents generating 50 gallons of wastewater per day. Additional faculty and staff proposed under the plan may generate as much as 9,300 gallons per day for a total of 0.168 million gallons per day.
Cal Poly Master Plan

Cal Poly is entitled to 0.471 mgd of treatment at the City plant. Cal Poly currently averages 0.323 mgd. The plant is planning to increase capacity to 5.8 mgd average dry weather flow. As part of this expansion, Cal Poly’s entitlement will be increased. Impacts on the system will be less than significant (Class III).

The University’s wastewater collection infrastructure is currently operating well below capacity (1.2 mgd); however, storm runoff often exceeds this capacity. The Public Facilities and Utilities Element of the Master Plan calls for improvement of the stormwater system, which should decrease the impact on the collection system. Impacts related to infrastructure collection are therefore considered less than significant (Class III).

Solid Waste

New residents and staff will generate additional solid waste, which will continue to adversely impact landfill capacity. Because Cal Poly will continue to state mandates for waste stream reduction, impacts are less than significant (Class III).

The development of the Master Plan would increase overall solid waste to be disposed of at the Cold Canyon Landfill. The Landfill is currently undergoing a comprehensive expansion to meet the needs of the County for another 15 years. Impacts are considered less than significant (Class III).

Cumulative Impacts

Fire

Fire service is funded in part by developer’s fees and statewide monies. Cumulative impacts to service will be mitigated in part by additional funds paid by area developers. Personnel allocations are decided on a county and statewide basis, a process over which the University exerts no control. Impacts are less than significant (Class III).

Police

Implementation of the Master Plan will mainly impact the campus police force. Other, cumulative growth will not affect this service. Cumulative impacts are significant, but mitigable (Class II).

Water

Cumulative growth in the City of San Luis Obispo will place additional strain on Whale Rock Reservoir. During drought, the burden would be intensified. The City is exploring means to expand their water supply; Cal Poly is projected to remain within their allocation, with the implementation of mitigation below. Cumulative impacts are significant, but mitigable (Class II).

Wastewater

The wastewater system serving the campus and the City is undergoing expansion to increase capacity. Proposed expansions should be sufficient to meet needs of the University and the City of San Luis Obispo.

Solid Waste

The Cold Canyon landfill is currently undergoing expansion to increase capacity to serve the area for the next fifteen years. The University will continue to meet the state-mandated 50% reduction in the waste stream through continuation of the recycling program. Impacts are less than significant (Class III).
Mitigating Measures

Police

The University will provide for at least the equivalent of 3.3 additional police personnel to serve the anticipated growth. The University will work with the campus police to determine an adequate level of service ratio for the campus and will plan for provision of needed personnel.

Water

Because future water demand will begin to tax the University’s supply of Whale Rock water, the following programs should be instituted:

- **Water Conservation Program.** The University should develop a program designed to reduce overall water consumption on campus. The program will incorporate water-saving fixtures into new development, retrofit older facilities over time, and modify landscaping irrigation requirements.
- **Drought contingency plan.** As part of implementation of the Master Plan, the University will draft a drought contingency plan to address potential water shortages associated with extended drought conditions.
- **Additional Water Supply.** The University should investigate the availability of additional water supplies over the next twenty-year horizon.

Residual Impacts

Residual impacts are less than significant.
CONSTRUCTION IMPACTS

The following section analyzes temporary impacts that will result from construction of proposed buildings and other facilities indicated in the Master Plan.

Setting

Construction activities generally have impacts on air quality, the ambient noise environment, circulation, and water quality. These impacts may be restricted to the immediate campus environment, or they may influence exterior conditions.

Aesthetics

Visual impacts associated with construction stem from clearance of vegetation, staging of equipment and materials and the subsequent construction process. Impacts are more pronounced in sensitive areas such as the Highway 1 corridor and gateways to the City.

Air Quality

Air quality impacts from construction typically take the form of dust and equipment emissions. Dust, or PM10, is associated with earth moving and grading activities, as well as excavation. Equipment emissions are usually measured as oxides of nitrogen (NOx), from combustion engines. Effects of these air pollutants are described in the “Air Quality” section.

Biological Resources

Construction activities, particularly land clearing, may have direct or indirect effects on sensitive species and their habitat. Direct impacts include removal of vegetation, while indirect impacts may include erosion and stream sedimentation.

Hydrology and Water Quality

Land disturbance during grading and clearing may increase the potential for erosion and deposition of sediment in surface water systems. Fuel and other hazardous materials present during construction may spill and adversely affect waterways as well.

Noise

Noise from construction activities varies depending on the phase of construction and the equipment used; land clearing, excavation and grading are generally the loudest. At 50 feet from the source, equipment noise levels range from 75 to 95 dBA for tractors, up to 87 dBA for compressors, and up to 98 dBA for jackhammers. Peak noise levels range from 90 to 95 dBA during demolition, and 75 to 90 dBA during grading and other construction. Trucks hauling materials to and from the site also generate noise.

Traffic and Circulation

Construction-related traffic impacts stem from increased vehicle trips from workers, delays associated with slow-moving equipment, and lane closures and detours. Some projects will also involve temporary losses of parking spaces and relocation of transit stops.
Regulatory Setting

Air Quality. Refer to the portion of this chapter entitled Air Quality; the San Luis Obispo Air Pollution Control District (APCD) governs air quality locally.

Biological Resources. Construction impacts to resources are governed by the California Department of Fish and Game (CDFG) through Streambed Alteration Agreements, Section 404 permits from the Army Corps of Engineers (ACOE) and the Endangered Species Act. Refer to the Biology portion of this chapter for further explanation of regulations.

Hydrology and Water Quality. Refer to the Hydrology and Water Quality portion of this chapter; the Regional Water Quality Control Board (RWQCB) regulates water quality. NPDES permits and Stormwater Pollution Prevention Plans (SWPPP), drafted for projects disturbing more than five acres, most commonly regulate water quality impacts stemming from construction.

Noise. Refer to the portion of this chapter entitled “Noise”; Cal Poly has not adopted noise standards for the campus; the City and County Noise Elements serve as guidelines for determining impact significance.

Traffic and Circulation. Impacts to City roadways and state highways must be coordinated with City and Caltrans officials, respectively. Transit service is coordinated with the City and CCAT. Campus Safety regulates internal circulation.

Significance Thresholds

Aesthetics

If construction activities will substantially affect views of a scenic area visible to the general public (e.g., Highway 1 scenic hillsides), impacts are considered significant.

Air Quality

The following are guidelines for determining the significance of air quality impacts from construction. Impacts are considered significant if any of the following criteria are met.

<table>
<thead>
<tr>
<th>Threshold By Pollutant</th>
<th>Mitigation Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactive Organic Compounds</td>
<td>Best Available Control Technology for Construction Equipment (CBACT)</td>
</tr>
<tr>
<td>Oxides of Nitrogen</td>
<td></td>
</tr>
<tr>
<td>PM 10</td>
<td></td>
</tr>
<tr>
<td>&gt; 185 lbs/day or 2.0 to 6.0 tons/quarter or &gt; 400,000 cubic yards of material/quarter or &gt; 15,000 cubic yards of material/day</td>
<td>&gt; 2.5 tons/quarter or &gt; 4.0 acres of graded area</td>
</tr>
<tr>
<td>&gt; 2.5 tons/quarter or &gt; 4.0 acres of graded area</td>
<td></td>
</tr>
</tbody>
</table>

Table 6.26: SLO APCD Threshold Criteria for Construction
## Threshold By Pollutant

<table>
<thead>
<tr>
<th>Threshold By Pollutant</th>
<th>Oxides of Nitrogen</th>
<th>PM 10</th>
<th>Mitigation Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactive Organic Compounds</td>
<td>&gt; 6.0 tons/quarter or &gt; 970,000 cubic yards of material/quarter</td>
<td>&gt; 6.0 tons/quarter or &gt; 125,000 cubic yards of material/quarter</td>
<td>--</td>
</tr>
</tbody>
</table>

### Hydrology and Water Quality

Impacts to water quality are significant if construction activities would adversely affect area waterways.

### Noise

Construction noise is considered a temporary nuisance; for the purposes of this analysis, construction noise exceeding the ambient background level by more than 10 dB is considered a short-term adverse impact.

### Traffic and Circulation

Impacts to traffic and circulation would be significant if a project resulted in substantial additional traffic, if normal circulation patterns would be substantially impeded, or if levels of service were reduced in the long term.

### Impacts

#### Aesthetics

**Campus.** Construction equipment will be temporarily visible to internal campus viewers. Some off-campus viewers may also have temporary views of construction equipment. This impact is less than significant (Class III). Views of this area are minimized by intervening structures and overall building density. It is unlikely that construction activities will be highly visible to the off-campus public.

**Off-campus.** Properties proposed for development off campus border Highway 1, a scenic highway, and the northern gateway to the City. Mitigation will reduce impacts from construction in these areas to a less than significant level (Class III).

#### Air Quality

**Toxic Substances.** Demolition of some existing buildings may expose persons to asbestos and lead. By law, the University must identify which buildings may contain asbestos or lead and therefore require special demolition and disposal techniques. Properly handled, these materials will not pose a threat to humans or the environment. Impacts from hazardous materials are therefore considered less than significant (Class III).

**Dust (PM10).** Dust generation is often a function, in part, of soil disturbance associated with site preparation (e.g., grading). The APCD generally considers dust generation significant if the project will involve continuous disturbance of four or more acres. Applicable thresholds will likely be exceeded, therefore, any time total grading activities on or off campus exceed 4 acres. If final phasing of the projects shows that the four-acre threshold will not be exceeded, mitigation will not apply.

**Equipment Emission (NOx).** Construction will also result in emissions from equipment that will take the form of ozone precursor NOx. If any total campus or off-campus construction activities move greater than 50,000 cubic yards of material per quarter or greater than 2,000 cubic yards per day, mitigation will be required.
Not enough is known about the construction of each plan component to conduct air quality modeling. Based on modeling completed for the 800-bed student housing project (1999), it is assumed that construction emissions from the larger H-1 and H-2 projects would exceed the APCD’s significance thresholds for NO\textsubscript{x} and PM\textsubscript{10} and would be considered a significant impact. Emissions thresholds would also be exceeded by development at the Goldtree site, the off campus housing sites, and the Grand and Slack housing sites because these locations are currently undeveloped and would require substantial grading.

**Biological Resources**

Construction and operation of facilities may have adverse effects on special-status plant and animal species. The Chorro, Stenner, and Brizzolara Creek corridors provide habitat for special-status plant and animal species. Facilities proposed for these areas have been designed to avoid direct disturbance of the creek corridor; however, road crossings and creek restoration activities will have direct impacts on the corridor. Moreover, construction of facilities near these corridors may have indirect impacts on these species through site disturbance and erosion. Impacts are significant, but mitigable (Class II).

**Hydrology and Water Quality**

**Chorro, Stenner and Brizzolara Creeks.** Construction may increase the potential for erosion and subsequent sedimentation of the creeks.

**Other Drainage Channels (Grand/Slack, Drumm Reservoir area).** Construction activities may adversely affect the drainage channels on these sites by temporarily increasing the potential for erosion. At Grand Avenue and Slack Street, the northern channel will need to be filled to accommodate development.

The drainage channels bisecting these sites most likely constitute wetlands or Waters of the U.S., subject to Army Corps regulation. Projects on these sites have been designed largely to avoid the channels; however direct effects to the northern channel at Grand Avenue and Slack Street, and indirect effects stemming from construction and site disturbance may occur. Mitigation is recommended to reduce the potential for adverse effect.

**Brizzolara Creek - Other Direct Alterations**

Via Carta crosses Brizzolara Creek before its intersection with Highland Drive. The Master Plan proposes improvements to this roadway. Impacts to the creek during construction and operation are mitigated by measures identified for creek enhancement projects in the Biological Resources section of the EIR and would reduce impacts to a less than significant level (Class III).

**Riparian Enhancement**

Although enhancement of riparian corridors is designed to result in overall improvements to biologic and hydrologic quality, immediate impacts of excavation, vegetation removal, and other activities may be adverse. Brizzolara and Stenner Creek are known to contain sensitive plant and animal species that may be negatively affected by such activities. Careful planning of such programs is necessary to avoid impacts to species and water quality. Regardless of immediate effects, the net impact of enhancement efforts will be beneficial.

Enhancement programs outlined in the Natural Environment Element of the Master Plan will require the approval of the California Department of Fish and Game (Streambed Alteration Agreement), the Army Corps of Engineers (under Section 10 of the Clean Water Act), and the Regional Water Quality Control Board. Although these agencies will largely dictate the scope and requirements of the enhancement, mitigation is recommended to aid in the reduction of impacts.
After completion, the enhancement projects will result in a net benefit to riparian vegetation and fisheries habitats (Class IV).

**Noise**

Noise levels will temporarily exceed acceptable thresholds in most construction projects. Impacts are significant, but mitigable (Class II). General construction noise mitigation included at the end of the section would mitigate noise to less than significant levels (Class III).

Noise from equipment would be created throughout the construction of proposed projects, with the noisiest period during site preparation (grading, excavation, etc.). Most projects proposed in the Master Plan are proximate to noise-sensitive uses internal and external to the campus, and construction would temporarily impact such areas.

**Traffic and Circulation**

During construction, pedestrian and vehicle flows will be interrupted and safety may be reduced. This impact is significant, but mitigable (Class II).

Construction equipment and workers will periodically conflict with the normal flow of traffic in areas. Mitigation for noise impacts at the end of this section includes a requirement to designate a haul route and staging plan for review by the University. The haul route must also have the purpose of avoiding conflicts between equipment and pedestrians and vehicles. Other traffic inconveniences may be addressed by mitigation.

**Mitigating Measures**

**Aesthetics**

**Off-campus Projects.** Construction at the Goldtree and off-campus housing facilities will locate stockpiling and staging areas shall be located out of view where feasible

**Air Quality**

**DUST CONTROL**

A. Employ measures to avoid the creation of dust and air pollution.
B. Unpaved areas shall be wetted down, to eliminate dust formation, a minimum of twice a day to reduce particulate matter. When wind velocity exceeds 15 mph, site shall be watered down more frequently.
C. Store all volatile liquids, including fuels or solvents in closed containers.
D. No open burning of debris, lumber or other scrap will be permitted.
E. Properly maintain equipment to reduce gaseous pollutant emissions.
F. Exposed areas, new driveways and sidewalks shall be seeded, treated with soil binders, or paved as soon as possible.
G. Cover stockpiles of soil, sand and other loose materials.
H. Cover trucks hauling soil, debris, sand or other loose materials.
I. Sweep project area streets at least once daily.
J. Appoint a dust control monitor to oversee and implement all measures listed in this Article.
K. The Contractor shall maintain continuous control of dust resulting from construction operations. Particular care must be paid to door openings to prevent construction dust and debris from entering the adjacent areas.
L. When wind conditions create considerable dust, such that a nuisance would generate complaints, the Contractor shall either suspend grading operations, and/or water the exposed areas.
M. Water down the project site, access routes, and lay down areas whenever generate dust becomes a nuisance.
N. The campus reserves the right to request watering of the site whenever dust complaints are received.
O. It shall be the University’s sole discretion as to what constitutes a nuisance.

In addition to the measures listed above, CMCM recommends the following be added to standard construction contracts:

**EQUIPMENT EMISSION CONTROL**

To the extent feasible, the applicant shall utilize newer construction equipment (manufactured after 1990) that produces fewer emissions, especially for the highest emitting pieces of diesel-fired heavy equipment. In any case, all equipment shall be properly tuned and maintained. Additional measures that would reduce construction-related emissions include, but are not limited to:

- Retarding fuel injection timing two degrees from the manufacturer's recommendation.
- Using high-pressure fuel injectors.
- The use of reformulated diesel fuel.
- The use of Caterpillar pre-chamber, diesel-fired engines (or equivalent low NOx engine design) in heavy equipment used to construct the project to further reduce NOx emissions.
- The project shall require that all fossil-fueled equipment shall be properly maintained and tuned according to manufacturers specifications.
- The project proponent shall require that all off-road and portable diesel-powered equipment including but not limited to bulldozers, graders, cranes, loaders, scrapers, backhoes, generator sets, compressors, auxiliary power units, shall be fueled exclusively with CARB certified diesel fuel.
- During construction activities at each of the locations identified above where equipment emissions are projected to exceed the District’s thresholds, the project proponent shall install catalytic soot filters on the two pieces of equipment (per site) projected to generate the greatest emissions. Where the catalytic soot filters are determined to be unsuitable, the project proponent shall install and use an oxidation catalyst. Suitability is to be determined by an independent California Licensed Mechanical Engineer who will submit for District approval, a Suitability Report identifying and explaining the particular constraints to using the preferred catalytic soot filter.

**DUST CONTROL**

Dust generated by construction activities shall be kept to a minimum by full implementation of the following measures:

- During construction, the amount of disturbed area shall be minimized.
- Onsite vehicle speeds should be reduced to 15 mph or less;
- Exposed ground areas that are left exposed after project completion should be sown with a fast-germinating native grass seed and watered until vegetation is established;
- After clearing, grading, earth moving, or excavation is completed, the entire area of disturbed soil shall be treated immediately by watering or revegetating or spreading soil binders to minimize dust generation until the area is paved or otherwise developed so that dust generation will be minimized;
- All roadways, driveways, and sidewalks associated with construction activities should be paved as soon as possible. In addition, building and other pads shall be laid as soon as possible after grading, unless seeding or soil binders are used.

**Hydrology and Water Quality/Biology**

**Construction drainage plan.** Prior to construction, the contractor shall draft a drainage and activity plan to protect channels on the Goldtree, Grand/Slack, H-1, H-2 and H-3 housing sites, Highland Drive, Parking...
Structure III and the Brizzolara Creek Enhancement Projects and their associated habitats. The plan will emphasize avoidance, and erosion and runoff control. The University will consult with appropriate jurisdictional agencies prior to activity.

**Grand/Slack – northern drainage.** The University will consult with the Army Corps of Engineers well in advance of construction to determine permitting requirement.

**Brizzolara Creek – Other direct alterations.**

Develop, for each enhancement project and other direct alteration, a set of performance standards, incorporating the following requirements:

- **Timing** – Highly invasive activities shall be scheduled to avoid breeding and nesting periods of sensitive species, including steelhead, and southwestern pond turtle
- **Erosion control** – Erosion of banks and streambed will be minimized through approved methods (per agencies listed above)
- **Revegetation** – Disturbed areas shall be revegetated with native species to provide nesting habitat, and connections to adjacent areas for migration

The university shall consult with appropriate jurisdictional agencies prior to construction activity.

**Noise**

Cal Poly shall apply the following during construction:

**Cal Poly Standard Requirements**

A. The requirements of the Article are in addition to those of Article 4.02 of the Contract General Conditions.

B. Maximum noise levels within 1,000 feet of any classroom, laboratory, residence, business, adjacent buildings, or other populated area; noise levels for trenchers, pavers, graders and trucks shall not exceed 90 dBA at 50 feet as measured under the noisiest operating conditions. For all other equipment, noise levels shall not exceed 85 dBA at 50 feet.

C. Equipment: equip jackhammers with exhaust mufflers and steel muffling sleeves. Air compressors should be of a quiet type such as a “whisperized” compressor. Compressor hoods shall be closed while equipment is in operation. Use electrically powered rather than gasoline or diesel powered forklifts. Provide portable noise barriers around jack hammering, and barriers constructed of 3/4-inch plywood lined with 1-inch thick fiberglass on the work side.

D. Operations: keep noisy equipment as far as possible from noise-sensitive site boundaries. Machines should not be left idling. Use electric power in lieu of internal combustion engine power wherever possible. Maintain equipment properly to reduce noise from excessive vibration, faulty mufflers, or other sources. All engines shall have properly functioning mufflers.

E. Scheduling: schedule noisy operations so as to minimize their duration at any given location, and to minimize disruption to the adjoining users. Notify the Trustees and the Architect in advance of performing work creating unusual noise and schedule such work at times mutually agreeable.

F. Do not play radios, tape recorders, televisions, and other similar items at construction site.

G. When work occurs in or near occupied buildings, the Contractor is cautioned to keep noise associated with any activities to a minimum. Excessively noisy operations that disrupt academic activities are anticipated, they must be scheduled after normal work hours.

H. All work in the area of the residence halls will be restricted to 10:00 a.m. to 10:00 p.m., seven days per week, throughout the year. No work will be allowed in the residence hall areas during the finals week. University reserves the right to stop construction work, including but not limited to noisy work, during the following events: Spring and Winter Commencement, Open House, Finals Week, residence hall move-in,
or at other times that may be identified by the University. University reserves the right to stop noisy work at any time when said work disrupts classes or other planned events.

In addition to these standard measures, the following measures are recommended:

- A haul route plan shall be prepared for review and approval by the University that designates haul routes as far as possible from sensitive receptors.

- Stockpiling and vehicle staging areas shall be located as far as practical from occupied structures.

- Whenever practical, the noisiest construction operations shall be scheduled to occur together in the construction program to avoid continuous periods of noise generation. Scheduling of noisier construction activities shall also take advantage of summer sessions and other times when classes are not in session.

- Project construction activities that generate noise in excess of 60 dB at the project site boundary shall be limited to the hours of 7 a.m. to 6 p.m.

**Pile Driver Use.** If possible, the use of pile drivers shall be minimized in construction. Alternative techniques that produce less noise, such as drilled or bored piles, shall be considered.

**Traffic and Circulation**

**Circulation Plan.** Where vehicle and pedestrian routes and residential areas conflict with construction activities, a circulation plan will be developed, which will include warning signs and detours, as well as efforts to minimize noise in residential areas.

**Residual Impacts**

Mitigation included above would reduce most impacts to a less than significant level; however, it is likely that the H-1 and H-2 projects, as well as the Goldtree facility would continue to exceed air quality emissions thresholds and remain significant (Class I).
OTHER CEQA SECTIONS

Growth-inducing Impacts

The CEQA Guidelines (Section 15126(g)) require that an EIR evaluate the growth-inducing impact of a proposed action. The Guidelines define a growth-inducing impact as “the way 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. Included in this are [public works] projects, which would remove obstacles to population growth. Growth is not assumed to be necessarily beneficial, detrimental, or of little significance to the environment.”

The environmental effects of a proposed project’s induced growth are secondary or indirect impacts. Secondary effects of growth can result in significant increased demand on community and public service infrastructures, an increase in traffic, noise, degradation of air and water quality, and agricultural land conversion to urbanized uses.

The Master Plan’s policies and land use categories would guide future growth on campus and the surrounding ranches through the year 2020. Growth proposed under the Plan occurs mainly in the residential student population (3,000) and faculty and staff (465). By housing the additional students on campus, and providing an increased level on on-campus services, the University attempts to reduce the impact on local communities. The proposed increase in the residential population will help alleviate the need for additional student housing in the City, and the resulting need for substantial additional off-campus services. Some incidental services (e.g., gas stations) may be needed to accommodate the proposed student increase, but the overall impact upon the surrounding community will be diminished.

Implementation of the Master Plan would require and attract additional faculty and staff who would likely settle in San Luis Obispo County. This would result in some additional housing demand or occupation of existing housing, and a need for additional services.

Overall, the proposed Master Plan provides a strategy for accommodating University growth and many policies that encourage orderly growth and provide for reduced impact on the local community and the environment.

Significant and Unavoidable Impacts if The Master Plan is Implemented

According to Section 15126(b) of the CEQA Guidelines, the purpose of this section is to “describe any significant impacts, including those which can be mitigated but not reduced to a level of insignificance. Where there are impacts that cannot be alleviated without imposing an alternative design, their implications and the reasons why the project is being proposed, notwithstanding their effect, should be described.”

The significant effects of the proposed Master Plan are identified in each element of this document. Mitigation measures identified in those sections would reduce all of the significant impacts to a less than significant level, except for impacts associated with construction and cumulative operational air quality.

Significant Irreversible Environmental Changes

Section 15126 of the CEQA Guidelines requires that an EIR identify any significant irreversible changes associated with a proposed project. Such changes typically include use of non-renewable resources or land use changes that would preclude other types of development in the future.

Continued development of the campus in accordance with the Master Plan would result in a permanent change as development continues on land that is presently vacant, used for agricultural purposes, or underutilized. Although these changes will be permanent, they are not considered adverse. The irreversible commitment of non-renewable resources includes, but is not limited to:
I. The conversion of vacant land to urban uses within existing developed areas.
II. The conversion of agricultural land to non-agricultural uses.
III. The consumption of building materials for roads, structures and infrastructure.
IV. The continued use of energy resources for heating and transportation.

None of the secondary impacts of increased urbanization is considered a significant irreversible adverse environmental impact. Agricultural land proposed for conversion is not considered prime and is currently used for grazing or pasture.

Impacts Found Not to be Significant

It was determined that the Master Plan would not result in adverse environmental impacts to the following issue areas. Therefore, no further assessment of these issues is provided in this document.

- Hazardous Materials
- Mineral Resources
- Recreation

Risk Of Upset

Hazardous substances are routinely used or stored on campus. Hazardous materials include laboratory chemicals and agricultural fuels. The campus maintains a Hazardous Materials Management and Response Plan that addresses the handling of and risks associated with hazardous materials. The Master Plan does not propose storage or use of new hazardous materials that would not be addressed by the existing Management Plan. Risk of upset is considered less than significant.
ALTERNATIVES

Introduction

In accordance with Section 15126(d) of the CEQA Guidelines, this section analyzes a range of reasonable alternatives to the proposed Master Plan. The CEQA Guidelines specify that the alternatives should be designed to feasibly attain the basic objectives of the proposed project while reducing or eliminating significant adverse impacts. A feasible alternative is one that can be "accomplished within a reasonable period of time, taking into account economic, legal, social and technological factors" (Public Resources Code, Section 21061.1 and the CEQA Guidelines, Section 15364).

Alternatives to the Master Plan analyzed in this section may be grouped into two categories: alternatives to the entire Master Plan, and alternatives to specific plan components. Both are discussed below.

Because the plan is a complex combination of many components, broad alternatives to the entire Master Plan are of limited utility. In fact, each of the alternative enrollment scenarios discussed below is a component contained within the proposed Master Plan. The purpose in examining the alternative scenarios in isolation is to understand their relative merits and weaknesses for achieving the objectives of the Master Plan and with regard to their impacts on the environment. The more productive alternative analysis has been to examine several of the major components of the Master Plan, especially housing and parking. These result in the most serious environmental consequences, and isolating them is more productive for understanding those consequences. Additional commentary on alternatives examined during the course of the plan preparation can be found in marginal notes throughout the text.

Description and Analysis of Alternatives

The alternatives to the proposed plan or plan component are described and analyzed below. Impacts associated with each alternative are discussed if they would result in lesser or greater impact than the proposed plan or component. If a particular issue is not highlighted within this section, it is to be assumed that the impact is similar.

Alternative Enrollment Scenarios

During the development of the Master Plan a large number of alternative approaches to enrollment increases were studied. The Master Plan contains all of these elements to a degree. The discussion below is for comparing the relative impacts of these components when viewed in isolation.

Student Progress. This involves increasing the number of students who graduate and reducing the time in which they complete their studies. Achieving this goal is largely an administrative task involving counseling, curriculum changes, and better student tracking. It will likely require subtle modifications in classroom and other academic allocations, perhaps necessitating additional facilities. It is this latter requirement that is likely to have the most impacts, mostly related to construction. This approach has minor environmental impacts. In fact, increased student progress should result in fewer actual students on campus, as head count would move closer to FTE. Lower head count results in fewer automobiles, lower air quality impacts, less demand on services and other related issues.

Distributed Teaching and Learning. This allows more students to utilize campus facilities without residing or coming to the University. This is achieved using technology, especially distance learning (televised classrooms) and the Internet. Developing the infrastructure required to accomplish this approach would have minimal environmental impacts. New equipment, classroom modifications and wiring are the most significant physical attributes of this scenario.
**Year-round Operations.** This would mean an increase in the summer enrollment, perhaps as high as 40% of quarterly capacity, which is the goal of the Chancellor’s office system-wide. The year-round operations would require very few modifications of the campus physical plant to operate. The one serious impediment to summer quarter is the lack of air conditioning (natural or mechanical) in most of the facilities.

Although there would be little modification required to accommodate additional enrollment in the summer, there would be impacts on the community. San Luis Obispo currently operates on a pattern of having students in town during three academic quarters, with most of them departing during the summer. This coincides with a marked increase in tourism during the summer weeks. The combination of more students and increased tourism would put greater stress on area roadways, housing market and services.

**Increase Enrollment During the Academic Year.** This scenario involves increasing the number of full-time-equivalent students on campus. This results in the greatest demands on the physical plant as well as the largest amount of development needed to accommodate the increased population on campus. Virtually every category of environmental issue would see significant impacts requiring mitigation. This scenario constitutes the basis of the project description for this EIR.

**No Project Alternative**

CEQA requires an analysis of the “no project” alternative. There has been considerable discussion in the courts about the meaning of “no project.” The essential debate is whether this means that the status quo persists indefinitely into the future, or whether the University (in this case) continues to grow in the manner it has in the past, without benefit of the new Master Plan. The reality for Cal Poly is a combination of both. Cal Poly cannot substantially increase its enrollment capacity without a comprehensive revision of its Master Plan. Without added enrollment, there would likely not be a substantial increase in on-campus housing, or additional parking structures, the two largest physical components of the Master Plan outside of the redevelopment areas. The changes that would occur would be the upgrading or replacement of existing facilities and projects brought to campus to enhance academic and research capacity. It is difficult to predict what those changes would be. The following describe the essential environmental differences between proceeding with the proposed Master Plan and continuing the current course. Various housing and parking are discussed in detail below as alternatives to specific plan components.

**Housing:** Eliminating this component is discussed in detail below. Impacts to natural resources from the development of projects on open land would be eliminated. Necessary services such as police, fire, water and wastewater would not be required from Cal Poly.

**Parking:** This is also discussed in detail below. Not building these structures eliminates significant construction impacts, as well as operational impacts to circulation and air quality.

**Biological Resources:** A few areas with sensitive biological resources would be disturbed under the proposed plan. Without the development contemplated, areas near Poly Canyon, Grand Avenue and Slack Street, west of Santa Rosa and near Chorro Creek would remain in their current condition.

**Geologic Resources:** Fewer students would be subjected to seismic and other geologic hazards on campus. However, since most of those students reside in California, they are generally at risk from the same problems that exist elsewhere.

**Water quality and flooding:** By not intensifying the instructional campus core, or building beyond the core, there would be less pressure on stormwater facilities and the receiving creek systems in or near Cal Poly. However, there would also not be the enhancement projects contemplated for Brizzolara Creek that will improve water quality and address flooding issues.
Aesthetics: While the campus core intensification will have only a minor effect on visual resources for the neighborhoods and travelers on nearby roadways, the student housing projects will add to the built environment on the hillsides and into the northern portion of the extended campus. Development at the Goldtree site would add development in the northwest corner of the extended campus. Eliminating these projects would leave these views relatively unchanged.

Cultural and Historical Resources: Not developing the plan would leave intact, for the time being, several structures of historic potential on or near the instructional core. There would be relatively little effect on archaeological resources under any alternative.

Alternatives to Plan Components

Housing

No Additional On-campus Housing

No additional housing would be built on campus under this alternative. The increased enrollment would therefore require housing supply within San Luis Obispo or the surrounding communities. Assuming the likely commensurate increase in the general population, housing supply would continue to be scarce, especially in the City. There would likely be an increase in rent and in the use of substandard premises and the necessity of more students finding housing at ever increasing distances from Cal Poly. The following points outline the general differences between this alternative and the Master Plan proposal of adding 3,000 additional beds at the University.

Biological Resources: There would be less impact to on biological resources on campus since development would not occur near the entrance to Poly Canyon (H-1, H-2, H-3), near Slack Street and Grand Avenue (H-6), or on the properties west of Santa Rosa Street (H-8, H-9). There would be an undetermined impact to biological resources for any housing that may be built outside Cal Poly to accommodate increased enrollment.

Traffic and air quality: There would be a considerable increase in peak hour traffic due to the additional 3,000 students commuting to and from campus during the morning and afternoon peak hours. With this traffic would come an increase in air quality impacts. There would be a slight reduction in off-peak trips, since the additional residents would not be making trips off campus.

Aesthetics: There would be a reduction in impacts to visual resources if the housing were not built on campus. Structures and lighting would not be built near the entrance to Poly Canyon, Slack Street and Grand Avenue, or west of Santa Rosa Street. These structures introduce visual elements that are not currently present.

Public Services and Utilities: Not housing the additional students on campus would mean the University would not have to provide fire, police, water, wastewater and other services to the residences. This would reduce costs and provide greater future capacity for any of these limited resources, especially water and wastewater. However, when examined on a broader basis, these services would still have to be provided to the students, albeit by different entities, especially the City of San Luis Obispo. So while the impact to Cal Poly would be reduced, there would be a concomitant impact elsewhere.

Other impacts: In general, all the other impacts associated with the development of on-campus housing would be eliminated. There would be no impacts to archaeological resources, geology, water quality or hydrology, noise, agricultural resources or the associated construction impacts. Again, these impacts would be transferred to other communities.
Housing in Different Locations

All of the housing location alternatives identified in the Gordon H. Chong housing study are proposed for residential development in the Master Plan. Therefore, all viable housing locations are identified and analyzed in this EIR. For a further discussion of housing locations, see the Housing Project EIR (1999). There are no other housing sites that both meet the definition of “on-campus” housing (reasonably proximate to the instructional core) and resolve or reduce any of the impacts described in this EIR. The only other sites near campus are of very high agricultural value, containing mostly prime agricultural soils. Development on these sites would be a Class I impact.

Modifying Housing Configurations

Of the sites chosen, several have environmental issues, especially regarding biology and aesthetics. Numerous mitigation measures have been proposed that will reduce these impacts to a less than significant level. However, these proposals have been developed only to a programmatic level. As plans for the individual complexes are developed, site specific issues may arise that cannot be ascertained at the current level of planning. It is understood that there will be additional environmental review for these projects. At that time, adjustments to the layout and design of the complexes can be made to reduce any impacts discovered.

Mustang Stadium Remodeling

The relocation of Mustang Stadium is not proposed as part of the Master Plan, although a future possible site has been identified at the Sports Complex. As the preferred alternative, the existing Mustang Stadium could be remodeled to accommodate additional attendance and improve the facilities. This would result in virtually no impacts to the environment, except for temporary impacts associated with construction. Remodeling of the Stadium is considered environmentally superior to relocation.

Parking

Development with Current Supply

The “no project” alternative for this component of the Master Plan would entail increased enrollment with no increase in available parking. An extreme version of this would be to not replace any of the parking lost (approximately 2,000 spaces) to other plan projects, a net reduction of parking.

In general, all impacts associated with building parking structures or surface lots would be eliminated, especially construction-related impacts, visual, circulation, and operational air quality. However, since there would not be adequate supply of parking, there would be resulting significant impacts to neighborhoods (as students parked at ever increasing distances from campus). Many university communities have experienced problems from students who park relatively near campus, take their bike off the bike rack, and ride the rest of the way into school.

In order to accomplish this alternative, alternative transportation would have to be made available in far greater quantities than currently exist.

No Additional Structures

This alternative would entail the development of 2,000 surface parking spaces in lieu of the parking structures proposed under the plan. This would require approximately 14 acres of land, assuming 300 square feet (which includes necessary aisles, sidewalks and entrances) for each space. These lots would be built in several locations in order to disperse the automobiles and service the various areas of campus.

There are general advantages and disadvantages to surface lots over parking structures.
Advantages: Surface lots are less expensive. They result in fewer concentrated air pollutants, although given the additional driving required to find a space, the overall emissions associated with surface lots are generally higher. Surface lots have less crime than parking structures because there are fewer opportunities for concealment. Surface lots usually reduce impacts to circulation given the lower concentration of automobiles.

Disadvantages: Surface lots consume more land. At Cal Poly, the only land available near the instructional core is either occupied by buildings or outdoor educational facilities, such as agricultural fields (much of which are on prime agricultural soils). Water quality issues are greater with surface lots because of the larger area of impermeable surface for which runoff must be collected and treated. Surface lots would generally have greater impacts on biology, archaeology, and other natural resources by virtue of the larger area they consume.

Reduction in Parking Spaces

The Master Plan proposal represents a 2,000-space reduction of parking from estimated future demand. To accomplish this, the plan sets forth an aggressive approach to parking demand reduction and increased alternative transportation capacity. Therefore, the “reduced project” is the proposed Master Plan.

Modification of Structure Locations

Alternative locations for parking structures were studied in the Walker parking plan (1988) and the EIR for Parking Structure I (1998). Both documents are incorporated here by reference. The proposed locations follow the Walker approach of placing a parking structure at each of the three entrances to campus. There are alternate possible locations for the two structures in close proximity to their proposed locations. In both situations, there are relatively minor differences in environmental impacts. All of the locations would be on existing parking lots or otherwise disturbed land.

Parking Structure II (California Boulevard). This structure could be moved north and be built in the current location of Mustang Stadium. This would provide a little more of a buffer between the California Boulevard entrance to campus and the structure. This could reduce visual impacts of the structure. In all other respects, the locations would have essentially the same impacts.

Parking Structure III (Highland Drive). The illustration below shows the three possible locations for this structure. The proposed location discussed in the main portion of this EIR is northwest of the intersection of Via Carta and Highland.

Library: The location adjacent to the library would eliminate a large area of the instructional core for classroom and other academic development. It would bring automobiles with their noise and air pollutants closer to sensitive receptors on campus. It would eliminate the need to build an additional crossing on Brizzolara Creek with its associated impacts to biological and water resources.

East of Via Carta: This location would bring the structure closer to the proposed housing north of Brizzolara Creek. It would have negative effects on the nearby Environmental Horticulture Sciences facility further north. These would be from noise, lighting and increased vehicular activity. Its proximity to the creek would necessitate greater mitigation measures than the library location.
Alternatives Considered but Dismissed

The development of the Master Plan occurred in the context of understanding the environmental constraints and opportunities of all proposals. Environmental planners were part of the Master Plan Team from the outset and were able to provide guidance that influenced the location and approach to all of the Master Plan components. This process allowed the team to evaluate a number of alternatives and choose, in most instances, the environmentally superior approach. Throughout the text of the Master Plan are marginal notes that indicate many of these choices. Those notes are incorporated here by reference and understood to be an important component of the overall environmental analysis of the Cal Poly Master Plan.

Environmentally Superior Alternative

The “no project” alternative, which means no general increase in enrollment, would have the least amount of environmental impacts. It presumes that Cal Poly would continue on its present course of individual plan modifications through the CSU system without a comprehensive approach to these changes. However, many of the proposed improvements on campus - improved circulation, better student services, protection of natural resources, enhancement of creeks - would not necessarily be planned. Furthermore, there would not necessarily be the establishment of an orderly phasing of development that, through sequencing, resolved many problems of convenience and facility loss.

Because of a number of important mitigating qualities of the plan discussed above, the proposed project is the environmentally superior alternative.
Bibliography

Air Pollution Control District, County of San Luis Obispo. 1997. CEQA Air Quality Handbook.

Associated Transportation Engineers. 1996. Traffic, Circulation and Parking Study for the Ventura Baseball Stadium Project.

Associated Transportation Engineers. 1998. Traffic & Circulation Study for the UCSB San Rafael Housing Project.

Associated Transportation Engineers. 1998. Traffic & Parking Study for the Claremont Colleges North Campus Master Plan EIR.

Associated Transportation Engineers. 1996. Traffic and Parking Study for the Cal Poly Student Housing Complex Project.


Associated Transportation Engineers. 1998. Traffic & Circulation Study for the UCSB San Rafael Housing Project.

Associated Transportation Engineers. 1998. Traffic & Parking Study for the Claremont Colleges North Campus Master Plan EIR.


Central Coast Regional Water Quality Control Board. 1994. Water Quality Control Plan: Central Coast Region.


County of San Luis Obispo Department of General Services. 1991. County Trails Plan


Earth Systems Consultants Northern California. 1999. Geotechnical Investigation Student Housing Project, California State University San Luis Obispo


Rogers, David Banks. 1929. Prehistoric Man on the Santa Barbara Coast. Santa Barbara Museum of Natural History.


San Luis Obispo County Air Pollution Control District. 1998. Clean Air Plan, San Luis Obispo County.


San Luis Obispo County Department of Planning and Building. 1998. San Luis Obispo General Plan Agriculture and Open Space Element.


List of Preparers and Persons Contacted

Preparers

Crawford Multari and Clark Associates prepared this Environmental Impact Report, under contract to the California Polytechnic State University. Linda Dalton, Vice Provost for Institutional Planning and Robert Kitamura, Director of Facilities Planning, were the principals on behalf of the University. Persons involved in data gathering, analysis, project management, and quality control include:

**Crawford Multari and Clark Associates:**
- Chris Wm. Clark, JD, AICP, Principal
- Nicole Phillips, Environmental Specialist
- Jeff Legato, Graphics Coordinator
- Dave Moran, Senior Associate

**Associated Transportation Engineers**
- Scott Schell, AICP, Principal Transportation Planner
- Dick Pool, P.E. Principal Engineer
- Dan Dawson, Senior Transportation Planner
- Heather O’Connell, Civil Engineer II
- Andrew Orfila, Traffic Technician

**Conejo Archaeological Consulting**
- Mary Maki, Archaeologist

**Individuals and Agencies Contacted**
- Bochum, Tim, Deputy Director of Public Works, City of San Luis Obispo
- Campbell, Cindy, Parking Administrator, California Polytechnic State University, San Luis Obispo
- Codron, Michael, Planning Technician, City of San Luis Obispo
- Dalton, Linda, Vice Provost for Institutional Planning, Cal Poly
- Hanson, Jim, Associate Transportation Engineer, City of San Luis Obispo
- Holland, V.L., Chair of Biological Sciences, California Polytechnic State University, San Luis Obispo
- Johnson, Ed, Utilities Manager, California Polytechnic State University San Luis Obispo
- Kitamura, Robert, Director Facilities Planning, California Polytechnic State University San Luis Obispo
- Lajoie, Barry, San Luis Obispo Air Pollution Control District
- Naretto, Ed, Facility Services, California Polytechnic State University San Luis Obispo
- Sanville, Terry, Transportation Planner, City of San Luis Obispo
- Stinson, Bret, RRM Design Group
Notice of Preparation of a Draft Environmental Impact Report

August 24, 2000

TO: Responsible and Trustee Agencies and Other Interested Parties

FROM: California Polytechnic State University, San Luis Obispo

SUBJECT: Notice of Preparation of a Draft Environmental Impact Report (DEIR)

California Polytechnic State University, San Luis Obispo (Cal Poly) will be the lead agency for the preparation of an environmental impact report (EIR) for the Cal Poly Master Plan. The project consists of a comprehensive plan guiding growth, development and management of the University and its land holdings in San Luis Obispo County. The location of the project and a general project description are provided in the attached supplemental information. The project will entail an increase in enrollment from 15,000 FTE to 17,500 FTE during the academic year and 2,500 FTE in summer session.

Cal Poly needs to know the views of your agency relative to the scope and content of environmental information to be contained in the EIR. In accordance with the time limits prescribed by State law, your response must be sent at the earliest date but not later than 30 days from the date of this notice. Please send your comments to:

California Polytechnic State University, San Luis Obispo
c/o Crawford Maltari Clark & Mohr
(Consultants to the University)
641 Higuera Street, Suite 302
San Luis Obispo, CA 93402
Attn: Nicole Phillips

We would also appreciate the name(s) of a contact person at your agency. If you have any questions regarding the project or this notice, please call me at (805) 541-2622 X-20.

Sincerely,

Nicole Phillips
Crawford Maltari Clark & Associates
(on behalf of the University)

attached: supplemental information
Background

California Polytechnic State University, founded in 1901, is a predominately undergraduate, teaching university specializing in applied technical and professional fields. With its unique tradition of "learn-by-doing" education, Cal Poly students receive both theoretical knowledge in the classroom and practical experience in laboratories and fields, ensuring that graduates are prepared for careers in the 21st century.

About 70 percent of Cal Poly's students major in engineering, agriculture, business, architecture or related fields. Programs in the liberal arts, science and mathematics, and teacher-training build on the University's polytechnic character. More than 90 percent are undergraduates; the rest are in master's degree or teaching credential programs.

The campus occupies over 6,000 acres in San Luis Obispo County and 3,200 acres in Santa Cruz County. These lands provide hands-on opportunities for students, especially those studying agriculture, biological sciences, architecture, and engineering, to apply their classroom knowledge to real-life situations.

Cal Poly, with its national reputation for excellence and its desirable location on the Central Coast, receives many more student applications than can be accommodated. The University is able to enroll only about one in five undergraduate applicants. In Fall 1999, the average GPA and SAT scores for incoming freshmen were 3.64 and 1162.

Cal Poly is regularly included in "best colleges" lists. In its past seven surveys, *U.S. News and World Report* has ranked Cal Poly as the top public undergraduate university in the western United States. The magazine rates the engineering college the best public non-doctoral program in the entire country.

Cal Poly's new Master Plan provides principles and guidelines for the physical development of Cal Poly so that the University can sustain its mission as a polytechnic university into the 21st century. The Plan is designed to meet the educational needs of the campus, to respond to the growing demand for higher education—particularly in scientific and technical fields—and to address the role of the University as a member of its larger community.

The architectural firm of Allison and Rible prepared the first formal Master Plan for Cal Poly in 1949, based on a projected enrollment of 4,080. In 1958 the California Department of Education dictated that all non-metropolitan state college campuses plan for an enrollment of 12,000 Full-Time Equivalent Students (FTES). This led to the next Master Plan, prepared by the architectural firm of Falk and Booth in 1962, and approved by the California State University Board of Trustees in May 1963. In 1970, the 4th revision to this Master Plan increased the enrollment capacity to 15,000 FTES. Subsequent revisions to add or change building sites resulted from piecemeal planning for new projects—thus, a major review was long overdue.
Project Description

The projected increase in college-bound students in California referred to as ‘Tidal Wave II’ expands the need for higher education. The high demand for a Cal Poly education, particularly in programs not generally available at other public universities in California, brings that pressure to San Luis Obispo. The existing investment in specialized programs, the number and quality of applications, and the economic and societal contributions of graduates all contribute to the perception of Cal Poly as a candidate for growth.

This Master Plan update represents the culmination of a four-year planning process at Cal Poly. The process began with academic strategic planning in the 1997-98 academic year, involved campus and community task forces in identifying issues during 1998-99 and invited public comment on a preliminary draft in the Spring of 2000.

As guidance for approximately the next 20 years, the Master Plan addresses academic program demand, physical and environmental constraints and opportunities, and capital and operating budget requirements to support a future enrollment of 17,500 net academic year and 2,500 summer full-time equivalent students (PTES). The Plan also anticipates a modest increase in technology-supported instruction and enhancements to curricula and advising to accelerate student progress to degree completion. Together these operational changes designed to increase summer enrollment, apply technology and facilitate student progress are expected to increase college year enrollment by about 9 percent without increasing fall headcount.

The physical development portion of the Master Plan focuses on land use and circulation issues associated with increasing enrollment during the Academic Year, as this scenario involves the most extensive change on campus. Enrollment growth projections translate into a Fall headcount of approximately 20,900 students and about 3,200 regular faculty and staff - an increase of about 17 percent over present capacity to be accomplished in phases over approximately 20 years. Because demographers expect the demand for higher education to increase rapidly through about 2010, the earlier phases of the Master Plan may need to accommodate more enrollment growth than later phases.

The Master Plan redevelops and consolidates academic facilities within an expanded instructional core south of Brizzolara Creek. At the same time, the Plan is designed to protect natural environmental features and agricultural lands that form the character of the campus. A central feature of the plan involves creating new student residential communities accommodating approximately 3,000 additional students and provision of faculty and staff housing. Student services, recreational facilities, would be expanded commensurate with increased enrollment. Although parking may increase over existing numbers, the ratio of parking to students is planned to decrease during the planning period.

Draft and Final EIR

Cal Poly has concluded that a Draft and Final EIR are necessary to assess the potential environmental impacts of the project as described above. The following issues have been identified for inclusion in the Draft EIR:
Acoustics 
Agricultural Resources
Air Quality 
Biological Resources
Cultural Resources 
Geology and Soils
Noise 
Public Services/Utilities
Traffic and Circulation (including Parking)

The list of potential impact areas may be amended as a result of the input from responsible and trustee agencies and other interested parties.

Attached:
Map 1 -- Regional Location
Map 2 -- Campus Area Affected by the Master Plan
Map 3 -- Conceptual Campus Plan
Mailing List

San Luis Obispo Council of Governments
150 Osos Street, Suite 202
San Luis Obispo, CA 93401

City of San Luis Obispo
Community Development Dept.
390 Palm Street
San Luis Obispo, California 93401

State Clearinghouse
1400 Tenth Street
Sacramento California 95814

Regional Water Quality Control Board
Central Coast Region
81 Figueroa Street, Suite 200
San Luis Obispo, California 93401

Caltrans, District 5
P.O. Box 8114
San Luis Obispo, CA 93403-8114

Sydney Holcomb
Chair: RQN
2076 Hayes
San Luis Obispo, California 93405

U.S. Army Corps of Engineers
Ventura Field Office
2151 Alessandro Drive, Suite 255
Ventura, California 93001
ATTN: Tiffany Welch

Air Pollution Control District
San Luis Obispo
3433 Robert Court
San Luis Obispo, CA 93401
Attn: Barry Layne

County of San Luis Obispo
Planning and Building Department
County Govt. Center
San Luis Obispo, California 93408
Attn: Ellen Caroll

County Clerk
1144 Monterey Street
San Luis Obispo, California 93401

US Fish and Wildlife Service
2493 Portola Road, Suite B
Ventura, Ca. 93003

California Department of Fish and Game
Region III
P.O. Box 47
Yountville, Ca. 94599-0047

County Agricultural Commissioner
2156 Sierra Drive
San Luis Obispo, Ca. 93401
Attn: Mr. Robert Hopkins

Richard Kranzendorf
160 Graves
San Luis Obispo, California 93405

California Department of Fish and Game
1178 17th Street
Los Osos, California 93407
ATTN: Bob Stafford

Department of Water Resources
1416 9th Street, Km 252-19
Sacramento, California 95814

Facilities Planning
Cal Poly State University
San Luis Obispo, CA 93407
Attn: Robert Kitamura, AIA

Office of the Chancellor
SWRC Office
4665 Lampson Avenue
Los Alamos, California 90720

Office of Historic Preservation
P.O. Box 942896
Sacramento, Ca. 94296-0001

Julie Frankel
655 Oak Ridge Road
San Luis Obispo, California 93405
August 28, 2000

To: Reviewing Agencies

Re: Cal Poly Master Plan
   SCH# 2000081102

Attached for your review and comment is the Notice of Preparation (NOP) for the Cal Poly Master Plan draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Nicole Phillips
California State Polytechnic University, San Luis Obispo
641 Higuera Street
Suite 302
San Luis Obispo, CA 93402

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Project Analyst, State Clearinghouse

Attachments
cc: Lead Agency
Document Details Report
State Clearinghouse Data Base

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**Lead Agency Contact**

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<tbody>
<tr>
<td>Agency</td>
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<td>Address</td>
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<td>State</td>
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**Project Location**

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**Proximity to:**

- Highways
- Airports
- Railways
- Waterways
- Schools
- Land Use

**Project Issues**

- Aesthetic/Visual
- Air Quality
- Other Issues
- Noise, Traffic/Circulation
- Agricultural Land
- Geologic/Seismic
- Public Services

**Reviewing Agencies**

- Resources Agency
- California Coastal Commission
- Department of Conservation
- Department of Parks and Recreation
- Department of Health Services
- Department of Fish and Game
- Region 3
- Native American Heritage Commission
- State Lands Commission
- Caltrans, District 5
- State Water Resources Control Board
- Clean Water Program
- Regional Water Quality Control Board

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Note: Blanks in data fields result from insufficient information provided by lead agency.
September 1, 2000

Nicola Phillips
California State Polytechnic University, San Luis Obispo
641 Higuera Street
Suite 302
San Luis Obispo, CA 93402

RE: SCH #2000061102- Cal Poly Master Plan

Dear Ms. Phillips:

The Native American Heritage Commission has reviewed the above mentioned NOP. To adequately assess the project-related impact on archaeological resources, the Commission recommends the following action be required:

1. Contact the appropriate Information Center for a records search. The record search will determine:
   - Whether a part or all of the project area has been previously surveyed for cultural resources.
   - Whether any known cultural resources have already been recorded on or adjacent to the project area.
   - Whether the probability is low, moderate, or high that cultural resources are located within the project area.
   - Whether a survey is required to determine whether previously unrecorded cultural resources are present.

2. The final stage of the archaeological inventory survey is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
   - Required the report containing site significance and mitigation be submitted immediately to the planning department.
   - Required site forms and final written report be submitted within 3 months after work has been completed to the Information Center.

3. Contact the Native American Heritage Commission for:
   - A Sacred Lands File Check.
   - A list of appropriate Native American Contacts for consultation concerning the project site and assist in the mitigation measures.

Lack of surface evidence of archaeological resources does not preclude the existence of archaeological resources. Lead agencies should include provisions for accidentally discovered archeological resources during construction per California Environmental Quality Act (CEQA) §15064.5 (f). Health and Safety Code §70560.5 and Public Resources Code §5097.88 mandates the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery and should be included in all environmental documents. If you have any questions, please contact me at (915) 853-4038.

Sincerely,

Debbie Pike-Treadway
Associate Governmental Program Analyst

CC: State Clearinghouse
Transmittal

TO: Debbie Pilas-Treadway

DATE: September 7, 2000

RE: Request for Sacred Lands File Check

In response to your September 1, letter, we are requesting a Sacred Lands File Check for the Cal Poly Master Plan Update EIR (SCH#2000081102). Attached are quads depicting the extent of Cal Poly property in San Luis Obispo County. Please let me know if this is not sufficient.

FROM: Nicole Phillips
October 2, 2000

Nicole Phillips
Crawford Multari Clark & Mohr
641 Higuera Street, Suite 302
San Luis Obispo, CA 93401

RE: Cal Poly Master Plan – San Luis Obispo County

Sent by Fax: (805) 541-5512
Pages Sent: 3

Dear Ms. Phillips: 

A record search of the sacred lands file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend other with specific knowledge. A minimum of two weeks must be allowed for responses after notification.

If you receive notification of change of addresses and phone numbers from any these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 653-4040.

Sincerely, 

[Signature]

Rob Wood
Associate Governmental Program Analyst
<table>
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<tr>
<th>Name</th>
<th>Address 1</th>
<th>Address 2</th>
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<tbody>
<tr>
<td>Chief Joseph</td>
<td>5811 Lone Pine Place</td>
<td></td>
<td>(805) 238-2784</td>
<td></td>
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<tr>
<td>Beverly Salazar Folkes</td>
<td>1931 Shadybrook Drive</td>
<td>Thousand Oaks, CA 91362</td>
<td>(805) 492-7255</td>
<td></td>
</tr>
<tr>
<td>Santa Ynez Band of Mission Indians</td>
<td></td>
<td></td>
<td>(805) 552-5370</td>
<td></td>
</tr>
<tr>
<td>Edward Valencia, Chairperson</td>
<td>P.O. Box 517</td>
<td></td>
<td>(805) 688-7997</td>
<td>(805) 688-8005Fax</td>
</tr>
<tr>
<td>Pilulaw Khus Zarate</td>
<td>2001 San Bernardo Creek</td>
<td>Morro Bay, CA 93442</td>
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<td>Julie Lynn Tumamait</td>
<td>385 North Pole Ave</td>
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<td>(805) 646-6214</td>
<td></td>
</tr>
</tbody>
</table>

| Salinan Nation                | Gregg Castro, Chairperson                     |                                 | (408) 385-3759-home | (408) 385-3339-work |
| Judith Borman Grindstaff      |                                                 |                                 | (408) 385-3759-home | (408) 385-3339-work |
| San Luis Obispo County Chumash Council | Mark Steven Vigil                          |                                 | (805) 481-2461 |          |
| Mary E. Trejo                 | PO Box 459                                    |                                 | (805) 529-3143 |          |

This list is current only as of the date of this document.
Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7069.5 of the Health and Safety Code, Section 5097.04 of the Public Resources Code and Section 5097.08 of the Public Resources Code.
This list is only applicable for contacting local Native Americans with regards to the cultural assessment for the proposed Cal Poly Master Plan Update (SCH#2000081102), San Luis Obispo County.
September 22, 2000

California Polytechnic State University, San Luis Obispo
c/o Crawford Multani Clark & Mohr
641 Higuera Street, Suite 302
San Luis Obispo, Ca. 93402
Attention: Nicole Phillips

Re: Cal Poly Master Plan EIR

Dear Ms. Phillips:

RQN’s comments regarding the scope and content of information to be contained in the EIR for the Cal Poly Master Plan are as follows:

1. The “costs” of new development and/or re-development on the campus such as glare, light trespass, noise trespass, and traffic must be thoroughly studied for their impacts on established residential neighborhoods and the City’s open space areas.

2. The statements, findings and conclusions must be based on factual information, such as, but not limited, to sound tests and traffic studies.

Thank you for including RQN in this process and we look forward to being involved in the future.

Sincerely yours,

Cydney Holcomb
Chairperson, RQN
2076 Hays Street
San Luis Obispo, Ca. 93405
BOTANICAL SURVEY

Poly Canyon North
Proposed Campus Housing Site

Cal Poly State University Campus
San Luis Obispo, California

Prepared by

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Professor and Department Chair
Biological Sciences Department

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Prepared for:

Cal Poly Master Plan

October 2000
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EXECUTIVE SUMMARY

This report presents the results of a botanical survey conducted during April, May, and June 2000 on a site proposed for new student housing near the southern entrance to Poly Canyon and adjacent to Brizzolara Creek on the Cal Poly campus. Special attention was given to potential occurrences of several rare, endangered or special-status plant species known to exist within the San Luis Obispo Quadrangle (Skinner and Pavlik 1994) and to any sensitive habitats present on the site.

We identified 195 plant species (Appendix 1) consisting of 85 natives, 110 aliens (including 17 cultivated trees and shrubs), and seven general plant communities: (1) coastal valley grassland; (2) California native grassland; (3) coastal scrub; (4) riparian woodland; (5) freshwater marsh; (6) anthropogenic ruderal; and (7) anthropogenic urban mix. Most of the site north of Brizzolara Creek is covered by coastal valley grassland currently used as pasture for the beef and bull test unit. Historically, California native grassland covered this area, but it has largely been converted to a grassland community dominated by alien grasses and forbs. However, some significant stands of California native grasslands remain on the hillsides outside the pasture areas. Coastal scrub occurs on the steep, rocky hillside along the northern boundary of the site, and riparian woodland, dominated by coast live oak, California sycamore, California bay-laurel, and willows, line Brizzolara Creek. Freshwater marsh occurs along the margin of Drumm Reservoir and its drainage system as well as in small patches along the Brizzolara Creek channel. The southwestern portion of the site, near the Poly Canyon entrance, has significant stands of ornamental trees and shrubs such as eucalyptus, Peruvian pepper, olive, acacia, and pistachio. This human made forest community dominates the southwestern boundary of the site between Brizzolara Creek and Poly Canyon Road. Stands of introduced trees also flank Poly Canyon Road near the entrance to the Poly Canyon. Along the eastern boundary of the site, north of Brizzolara Creek, there is a row of eucalyptus trees just east of the parking lot. Rows of mulberry trees have also been planted in rows along the fence lines separating the pastures of the beef and bull test unit. Remnants of riparian vegetation, including some large coast live oaks and California sycamores, are scattered in the broad floodplain south of Brizzolara Creek among the campus buildings and roads around the Meats Unit, the Horseshoeing Unit, the Feed Mill, and the Rose Parade Float Shop.

The most significant natural resource elements remaining on this site are: 1) the riparian woodland along Brizzolara Creek; 2) the mature coast live oak woodland on the slope along Poly Canyon Road (including a small creek that flows through the woodland, under the paved flood plain, and into Brizzolara Creek); 3) Drumm Reservoir and its associated drainage system and wetlands; 4) the remaining stands of California native grassland along the northern boundary of the project site; and (5) the coastal scrub and serpentinite outcrops with potential rare plants.

Although extensive serpentinite rock outcrops exist on the hillsides above the site, it is not clear if any of these, or any of the rare plant species associated with these outcrops, occur within the disturbance area of the proposed housing site. However, we must consider the impact that students living in the proposed dormitories would have on the plant life of these nearby serpentinite slopes. Foot traffic is likely to result in the trampling of sensitive plants, the deliberate or accidental movement of rocks, the creation of trails, erosion, and the creation of disturbed habitats where weeds will grow in place of native species.

Further studies will be needed when specific plans are proposed for the site, and a creek management and enhancement plan must be prepared to protect Brizzolara Creek.
INTRODUCTION

The proposed project site consists of approximately 50 acres of the Cal Poly campus, immediately north and east of the campus core. The site is situated at the southern entrance to Poly Canyon and includes areas both north and south Brizzolara Creek. The site location is specifically in north-central Section 23 of Township 30 South from the Mt Diablo Base Line and Range 12 East from the Mt Diablo Meridian. The study site is bounded on the north and east by the hillsides of Poly Canyon, on the east by Poly Canyon Road, and on the south, west, and northwest by roads and parking lots associated with existing campus facilities (see site map).

The project site is divided by Brizzolara Creek, which traverses the area from northeast to southwest. Approximately 75% of the site is located northwest of the creek. Slopes in this portion of the site gradually increase from about 5% to over 20% slopes in a continuous incline from the creek upward to the steep hillsides along the northern boundary of the project site. The remaining 25% of the site is located southeast of the creek. Much of this portion of the site is located in the relatively flat, disturbed floodplain of the creek. However, the terrain rises abruptly from the floodplain forming steep slopes along Poly Canyon Road and behind Cal Poly’s Facilities and Transportation Services yards. Elevations range from approximately 400 to 620 feet in this area.

The general climate is the cool summer phase of the dry-summer Mediterranean type of humid mesothermal climates (Trewartha 1968). Winter high temperatures average near 62°F (16.7°C) with low averages near 41°F (5°C). Winter lows below 32°F (0°C) are not uncommon, and a low of 9°F (–12.7°C) has been recorded on the Cal Poly campus. Summer high temperatures average near 77°F (25°C) with low averages near 52°F (11°C). Summer highs above 90°F (32°C) are not uncommon, and a high of 109°F (42.8°C) has been recorded on the Cal Poly campus. Precipitation falls as rain primarily from October through April and averages about 22 inches (558 mm) per year. Less than one inch of precipitation is typically recorded from May 1 to September 30, but overnight and morning fog with nearly 100% humidity occurs nearly every day unless drier, downsloping winds descend from the Salinas Valley over the Santa Lucia Range to overwhelm the onshore flow of marine air (Felton 1965). However, within this general climatic type are a number of local and micro climates that affect the distribution of plants and vegetation types.

Upland soils are mostly of the Los Osos Loam series with Lodo-Diablo Clay Loam Complex present to the southeast of Brizzolara Creek. Los Osos Loam soils are moderately deep, slowly permeable, well-drained residual soils derived from sandstone. Surface loam or loamy clay is underlain by thick clay horizons to a depth of about 32 inches. Lodo-Diablo Clay Loam soils are shallow to moderately deep, slowly permeable, well-drained residual soils also derived from sandstone but with greater clay content in the surface horizons than is present in Los Osos Loam soils (Ernstrom 1977).

Current land use is mostly agricultural, with the larger northern portion used by the College of Agriculture for its Beef and Bull Test Unit. The portion of this site nearest Brizzolara Creek is sectioned into corrals and equipment yards with unpaved
road access to each. North of these facilities, the gradual sloping hillside is fenced in a fan-shaped fashion toward the main corral into six unequally sized, heavily grazed pastures. The southwestern-most part of these pastures contains Drumm Reservoir, which was created by damming a smaller perennial tributary of Brizzolara Creek. This tributary flows from north to south through the project site. In the flood plain along the south side of Brizzolara Creek there are several structures that support activities of the Meats Unit, the Horseshoeing Unit, the Feed Mill, and the Rose Parade Float Shop. Many of these structures extend to the top of the creek bank, and most of flood plain in this area is paved and used as roadways and parking lots. (see project map for overview).

---

**OVERVIEW OF VEGETATION**

The vegetation of the study site has developed in response to the interaction of a complex of environmental features that are variable over the area and result in a mosaic of plant communities. Local climate (wind, temperature, rainfall, fog, etc.), topography, parent materials, soils, biotic components, fire, location of waterways, and natural historical events are all variables that have affected the vegetation on the site. Past and present land-use and other human caused events have also resulted in significant changes in the vegetation.

Prior to grazing and the creation of pastures, the large grassland area the covers most of the site north of Brizzolara Creek was covered by California native grassland. Coastal scrub, which is the dominant vegetation on the steep hillside s along the northern and eastern boundaries, has been modified to some extent by past brush clearing, but much of it is relatively undisturbed. There are also small patches of coastal scrub and a significant stand of coast live oak woodland on the slope along Poly Canyon Road. Riparian woodland is restricted to the areas along Brizzolara Creek and its floodplain, which ranges from about 50 to 150 feet or more wide. The riparian zone has been significantly modified by paving and building agricultural facilities along the creek. In many cases the buildings, structures, and paving extent right on the top of the creek bank. Remnants of the once more extensive riparian woodland, including large sycamores and oaks, remain in the paved areas and around the buildings in the flood plain.

Presently, the California native grassland is entirely converted to livestock pastures thoroughly dominated by non-native grasses, forbs, and sparsely-planted trees along the pasture fences. The riparian woodland is now reduced, fragmented, and invaded by alien trees, shrubs, forbs, and grasses. The slopes likely covered at one time by coastal scrub and coast live oak woodland has been converted to ornamental plantings of *Eucalyptus, Acacia*, and other exotics along the southern boundary and along the entrance to Poly Canyon.

The most significant natural resource elements remaining on this site are: 1) the riparian woodland and associated wetlands along Brizzolara Creek; 2) the mature coast live oak woodland between Brizzolara Creek and Poly Canyon Road (including a small creek that flows through the woodland, under the paved flood plain, and into Brizzolara Creek); 3) the wetlands around Drumm Reservoir and its drainage system; and 4) the remaining stands of California native grassland along the northern boundary of the site.

---

**VEGETATION DYNAMICS**

Plant communities are dynamic assemblages of plants that interact among themselves and their environment within a space-time boundary. Some of these communities are well defined and distinct while others are not. No two sites within a given community are exactly the same in environmental conditions, vegetation structure, or species composition. This
complexity makes defining plant communities and mapping their areal coverage sometimes difficult and arbitrary.

Spatial boundaries between plant communities (also referred to as ecotones or transition areas) may be abrupt where environmental features change sharply, such as between terrestrial and aquatic habitats. However, usually there is an environmental gradient and plant communities change more gradually in response to that gradient.

Another complicating factor in vegetation analyses and mapping is that plant communities are not static but change through time in response to both natural and human induced environmental changes. As a result, some areas are mixtures of plant assemblages at varying successional stages. The invasion of exotics into native communities further complicates our study.

**DESCRIPTION OF THE VEGETATION AND FLORA**

The floristic inventory of the study site took place in April, May, and June 2000. The species list and vegetation map indicates the diversity of plant species and habitats. The vegetation and floristic survey consisted of canvassing the site on foot, recording the plant species found in identifiable condition, and describing the plant communities and habitats.

We identified about 195 plant species (Appendix 1), 85 natives, 110 aliens (including 17 cultivated trees & shrubs), and seven plant communities. However, it is important to note that this may not be a complete list of the plants present on the site. Plant species composition, especially herbaceous cover, varies seasonally and annually. During May and June 2000 some herbaceous plant species may have been overlooked or may bloom in late summer or early fall. A thorough survey through the entire year would be necessary for a complete listing of the flora found on the project site. In addition, more detailed work is needed in some of the less accessible areas.

The natural vegetation on the site can be somewhat arbitrarily divided into seven plant communities, as classified by Holland and Keil (1995): (1) coastal valley grassland; (2) California native grassland; (3) coast live oak woodland; (4) coastal scrub; (5) riparian woodland; (6) freshwater marsh; (7) anthropogenic ruderal and urban mix. Each is discussed separately below.

1. **Coastal Valley Grassland**

Coastal valley grasslands cover the majority of the site north of Brizzolara Creek. These grasslands are currently composed of various species of native and introduced grasses and forbs (dicot herbs), and sometimes occasional shrubs are present. The grasses that dominate this grassland include annuals, perennials, or a mixture of the two depending on location. Many of the grasslands on campus are now dominated by grasses and forbs tolerant to grazing that were introduced into California during the period of Spanish settlement.

Grasslands often occur on fine textured, clay rich soils of valleys and alluvial deposits at the base of hillsides, although they also extend on some steep hillsides. They integrate with coastal live oak woodlands on mesic hillside slopes, with coastal scrub and chaparral on xeric, steep, rocky slopes, and with riparian woodland and freshwater marsh communities in aquatic and semi-aquatic areas along the creek and reservoir. Many of the grassland species occur as
understory species in the other communities.

Some areas of the Cal Poly campus have an impressive number of native grasses in the grassland areas, much more than most grasslands in locally and in California. The stands of perennial, native bunch grasses, which dominated the grassland prior to Spanish settlement, have gradually been reduced on most of the study site and are now found as only scattered components in some areas of the coastal valley grasslands. In heavily grazed pastures, which dominate much of the grasslands north of Brizzolara Creek, few if any native grasses have survived. However, outside these heavily grazed areas, stands of California native grassland persist. Historically, the changes in the composition of the grassland in this area are mostly a function of the introduction and invasion of alien plant species and changes in livestock grazing and their grazing patterns.

The Coastal valley grassland communities in the pastures of the site have been modified by both historical and present-day human influences. These past influences and the current pastoral land-use patterns have shaped the grasslands that occur on the open, upland slopes today. Repeated disturbance to the vegetation and soil by grazing animals maintains a pastoral influence on the grassland and results in grassland composed of mostly introduced species tolerant to this type of repeated disturbance regime.

Communities dominated by plants introduced by humans and established or maintained by human disturbance are anthropogenic communities. The coastal valley grassland used as heavily grazed pastures reflect the influence of humans by their species composition. These grasslands are composed of a mixture of plant species typical of coastal valley grasslands along with species intentionally grown for grazing livestock to consume. In the dry-summer subtropical climate region of California, the intentionally seeded pasture grasses are all cool-season Eurasian species, and mostly annual. The perennial species used, such as *Dactylis glomerata* (orchardgrass), *Festuca arundinacea* (tall fescue), *Lolium perenne* (perennial ryegrass), and *Phalaris aquatica* (Harding grass) generally need at least 15 inches of annual precipitation to persist. Common coastal grassland species found in these pastures are those capable of invading and tolerating the existing grazing regime. These include a variety of mostly annuals, such as *Avena* spp. (wild oats), *Bromus* spp. (bromes), and *Lolium* spp. (ryegrasses). These species persist through the dry summers as quiescent seeds that await the first autumn rains. Other invaders of pastures are frequently Eurasian forbs, but some natives are able to persist in pastures if they have some inherent chemical or physical attribute that renders them unpalatable to livestock.

Historically, these upland grassland areas were probably dominated by a mixture of the perennial grasses *Nassella lepida* (Foothill needlegrass), *Nassella pulchra* (Purple needlegass), *Danthonia californica* (California oatgrass), *Elymus elymoides* (Squirreltail), and *Poa secunda* (Malpais bluegrass), along with many perennial and annual forbs. Prior to introduction of cattle by the Spanish, coastal California had no large mammals that grazed all year, and grasslands were never heavily grazed. Native grassland species lack adaptations to heavy grazing and have declined markedly partly because grazing during their reproductive cycle greatly reduces seed production and the stored food reserves necessary to get them through dormant phases. The annual grasses introduced from the Old World are more tolerant of grazing, reproduce quickly, and do not need to store food reserves. Over the years their seedlings have out-competed and replaced native species. Native forbs have suffered a similar fate. On the Cal Poly campus, cultivation as well pastoral land use have played roles in the nearly complete conversion to alien dominated herb lands.
Within this upland pasture, both *Nassella lepida* (Foothill needlegrass) and *Nassella pulchra* (Purple Needlegrass) persist on the steeper slopes. Other indicators of California native grasslands are no longer present. However, in less disturbed sites, stands of California native grassland persist. This community is discussed next.

Some of the typical alien grasses and forbs found in the coastal valley grassland and pastures on-site are listed below. Others are listed in Appendix 1.

### Alien Grasses

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slender wild oats</td>
<td><em>Avena barbata</em></td>
</tr>
<tr>
<td>Common wild oats</td>
<td><em>Avena fatua</em></td>
</tr>
<tr>
<td>False brome grass</td>
<td><em>Brachypodium distachyon</em></td>
</tr>
<tr>
<td>Ripgut brome grass</td>
<td><em>Bromus diandrus</em></td>
</tr>
<tr>
<td>Soft chess</td>
<td><em>Bromus hordeaceus</em></td>
</tr>
<tr>
<td>Spanish brome</td>
<td><em>Bromus madritensis</em></td>
</tr>
<tr>
<td>Foxtail barley</td>
<td><em>Hordeum muninum</em></td>
</tr>
<tr>
<td>Annual ryegrass</td>
<td><em>Lolium multiflorum</em></td>
</tr>
<tr>
<td>Perennial ryegrass</td>
<td><em>Lolium perenne</em></td>
</tr>
<tr>
<td>Rattlefescue</td>
<td><em>Vulpia myuros</em></td>
</tr>
</tbody>
</table>

### Alien Forbs

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mayweed</td>
<td><em>Anthemis cotula</em></td>
</tr>
<tr>
<td>Black mustard</td>
<td><em>Brassica nigra</em></td>
</tr>
<tr>
<td>Italian thistle</td>
<td><em>Carduus pycnocephalus</em></td>
</tr>
<tr>
<td>Tocotolte</td>
<td><em>Centaurea melitensis</em></td>
</tr>
<tr>
<td>Yellow star-thistle</td>
<td><em>Centaurea solstitialis</em></td>
</tr>
<tr>
<td>Teasel</td>
<td><em>Dipsacus sativus</em></td>
</tr>
<tr>
<td>Storkbill filaree</td>
<td><em>Erodium botrys.</em></td>
</tr>
<tr>
<td>Italian thistle</td>
<td><em>Foeniculum vulgare</em></td>
</tr>
<tr>
<td>Tocotolte</td>
<td><em>Hirschfeldia incana</em></td>
</tr>
<tr>
<td>Perennial mustard</td>
<td><em>Lactuca saligna</em></td>
</tr>
<tr>
<td>Perennial mustard</td>
<td><em>Lactuca serriola</em></td>
</tr>
<tr>
<td>Bristly ox-tongue</td>
<td><em>Picris echioides</em></td>
</tr>
<tr>
<td>English plantain</td>
<td><em>Plantago lanceolata</em></td>
</tr>
<tr>
<td>Common plantain</td>
<td><em>Plantago major</em></td>
</tr>
<tr>
<td>Knotweed</td>
<td><em>Polygonum arenastrum</em></td>
</tr>
<tr>
<td>Milk thistle</td>
<td><em>Silybum marianum</em></td>
</tr>
<tr>
<td>Prickly sow-thistle</td>
<td><em>Sonchus asper</em></td>
</tr>
<tr>
<td>Common sow-thistle</td>
<td><em>Sonchus oleraceus</em></td>
</tr>
</tbody>
</table>

## 2. California Native Grassland

California native grasslands are areas in which the dominant plants are various species of native perennial grasses that grow as individual bunches or tussocks rather than as continuous turf. These grasslands typically occur on soils that form heavy, sticky clay in the winter and dries to nearly the hardness of pavement in the dry summer, thus limiting the growth of shrubs and trees. They integrate with coastal live oak woodlands on more mesic slopes, with coastal scrub on xeric, steep, rocky slopes, and with riparian communities in aquatic and semi-aquatic areas along drainages. Typically, numerous other types of herbaceous plants and occasionally scattered shrubs occupy open spaces among the native bunch grasses. These associated herbaceous species may be annuals, perennials or a mixture of the two depending on location and environmental conditions. Many species present in these grasslands also occur as components of the coastal valley grassland and other communities.

California native grasslands once formed the dominant vegetation on over 17 million acres, or 17%, of California land area prior to Spanish settlement (Biswell 1956; Huenneke 1989). Only about 10,000 acres of California grassland remains intact within California (Barry 1972), and less than 1% has any protected status (Keeley 1990). Native perennial bunch grasses have been reduced in distribution locally; however, there are some impressive California native grasslands on the hillsides to the north of the site, and along the slopes of Poly Canyon, especially in association with *Yucca whipplei* (Whipple yucca) on soils derived from serpentinite rock. The California native grasslands on the Cal Poly campus are some of the finest examples extant in California, representing about 10% of the remaining cismontane Foothill Needlegrass Grassland Series (Sawyer and Keeler-Wolf 1995), and 5% of the total remaining native grasslands.

As discussed previously, changes in the composition of California grasslands are mostly due to introduction and invasion of alien plant species and changes in the kinds of animals (especially grazing livestock) and their grazing patterns. Urban development and changes in
land use patterns have also resulted in the loss of native grasslands. As discussed previously, the California native grasslands that covered much of this study site historically and much of the Cal Poly campus have been lost or converted to grasslands dominated by introduced grasses and forbs. Stands of California native grassland remains on site along the northern and northeastern boundary as the slope rises to form the steep hillsides outside the boundaries of the study site.

The dominant species in the California native grasslands on site are the following native grasses and forbs:

<table>
<thead>
<tr>
<th>Native Grasses</th>
<th>Native Forbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bromus carinatus</td>
<td>Gnaphalium californicum</td>
</tr>
<tr>
<td>Elymus elymoides</td>
<td>Sisyrinchium bellum</td>
</tr>
<tr>
<td>Koeleria macrantha</td>
<td>Chlorogalum pomeridianum</td>
</tr>
<tr>
<td>Nassella lepida</td>
<td>Dichelostemma capitatum</td>
</tr>
<tr>
<td>Nassella pulchra</td>
<td></td>
</tr>
<tr>
<td>Poa secunda</td>
<td></td>
</tr>
<tr>
<td>Vulpia microstachys</td>
<td></td>
</tr>
</tbody>
</table>

Mixed with these natives are the following alien grass species:

<table>
<thead>
<tr>
<th>Alien Grasses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avena barbata</td>
</tr>
<tr>
<td>Avena fatua</td>
</tr>
<tr>
<td>Brachypodium distachyon</td>
</tr>
<tr>
<td>Bromus diandrus</td>
</tr>
<tr>
<td>Bromus hordeaceus</td>
</tr>
<tr>
<td>Bromus madritensis</td>
</tr>
<tr>
<td>Hordeum murinum</td>
</tr>
<tr>
<td>Lolium multiflorum</td>
</tr>
<tr>
<td>Lolium perenne</td>
</tr>
<tr>
<td>Vulpia myuros</td>
</tr>
<tr>
<td>Slender Wild Oats</td>
</tr>
<tr>
<td>Common Wild Oats</td>
</tr>
<tr>
<td>False Brome Grass</td>
</tr>
<tr>
<td>Ripgut Brome Grass</td>
</tr>
<tr>
<td>Soft Chess</td>
</tr>
<tr>
<td>Spanish Brome</td>
</tr>
<tr>
<td>Foxtail Barley</td>
</tr>
<tr>
<td>Annual Ryegrass</td>
</tr>
<tr>
<td>Perennial Ryegrass</td>
</tr>
<tr>
<td>Rattail Fescue</td>
</tr>
</tbody>
</table>

3. Coastal Live Oak Woodland

Coastal live oak woodland are one of the most characteristic and interesting vegetation types of California's central coast and on the Cal Poly campus. On the hillsides around Poly Canyon and on the slopes next to Poly Canyon Road on the study site, the oak woodland is typically composed of pure stands of Quercus agrifolia (coast live oak) although a few Umbellularia californica (California bay-laurel) are present. Heteromeles arbutifolia (toyon) is also common and sometimes attains the size of small oaks.

Coastal live oak woodland is the climax vegetation type in this area and characteristically occupies the most mesic slopes and canyon areas. Because of the heterogeneity of the habitats on the site, the coastal live oak woodland stands integrate and form a mosaic with grasslands, coastal scrub, and riparian woodland along Brizzolara Creek. In addition, coast live oaks are a common to dominant component of the riparian community along the section of the creek that traverses the study site.

Coastal live oak woodlands are common on the north facing slopes and canyon areas on the campus and form a significant stand on the northwestern facing slope along Poly Canyon Road in the study site. While coast live oak woodlands are variable, on the study site they are completely dominated by a dense cover of tall coast live oaks; many of which are multiple stemmed. These oaks form a closed-canopied woodland composed of very old trees that typically vary from about 1 to 3 feet in trunk diameter; however, there are some smaller and
larger trees present. Several very large sprawling trees with large branches that come to the ground occur locally.

The overstory of the oak woodland is mostly composed of a dark, evergreen canopy of mature coast live oak trees. The understory is quite variable from place to place depending on the microhabitat conditions. In some places the understory may be composed of a relatively lush growth of ferns, shrubs, and shade tolerant herbs. In other places, the understory is sparse consisting of a thick layer of litter with scattered shrubs and herbs.

Common associated species in the understory or open areas of the oak woodland include *Artemisia californica* (California sagebrush), *Mimulus aurantiacus* (Bush monkeyflower), *Salvia mellifera* (Black sage), *Baccharis pilularis* (Coyote bush), *Heteromeles arbutifolia* (Toyon), *Rhamnus californica* (Coffee-berry), *Rubus ursinus* (blackberry), *Toxicodendron diversilobum* (poison oak), and *Ribes speciosum* (Fuchsia-flowered gooseberry). Associated herbaceous species include many grasses and forbs such as *Bromus diandrus* (ripgut brome), *Salvia spathacea* (hummingbird sage), and *Stachys bullata* (hedge-nettle). In open areas some native grasses are found in association with the oaks on site, including *Nassella lepida* (Foothill needlegrass), *Nassella pulchra* (Purple needlegrass), *Bromus carinatus* (California brome), and *Melica imperfecta* (Coast range melic).

4. Coastal Scrub Community

This community is typically dominated by small to medium sized (3-6 feet tall) shrubs with a herbaceous understory. Both the density and the composition of the shrub cover vary from site to site as does the herbaceous understory. The dominant shrubs in this plant community are comparatively soft-stemmed plants that undergo significant dieback during the summer drought. For this reason, coastal scrub is sometimes referred to as "soft chaparral" as opposed to the "hard chaparral" or "true chaparral".

The coastal scrub community is the dominant cover on the steep hillsides north and east of the study site and small stands extend onto the northeastern portion of the study site. Patches of coastal scrub are also found along the slope of Poly Canyon Road in the southeast portion of the site where coastal scrub forms a mosaic with the coast live oak woodland. The dominant shrubs of the coastal scrub on site are *Artemisia californica* (California sagebrush), *Mimulus aurantiacus* (Bush monkeyflower) and *Salvia mellifera* (Black sage). Other shrubs present include *Baccharis pilularis* (Coyote bush), *Hazardia squarrosa* (saw-toothed goldenbush), *Heteromeles arbutifolia* (Toyon), and *Prunus ilicifolia* (Holly-leafed Cherry), *Rhamnus californica* (Coffee-berry), and *Ribes speciosum* (Fuchsia-flowered gooseberry). Among these shrubs are some native grasses, including *Nassella lepida* (Foothill needlegrass), *Nassella pulchra* (Purple needlegrass), *Bromus carinatus* (California brome), and *Melica imperfecta* (Coast range melic), and many of the same alien grass species listed above under California native grassland.

5. Riparian Woodland

A well developed riparian woodland occurs along the section of Brizzolara Creek that traverses the study site even though it has been reduced in size historically by human activities. This band of riparian woodland varies in width and density depending on the size and nature of the banks, the amount of water carried, the persistence of water in the soil, on the depth and lateral extent of the subterranean aquifer, and perhaps more importantly the extent of human
modification of the habitat. Because of California's summer dry season, many riparian species, such as the California sycamores and Arroyo willows, are restricted to streamside areas where water is permanently available.

The tree overstory is composed of native *Platanus racemosa* (California sycamore), *Quercus agrifolia* (Coast live oak), *Umbellularia californica* (California bay-laurel), and *Salix laevigata* (Red willow) sparsely invaded by *Schinus molle* (Peruvian pepper tree) and *Phoenix dactylifera* (Date palm).

Common understory shrubs include the following: *Heteromeles arbutifolia* (Toyon), *Rhamnus californica* (Coffee-berry), *Rubus ursinus* (California blackberry), *Salix lasiolepis* (Arroyo willow), and *Toxicodendron diversilobum* (Poison-oak). Common native herbs include: *Artemisia douglasiana* (Mugwort), and *Salvia spathacea* (Hummingbird sage). Native grasses are mostly *Bromus carinatus* (California brome), *Elymus glaucus* (Blue wild rye), *Leymus condensatus* (Giant wild rye), and *Melica imperfecta* (Coast range melic). Common alien forbs include *Carduus pycnocephalus* (Italian thistle), and *Foeniculum vulgare* (Fennel). Alien grasses are mostly *Bromus diandrus* (Ripgut brome), *Polypogon monspeliensis* (Rabbitfoot grass), and *Piptatherum miliaceum* (Smilo). Other common associates are listed in Appendix 1.

A second area of riparian woodland is associated with Drumm Reservoir and the inlet channel that drains into it. A fringe of arroyo willow-dominated riparian vegetation partially encircles the reservoir and extends as a narrow band along the inlet drainage. This riparian woodland vegetation grades into freshwater marsh that extends out into the reservoir and occupies part of the channel as well. It is bordered by areas of anthropogenic ruderal vegetation on the upland sites adjacent to the reservoir. The small tributary that traverses the coast live oak woodland along Poly Canyon Road and then flows under the paved flood plain into Brizzolara Creek has some species typical riparian vegetation but is lined entirely by coast live oaks.

6. Freshwater Marsh

Freshwater marsh vegetation occurs in patches along Brizzolara Creek and more extensively around the margin of Drumm Reservoir and along much of the drainage channel upstream from the reservoir. Freshwater marshes occur in nutrient-rich mineral soils that are saturated through much or all of the year. These communities are best-developed in locations with slow-moving or stagnant shallow water. Such sites commonly occur along the margins of creeks or along drainages where water is allowed to pool in depressions or move very slowly downslope. In areas where freshwater marshes occur there is not always standing water throughout the year. In some cases the water table is so close to the surface that it can be tapped by marsh plants. On hillsides, there are small seep areas associated with the drainages that provide a source of water much of the year.

A zone of tall reed-dominated freshwater marsh vegetation occupies part of the basin of Drumm Reservoir and the seasonal drainage channel that empties into the reservoir. Tall herbaceous monocots are dominant including native species such as *Scirpus californicus* (tule), *Typha spp.* (cattail), and *Phragmites australis* (common reed), and the introduced *Iris pseudoacorus* (water flag). The freshwater marsh vegetation grades into a narrow band of *Salix lasiolepis* (Arroyo Willow) which has developed along the east side of the reservoir and individual shrubs scattered upstream along the inlet channels. Other common species found along the Drumm Reservoir and its upstream channels are listed below.
Native Grasses, Sedges & Rushes

<table>
<thead>
<tr>
<th>Species</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyperus eragrostis</td>
<td>Nutsedge</td>
</tr>
<tr>
<td>Hordeum brachyantherum</td>
<td>Meadow Barley</td>
</tr>
<tr>
<td>Juncus bufonius</td>
<td>Toad rush</td>
</tr>
<tr>
<td>Juncus patens</td>
<td>Spreading rush</td>
</tr>
<tr>
<td>Juncus phaeocephalus</td>
<td>Brown-headed rush</td>
</tr>
<tr>
<td>Scirpus pungens</td>
<td>Common Threesquare</td>
</tr>
<tr>
<td>Typha latifolia</td>
<td>Broad-Leaved Cattail</td>
</tr>
</tbody>
</table>

Native Forbs

<table>
<thead>
<tr>
<th>Species</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epilobium brachycarpum</td>
<td>Annual willow-</td>
</tr>
<tr>
<td>Epilobium ciliatum</td>
<td>Willow-herb</td>
</tr>
</tbody>
</table>

Alien Grasses

<table>
<thead>
<tr>
<th>Species</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hordeum murinum</td>
<td>Foxtail Barley</td>
</tr>
<tr>
<td>Leptochloa fascicularis</td>
<td>Bearded Sprangletop</td>
</tr>
<tr>
<td>Lolium multiflorum</td>
<td>Annual Ryegrass</td>
</tr>
<tr>
<td>Lolium perenne</td>
<td>Perennial Ryegrass</td>
</tr>
<tr>
<td>Paspalum dilatatum</td>
<td>Dallis Grass</td>
</tr>
<tr>
<td>Phalaris aquatica</td>
<td>Harding Grass</td>
</tr>
<tr>
<td>Polypogon monspeliensis</td>
<td>Rabbitfoot Grass</td>
</tr>
<tr>
<td>Polypogon viridis</td>
<td>Water bent grass</td>
</tr>
<tr>
<td>Vulpia myuros</td>
<td>Rattail Fescue</td>
</tr>
</tbody>
</table>

Alien Forbs

<table>
<thead>
<tr>
<th>Species</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carduus pycnocephalus</td>
<td>Italian Thistle</td>
</tr>
<tr>
<td>Dipsacus sativus</td>
<td>Teasel</td>
</tr>
<tr>
<td>Foeniculum vulgare</td>
<td>Fennel</td>
</tr>
<tr>
<td>Hirschfeldia incana</td>
<td>Perennial Mustard</td>
</tr>
<tr>
<td>Plantago lanceolata</td>
<td>English Plantain</td>
</tr>
<tr>
<td>Ricinus communis</td>
<td>Castor Bean</td>
</tr>
<tr>
<td>Rumex conglomeratus</td>
<td>Knotted Dock</td>
</tr>
<tr>
<td>Rumex crispus</td>
<td>Curly Dock</td>
</tr>
<tr>
<td>Silybum marianum</td>
<td>Milk Thistle</td>
</tr>
</tbody>
</table>

7. Anthropogenic Communities

Communities dominated by plants introduced by humans and established or maintained by human disturbance are anthropogenic communities. Some of these are artificial communities such as plantations, cultivated row-crops, lawns, vineyards, etc. Others are assemblages of weedy species that have invaded disturbed areas, sometimes in spite of human efforts to control them. Weed-dominated communities often represent the early stages of natural succession. In the absence of disturbance many weedy plants do not persist, but are gradually replaced by native vegetation. Many of man's activities, however, cause continual disturbance.

Anthropogenic communities on the project site can be divided into the two types: ruderal and urban mix forest communities. Ruderal communities occur where frequent disturbances, caused by hiking trails, vehicles, dust, etc. Even a one-time tilling of the soil causes a shift from native species intolerant of such disturbance to native or alien species, often annuals, capable of colonizing and persisting on such disturbed lands. Urban mix forest communities are those that have been planted by humans and are maintained as exotic forests by humans. In some cases ornamental trees are capable of reproducing and becoming naturalized in the area. For example, *Eucalyptus globulus* (blue gum) have been planted in some areas on and near the site and have reproduced and spread naturally because they are adapted to the local conditions.

Ruderal Communities. Species of disturbed sites such as along roadways include various annual grasses and forbs of Eurasian origin that also occur in the grasslands. Even heavily disturbed pasture areas have been invaded by ruderal species. Many ruderal communities are successional in nature, covering the ground for a few years after a disturbance has taken place, and eventually giving way to the native and climax communities of the area when the disturbance factor is removed. Some of the introduced weeds, however, often maintain a position in the community as succession takes place, and the community may take years to or in some cases never return to its original state.

Along the north-central boundary of the project site is an area flanking the creek bed that is presently thoroughly invaded by alien ruderals as a result of some unknown past disturbance to the previously existing California native grassland. Some of the common weedy species in
ruteral areas on site include:

<table>
<thead>
<tr>
<th>Alien Grasses</th>
<th>Alien Forbs</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Avena barbata</em></td>
<td>Slender Wild Oats</td>
</tr>
<tr>
<td><em>Avena fatua</em></td>
<td>Common Wild Oats</td>
</tr>
<tr>
<td><em>Brachypodium distachyon</em></td>
<td>False Brome Grass</td>
</tr>
<tr>
<td><em>Bromus diandrus</em></td>
<td>Ripgut Brome Grass</td>
</tr>
<tr>
<td><em>Bromus hordeaceus</em></td>
<td>Soft Chess</td>
</tr>
<tr>
<td><em>Bromus madritensis</em></td>
<td>Spanish Brome</td>
</tr>
<tr>
<td><em>Hordeum murinum</em></td>
<td>Foxtail Barley</td>
</tr>
<tr>
<td><em>Lolium multiflorum</em></td>
<td>Annual Ryegrass</td>
</tr>
<tr>
<td><em>Lolium perenne</em></td>
<td>Perennial Ryegrass</td>
</tr>
<tr>
<td><em>Vulpia myuros</em></td>
<td>Rattail Fescue</td>
</tr>
<tr>
<td><em>Anthemis cotula</em></td>
<td>Mayweed</td>
</tr>
<tr>
<td><em>Brassica nigra</em></td>
<td>Black mustard</td>
</tr>
<tr>
<td><em>Carduus pycnocephalus</em></td>
<td>Italian thistle</td>
</tr>
<tr>
<td><em>Dipsacus sativus</em></td>
<td>Teasel</td>
</tr>
<tr>
<td><em>Erodium moschatum.</em></td>
<td>Green-Stem Filiaree</td>
</tr>
<tr>
<td><em>Foeniculum vulgare</em></td>
<td>Fennel</td>
</tr>
<tr>
<td><em>Hirschfeldia incana</em></td>
<td>Perennial Mustard</td>
</tr>
<tr>
<td><em>Medicago polymorpha</em></td>
<td>Bur-clover</td>
</tr>
<tr>
<td><em>Picris echioides</em></td>
<td>Bristly ox-tongue</td>
</tr>
<tr>
<td><em>Plantago lanceolata</em></td>
<td>English plantain</td>
</tr>
<tr>
<td><em>Polygnum arenastrum</em></td>
<td>Bristly ox-tongue</td>
</tr>
<tr>
<td><em>Rumex crispus</em></td>
<td>Curly dock</td>
</tr>
<tr>
<td><em>Silybum marianum</em></td>
<td>Milk Thistle</td>
</tr>
<tr>
<td><em>Sonchus asper</em></td>
<td>Prickly sow-thistle</td>
</tr>
<tr>
<td><em>Sonchus oleraceus</em></td>
<td>Common sow-thistle</td>
</tr>
</tbody>
</table>

**Urban Mix** communities include plantations, windbreaks, and ornamental plantings comprised of mostly non-native trees such as *Eucalyptus* sp. as well as other exotic species that have been planted or have escaped from cultivation and become part of the local vegetation. Native species may also be a component of these human-influenced communities. In the study area there are significant areas in the southeastern portion of the site with urban mix forest communities. In these areas ornamental trees have been planted along roads, parking lots, fences, agricultural fields, and pastures. The most extensive of these man-made forests are composed of large plantings of *Eucalyptus* spp., mostly *Eucalyptus globulus* (blue gum). Some of these plantations are characterized by having pure, dense stands of blue gum trees that grow tall and straight and form wind breaks and provide screening. Other common trees planted in various locations include: *Acacia melanoxylon* (Blackwood acacia), *Casuarina* sp. (She-oak), *Grevillea robusta* (Silky-oak), *Olea europaeae* (olive), *Phoenix dactylifera* (date palm), *Pistacia atlantica* (pistachio), *Prunus dulcis* (almond), and various species of *eucalyptus*. Some of these exotic trees are successfully reproducing themselves and are invading some of the surrounding native communities. Some planted species are native to California but not to the Cal Poly campus such as *Pinus radiata* (Monterey pine). In some areas the exotic trees occur as windrows, in other areas they form a mixed man-made forest, and in still other areas they mix with native species. These mixtures of trees form what is sometimes referred to as an "urban mix" forest because they often occur at the interface of urban areas. The urban mix is common in several areas on campus and along some of the drainages and creek areas where ornamental trees mix with willows, oaks, and other natives.

**RARE AND ENDANGERED PLANTS**

Twelve special status plant species have been identified on or near the project site and could potentially be on the site. These species have been documented to occur northeast of the project site in Poly Canyon (DeRome 1997), or within the
encompassing San Luis Obispo 7.5 minute Quadrangle (Skinner and Pavlick 1994). They are sufficiently rare to have been officially recognized as such by private or governmental agencies (see list below). Other rare plants listed in the Cal Poly Master Plan may also be potential on the project site. A rare plant is one that is limited in terms of number of individual plants still present in the wild, and also one that has a limited distribution. Usually rare plants are found in only a few highly restricted populations. This distribution is usually determined by the rarity of the habitat in which the plant is able to grow. While many rare plants are not at present threatened with extinction, they occur in such small numbers over such a limited range that they could be threatened if their remaining habitat is modified. An endangered species is one that is not only rare, but also threatened with extinction because the survival of existing populations and future reproduction are jeopardized. The main reason that most such plants in California are extinct or rare and endangered is that humans are gradually destroying their habitats through urbanization, forest destruction, agricultural practices and pollution. Attempts are being made to eliminate these practices and to protect the rare and/or endangered species in California.

**The Basis for Recognizing Rare and Endangered Plants**

**California Native Plant Society (CNPS)—**Since the 1970's the California Native Plant Society, an organization of professional and lay botanists that is dedicated to the preservation of California's native flora, has been involved in determining which plants in California are rare and endangered. The society has published five editions of a book entitled *Inventory of Rare and Endangered Vascular Plants of California.* The fifth edition of the CNPS Inventory (Skinner and Pavlik, 1994) lists plants in four categories: List 1—Plants of Highest Priority, with two sublists: 1A—Plants Presumed Extinct in California and 1B—Plants Rare and Endangered in California and Elsewhere; List 2—Plants Rare or Endangered in California, but More Common Elsewhere; List 3—Plants about which More Information is Needed; and List 4—Plants of Limited Distribution (A Watch List). Additionally each plant listed is given a R-E-D Code (Rarity, Endangerment, and Distribution) with numbers ranging from 1-3 in each category. For each of the values a higher number is an indication of greater sensitivity:

**R (rarity)**
1. Rare but found in sufficient numbers and distributed widely enough that the potential for extinction or extirpation is low at this time.
2. Occurrence confined to several populations or to one extended population.
3. Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.

**E (endangerment)**
1. Not endangered.
2. Endangered in a portion of its range.
3. Endangered throughout its range.

**D (distribution)**
1. More or less widespread outside California.
2. Rare outside California.
3. Endemic to California.

CNPS is revising its listing. In June 2000 the CNPS posted a list of the taxa included in the 6th edition of the CNPS Inventory which is not in hard copy yet but is
available on their web site (http://www.cnps.org/rareplants/inventory/6thEdition.htm). This list includes the RED codes that are to be adopted in the new version of the inventory.

**U. S. Department of Fish and Wildlife**—The Endangered Species Act in 1973 resulted in listing and protecting rare plants at the federal level by the U. S. Fish and Wildlife Service (USFWS). Their categories are summarized below:

- **Endangered Species (FE)** are taxa in danger of extinction throughout all or a significant portion of their range.
- **Threatened Species (FT)** are taxa likely to become endangered within the foreseeable future throughout all or a significant portion of their range.
- **Candidate Species** are taxa for which the Fish and Wildlife Service (Service) has sufficient information on their biological status and threats to propose them as endangered or

**California Department of Fish and Game**—The California Endangered Species Act in 1984 resulted in listing and protecting rare plants at the state level with the California Department of Fish and Game (DFG). Their categories are summarized below:

- **Rare Species (CR)** are taxa that are not presently threatened with extinction but occur in such small numbers that they could become endangered if habitat conditions worsen.
- **Threatened Species (CT)** are taxa likely to become endangered within the foreseeable future without special protection and management efforts.
- **Endangered Species (CE)** are taxa whose prospects of survival are in immediate jeopardy for one or more reasons. These taxa are in danger of extinction throughout all or a significant portion of their range.

**California Environmental Quality Act (CEQA)**—For all plant species listed on CNPS’s List 1B and 2, it is mandatory that they be fully considered during preparation of environmental documents relating to CEQA. For species on Lists 3 and 4, CNPS strongly recommends that they be considered in preparation of such documents.

**Rare Plants Potentially On or Near the Poly Canyon North Proposed Housing Site**

The rare plant species listed in the table below have documented occurrences within, adjacent to, or in the vicinity of the project site. Most are typically found on soils derived from serpentinite rock. Serpentinite is a metamorphic, magnesium silicate rock, often green in color and slippery to the touch. (It is the California state rock). Serpentinite and the soils derived from it have a number of traits inimical to plant growth. It is low in some essential nutrients, especially calcium, and high in magnesium. In addition, it is often high in toxic elements such as nickel and chromium. As a result of these unusual conditions, serpentinite rock and soil support unusual, endemic floras including a large number of rare and endangered species. The hillsides adjacent to the northeastern border of the project site exhibit serpentinite outcrops and
shallow soils that support some unusual plant species, many of which are listed as rare and/or endangered. Rock outcrops provide specialized habitats for both plants and animals. Some species are restricted to the rock crevices or to the bare, dry rock surfaces. Rock outcrops are mostly sparsely vegetated by extremely drought tolerant species on their surfaces and by moister requiring species in their crevices.

We have included the current listing from the 1994 *Inventory of Rare and Endangered Vascular Plants of California* (fifth edition). In November 1995, the CNPS circulated for comment a list of changes to the *Inventory* that are proposed for an upcoming 6th edition. These include proposals to add plants not previously listed, to delete plants previously listed but on the basis of new information determined to be too common for listing, and to change the status of plants previously listed. In June 2000 the CNPS posted on its website a list of the taxa to be included in edition 6 of the Inventory: [http://www.cnps.org/rareplants/inventory/6thEdition.htm](http://www.cnps.org/rareplants/inventory/6thEdition.htm)

For each taxon listed below, the current listed status for California is based on the July 2000 Special Plant List by the California Department of Fish and Game, and the current federal status is taken from the United States Fish and Wildlife website as of 2 October 2000 ([http://ecos.fws.gov/webpage/webpage_usa_lists.html?#CA](http://ecos.fws.gov/webpage/webpage_usa_lists.html?#CA)). Both are indicated in the table on the next page.

### Potential Rare Plant Species of the Poly North Housing Site

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>C.N.P.S. Listing</th>
<th>RED Code</th>
<th>State Listing</th>
<th>Federal Listing</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Calochortus clavatus</em> ssp. <em>clavatus</em></td>
<td>club-haired mariposa lily</td>
<td>List 4</td>
<td>1-1-3</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><em>Calochortus obispoensis</em></td>
<td>San Luis mariposa lily</td>
<td>List 1B</td>
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<td>None</td>
</tr>
<tr>
<td><em>Calystegia subacaulis</em> var. <em>episcopalis</em></td>
<td>Cambria morning glory</td>
<td>List 1B</td>
<td>3-2-3</td>
<td>None</td>
<td>Species of Concern</td>
</tr>
<tr>
<td><em>Chlorogalum pomeridianum</em> var. <em>minus</em></td>
<td>Dwarf soaproot</td>
<td>List 1B</td>
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<td>None</td>
</tr>
<tr>
<td><em>Chorizanthe breweri</em></td>
<td>Brewer’s spineflower</td>
<td>List 1B</td>
<td>3-1-3</td>
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<td>None</td>
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<tr>
<td><em>Chorizanthe palmeri</em></td>
<td>Palmer’s spineflower</td>
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<td>1-2-3</td>
<td>None</td>
<td>None</td>
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<tr>
<td><em>Dudleya abramsii</em> ssp. <em>murina</em></td>
<td>San Luis Obispo dudleya</td>
<td>List 1B</td>
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<td>None</td>
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<td><em>Layia jonesii</em></td>
<td>Jones’ layia</td>
<td>List 1B</td>
<td>3-2-3</td>
<td>None</td>
<td>Species of Concern</td>
</tr>
<tr>
<td><em>Lomatium parvifolium</em></td>
<td>small-leaved lomatium</td>
<td>List 4</td>
<td>1-2-3</td>
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*Calochortus clavatus* ssp. *clavatus* (club-haired mariposa lily) is a bulb-forming lily that produces one or two strap-shaped green leaves in early spring. These are beginning to wither by the time the plant flowers in May or June. The flowers are cup-
shaped with 3 narrow, yellow-green sepals and three, obtriangular, yellow petals marked by a jagged, transverse, purple-brown band across the inner face. Each petal bears a rounded, depressed nectary toward the base surrounded by club-shaped yellow hairs. The anthers are large and purple. After the flowers wither the ovary develops into a slender, 3-angled capsule with many dark seeds. The plant is generally completely dry by late summer. The dry remains can be identified by the shape of the capsule. Only the bulb and seeds remain alive until the next growing season.

*Calochortus clavatus* ssp. *clavatus* is restricted to San Luis Obispo County and Santa Barbara County in the western portion of the Coast Ranges, mostly on soils derived from serpentinite parent material. In San Luis Obispo County it is known from several locations in the Santa Lucia and San Luis Ranges. Four other rare subspecies occur to the north and south of subspecies *clavatus*. It is known from several sites in the area.

Club-haired mariposa lily has been documented in several sites in Poly Canyon and on the Pennington Creek Biological Reserve. It has been observed on slopes immediately adjacent to the proposed Poly Canyon North housing site within a few minutes walk from the proposed campus housing site. The attractive flowers of this species make it likely that it will occasionally be picked by curious students hiking in the canyon.

*Calochortus obispoensis* (San Luis Obispo mariposa lily is a bulb-forming lily that produces one or two strap-shaped green leaves in early spring. These are beginning to wither by the time the plant flowers in May or June. The flowers are star-like with 3 narrow, yellow-green sepals and three yellow petals that are bearded with long purple and yellow hairs. After the flowers wither the ovary develops into a slender, 3-angled capsule with many dark seeds. The plant is generally completely dry by late summer. The dry remains can be identified by the shape of the capsule. Only the bulb and seeds remain alive until the next growing season.

San Luis mariposa lily is restricted to central San Luis Obispo County where it occurs only on the hills and mountains in the vicinity of San Luis Obispo. It generally occurs associated with dry serpentinite rock outcrops and soils within chaparral, coastal scrub, and valley and foothill grassland habitats (Hickman, 1993; Skinner and Pavlik, 1994). It is a component of the serpentinite California native grassland community on the Cal Poly campus. San Luis mariposa lily has been documented in several sites in Poly Canyon, near the “P”, and on the Pennington Creek Biological Reserve. It has been observed on slopes immediately adjacent to the proposed Poly Canyon North housing site within a few minutes walk from the proposed campus housing site. The unusual flowers of this species make it likely that it will occasionally be picked by curious students hiking in the canyon.

*Calystegia subacaulis* ssp. *episcopalis* (Cambria morning glory) is a perennial herb with trailing or sometimes weakly twining stems. It has alternate, broadly triangular leaves that are minutely hairy. The cream-colored, funnel-shaped flowers are produced from April to June. After the flowers wither the plant develops small, dry capsules with dark seeds. By late summer the above-ground parts of the plants are completely dry and only seeds and an underground rootstock persist through the dry season. The plant is difficult to identify in the dry season because the dry parts shatter.
Cambria morning glory is at present known only from San Luis Obispo and northern Santa Barbara counties. In San Luis Obispo County it ranges from the Hearst Ranch in the northwestern corner of the county south to the vicinity of San Luis Obispo where it usually occurs in grassy sites with clay-rich soils often in association with serpentinite parent material. It has been observed on the proposed Poly Canyon North and Poly Canyon South housing sites, in the vicinity of Smith Reservoir, and in the Pennington Creek Biological Reserve.

During April and May 2000, scattered flowering stems of *Calystegia subacaulis* ssp. *episcopalis* were observed within the project site near Poly Canyon Road and near Drumm Reservoir in association with remnant California native grassland and coastal scrub. Additional non-flowering stems were observed as well. Because this species is relatively small and often obscured by overtopping grasses and forbs, it is easily overlooked when not in flower. Individuals present in a vegetative state, but not in flower this season, may have been missed. This species also produces underground stems that may arise above ground some distance apart so as to give the appearance of separate individuals. However, these shoots may be part of the same genetic individual.

The population of Cambria morning glory may be directly impacted by the construction of the proposed campus housing. This species occurs on the approved Poly Canyon South housing site as well and near Shepherd Reservoir adjacent to the new Sports Complex. It is likely to occur on other nearby sites, but these have not yet been investigated. Plants off site would be subject to foot traffic from residents of the proposed buildings.

*Chlorogalum pomeridianum var. minus* (dwarf soaproot) is a perennial herb that grows from a large bulb with fibrous outer bulb scales. In spring it produces a rosette of wavy-margined, strap-shaped leaves. A branched inflorescence arises from the bulb, and flowers develop in late spring or early summer. Flower buds of dwarf soaproot are externally purple, but the open flowers are white. The flowers are nocturnal, opening in the evening and closing the next morning. Seed capsules about 5 mm diameter mature in summer. Plants of *Chlorogalum pomeridianum* are easily identified in spring by their characteristic leaves and in summer by the seed capsules. Plants of var. *minus* have comparatively short stems 20–40 cm tall, and the bulb coats are membranous or have relatively few fibers.

Dwarf soaproot grows mostly in grassy areas or openings in chaparral, coastal scrub, and coastal live oak woodland. It occurs from the coast ranges north of the San Francisco Bay region to the vicinity of San Luis Obispo. Around San Luis Obispo it occurs mostly on soils derived from serpentinite. On the Cal Poly campus dwarf soaproot is known to occur in Poly Canyon and the Pennington Creek Biological Reserve and is probably present elsewhere as well. *Chlorogalum pomeridianum* was observed within the project site but could not be determined to variety because mature inflorescences could not be found during the field survey [deer and other herbivores often eat the immature flower clusters]. Because verified populations of dwarf soaproot (var. *minus*) are known to grow in Poly Canyon within a few minutes walk from the proposed campus housing site, we consider it probable that the plants found on site are var. *minus* as well.
The major impact of the proposed housing project would be removal of the existing individuals on the project site, and the activities of students in nearby natural areas. Foot traffic would be likely to have a negative impact on these plants by breaking their brittle stems and crushing the bulbs and leaves.

**Chorizanthe breweti** (Brewer’s spineflower) is a brittle-stemmed annual herb. In early spring it produces a rosette of stalked, oval basal leaves. Typically a solitary flower is produced and three spreading, reddish-purple stems radiate away from the rosette. Stem leaves are generally in widely separated pairs and most are much smaller than the basal leaves. In vigorous plants the stems branch repeatedly. The tips of the branches bear clusters of tiny white to pale pink six-parted flowers, each surrounded by a tubular cluster of six red-purple, spine-tipped bractlets. Each flower produces a tiny, one-seeded dry fruit. After flowering the plant dies and only seeds survive through the dry season. The dry plant shatters very easily, but its remains can often be identified through the summer.

**Chorizanthe breweri** is an endemic to San Luis Obispo County where most occurrences are on serpentine or serpentine-derived soils. It occurs only in the vicinity of San Luis Obispo where it has a range similar to that of *Calochortus obispoensis*. Brewer’s spineflower is known from about twenty occurrences. This species occurs in coastal scrub, closed-cone conifer forest, chaparral and cismontane woodland communities. Brewer’s spineflower has been documented from Poly Canyon and from the Pennington Creek Biological Reserve.

Brewer’s spineflower has not been observed within the proposed Poly Canyon North housing site, but it has been observed on nearby serpentine slopes within a few minutes walk from the proposed dormitories. Foot traffic would have a negative impact on populations of these brittle-stemmed plants.

**Chorizanthe palmeri** (Palmer’s spineflower) is a brittle-stemmed annual herb. In early spring it produces a rosette of stalked, oval basal leaves. Usually a single stem 1–12 inches high arises from the rosette, and it bears one or two, well-separated rings of leaves. Typically a solitary flower is produced at the end of the main stem and three spreading, reddish-purple stems radiate away from the upper leaf cluster. Stem leaves above this point are generally in widely separated pairs and most are much smaller than the leaves of the main stem. In vigorous plants the stems branch repeatedly. The tips of the branches bear dense, head-like clusters of tiny purple, six-parted flowers, each surrounded by a tubular cluster of six red-purple, spine-tipped bractlets. Each flower produces a tiny, one-seeded dry fruit. After flowering the plant dies and only seeds survive through the dry season. The dry plant shatters easily, but its remains can often be identified through the summer.

**Chorizanthe palmeri** is known definitely from Monterey and San Luis Obispo counties and may occur as well in San Benito and Santa Barbara counties. Most occurrences are on serpentine or serpentine-derived soils. In San Luis Obispo County it occurs in the Santa Lucia and San Luis Ranges from the northwestern corner of the county to the serpentine hills around San Luis Obispo.

Palmer’s spineflower has not been observed within the proposed Poly Canyon North housing site, but it has been observed on nearby serpentine slopes within a few
Botanical Survey – Poly Canyon North Proposed Campus Housing Site

minutes walk from the proposed dormitories. Foot traffic would have a negative impact on populations of these brittle-stemmed plants.

*Dudleya abramsii* ssp. *murina* (San Luis Obispo dudleya) is a succulent perennial herb with a thick, fleshy taproot. It produces a dense rosette of narrow, fleshy, leaves with a dull, gray-green coloration. In late spring and early summer clusters of 5-petaled, cream-colored to dull purplish flowers are produced on stalks arising from the rosettes. The ovaries of these flowers mature as clusters of small, dry fruits that split open and release many tiny seeds. These plants tough it out during the dry season and their somewhat shriveled leaves and old dry flower clusters are easy to recognize.

San Luis Obispo dudleya is endemic to San Luis Obispo County and it is apparently limited to stony serpentine soils and serpentine rock outcrops, usually associated with California native grassland. Its range is limited to the hills bordering the San Luis Valley in the foothills of the Santa Lucia Mountains from Chorro Creek to Corral de Piedra Creek and in the San Luis Range from upper Prefumo Canyon to the Froom Ranch and the hills south of Broad Street. San Luis Obispo dudleya is known to occur in Poly Canyon and in the Pennington Creek Biological Reserve, and is to be expected in similar habitats elsewhere on campus.

*Dudleya abramsii* ssp. *murina* has not been observed within the proposed Poly Canyon North housing site, but it has been observed on nearby serpentine slopes within a few minutes walk from the proposed dormitories. Foot traffic would have a negative impact on populations of these plants by crushing their succulent leaves and dislodging rocks on the hillsides where the plants grow.

*Layia jonesii* (Jones' layia) is a slender, erect, spring-flowering herb. The basal and lower stem leaves are generally lobed and the upper have smooth margins. The stems and leaves bear a mixture of short stiff hairs and small glandular hairs. Usually there is a single main stem and several ascending branches. In April and May flowers are produced in daisy-like heads at the branch tips. There are 13–27 petal-like ray flowers in a double row around the periphery of the flower head. These are yellow with three creamy white tips. The center of the head contains many small, yellow disk flowers with purple anthers. When the plants go to seed, the flower heads shatter and the many tiny one-seeded dry fruits drop to the ground. By late June the plants are withered and completely dry. In the dry season the remains are generally not recognizable.

Jones layia is an annual herb that occurs in Monterey and San Luis Obispo counties. It grows in chaparral and California native grassland communities, primarily on open serpentine or clay slopes (Hickman, 1993). Within San Luis Obispo County this species occurs from the San Luis Obispo area to coastal hills north of Cayucos and the vicinity of Cypress Mountain. It occurs locally in Poly Canyon and may be expected in suitable habitats elsewhere on the Cal Poly campus including the project site.

*Layia jonesii* was not observed within the project site but it grows in Poly Canyon within a few minutes walk from the proposed campus housing site. The attractive daisylike flower heads of this species make it likely that it will occasionally be picked by
curious students hiking in the canyon. Foot traffic would have a negative impact on populations of these plants.

*Lomatium parvifolium* (small-leaf lomatium) is a spring-flowering perennial herb with a slender, woody rootstock. Leaves are produced through beginning in March or April and flowering generally begins in April and may continue into June. The smooth green leaves have expanded, sheathing bases and blades divided into many segments. The small yellow flowers are borne in flat-topped clusters up to 5 inches across. The flattened, dry fruits are often tinged with purple and have membranous wings. The mature fruit clusters shatter during the summer as the leaves wither. By mid-summer the above-ground parts of the plants are completely dry. The old fruiting stalks may persist in identifiable condition during the drought season.

Small leaved lomatium occurs from Santa Cruz County to Santa Barbara County in the western portion of the Coast Ranges, mostly on soils derived from serpentinite parent material. It is a component of coastal scrub, chaparral, California native grassland, and rock outcrop communities. It is known from several sites in the San Luis Obispo area. On the Cal Poly campus it has been documented from Poly Canyon, Serrano Canyon, and the Pennington Creek Biological Reserve, and probably occurs in other sites as well.

*Lomatium parvifolium* was not observed within the project site, but it grows on serpentine slopes in Poly Canyon within a few minutes walk of the proposed campus housing site. Foot traffic is likely to impact populations of these plants by crushing the leaves and stems and dislodging rocks on the hillsides where the plants grow.

*Perideridia pringlei* (adobe yampah) is a perennial herb that arises from a deeply buried tuber. In the spring one or two basal leaves are produced from the tuber. These leaves are divided into numerous linear segments. The basal leaves often wither before the flower stalks are produced. Slender, erect flowering stems arise in late spring or early summer. The few leaves become progressively smaller and less divided up the stem. The small white flowers are borne in a flat-topped cluster that is elevated above the leaves. After the petals have fallen the ovaries develop into small, 2-seeded dry fruits that shatter when the plants dry up in summer. Old dry fruit clusters may occasionally be recognizable through the dry season.

Adobe yampah is known to occur in coastal locations from Monterey to Los Angeles counties and in the interior from Nevada to Kern counties. In San Luis Obispo County it has been documented from a few widely scattered locations on serpentinite soils in the vicinity of San Luis Obispo, from dry hills east of Creston, and the summit of the Caliente Range. It grows in California native grasslands, open shrub-dominated communities, and rock outcrop communities. On the Cal Poly campus adobe yampah has been documented from Poly Canyon and may be expected in areas with serpentine soils elsewhere on campus.

*Perideridia pringlei* was not observed within the project site. However, it grows in Poly Canyon within a few minutes walk of the proposed campus housing site. Foot traffic is likely to impact populations of these plants by crushing the leaves and stems and dislodging rocks on the hillsides where the plants grow.
**Sanicula hoffmannii** (Hoffmann’s sanicle) is a perennial herb 1–2 feet tall, three-parted leaves, and numerous, tiny yellow-orange flowers borne in dense, rounded balls at the ends of naked branches that emerge from a common origin like the spokes of an inverted umbrella. The fruits are small, flattened and beset with many hooked barbs around the top.

Hoffmann’s sanicle occurs within a variety of communities including, chaparral, coastal prairie, and valley foothill grassland. It commonly occurs at the ecotone between chaparral or coastal scrub and grassland communities, but sometimes grows beneath the canopy of coast live oak trees. On the Cal Poly campus it has been documented from the Stenner Creek drainage and from the Pennington Creek Biological Reserve.

*Sanicula hoffmannii* was not observed within or in the immediate vicinity of the project site. Although it has not been observed in Poly Canyon it is likely to be present. Foot traffic is likely to impact populations of these plants by breaking the flowering or fruiting stems.

**Senecio aphanactis** (rayless groundsel) is a spring-flowering annual herb with a slender taproot. Stems are simple or branched and hairless. Leaves are linear to oblong, coarsely toothed, hairless, and borne directly on the stem. The flowering heads are small, urn-shaped, and clustered at the main stem and branch tips. The outer bracts are green and surround the inconspicuous flowers that all lack ray corollas. The dry dandelion-like fruits are hairy and bear numerous whitish bristles from the top.

Rayless groundsel is an inconspicuous annual that occurs in vernally moist openings in low elevation coastal scrub on the mainland from Solano County south to northern Baja California, and on Santa Rosa, Santa Cruz, and Santa Catalina Islands. It usually occurs in sparsely vegetated areas with shallow stony soil. In San Luis Obispo County, it is known from a few widely scattered sites from Montaña de Oro State Park to Creston. On the Cal Poly campus it has been documented from serpentine soils on “School Ridge” and on hills west of Poly Canyon. It is easily mistaken for the much more common weedy *Senecio vulgaris* (common groundsel).

*Senecio aphanactis* was not observed within the project site but it has been documented to occur within a few minutes walk of the proposed campus housing site. Foot traffic might have a negative impact on populations of these plants.
REFERENCES


California Department of Fish and Game. 1997. Natural Diversity Data Base. Special List Plants List.


Endangered Plant Communities of Southern California. Southern California Botanists Special Publication 3.


### APPENDIX 1. PLANT SPECIES LIST FOR POLY CANYON NORTH PROPOSED HOUSING SITE

**NG** = California Native Grassland, **CS** = Coastal Scrub, **R** = Riparian, **CG** = Anthropogenic Pastoral, **AU** = Anthropogenic Urban

+ = occurs in that community & others; ● = occurs in that community principally or exclusively

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**FERNS & FERN ALLIES**

| Native | Equisetaceae | Equisetum telmateia | Giant Horsetail |   |   | ● |     |    |

**PERENNIAL FORBS**

<p>| Native | Asteraceae | Achillea millefolium | Yarrow |   |   | ● |     |    |
| Native | Asteraceae | Accourtia microcephala | Sacapelote |   |   | ● |     |    |
| Native | Asteraceae | Artemisia douglasiana | Mugwort |   |   | ● |     |    |
| Native | Asclepiadaceae | Asclepias fascicularis | Milkweed | + | + |     |     |    |
| Alien  | Liliaceae | Asparagus asparagoides | Garden Smilax |   |   | ● |     |    |
| Native | Asteraceae | Baccharis douglasii | Marsh Baccharis |   |   | ● |     |    |
| Native | Apiaceae | Berula erecta | Cutleaf water-parsnip |   |   | ● |     |    |
| Native | Liliaceae | Bloomeria crocea | Golden Stars |   |   | ● |     |    |
| Native | Convolvulaceae | Calystegia macrostegia | Wild Morning Glory |   |   | ● |     |    |
| Native | Convolvulaceae | Calystegia subcaulis ssp. episcopalis | Cambria Morning Glory |   |   | ● |     |    |
| Alien  | Asteraceae | Centaurea calcitrapa | Purple star-thistle | + | + |     |     |    |
| Native | Chenopodiaceae | Chenopodium californicum | California Goosefoot |   |   | ● |     |    |
| Native | Liliaceae | Chlorogalum pomeridianum | Soap Plant |   |   | ● |     |    |
| Alien  | Apiaceae | Conium maculatum | Poison Hemlock |   |   | ● |     |    |
| Alien  | Convolvulaceae | Convolvulus arvensis | Bindweed |   |   | ● |     |    |
| Native | Liliaceae | Dichelostemma capitatum | Blue Dicks |   |   | ● |     |    |
| Alien  | Dipsacaceae | Dipsacus satisivus | Teasel |   |   | ● |     |    |
| Native | Onagraceae | Epilobium canum | California-fuchsia |   |   | ● |     |    |</p>
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**ANNUAL OR BIENNIAL FORBS**

<p>| Alien | Amaranthaceae       | Amaranthus albus               | Amaranth       |    |    |    |    |    |
| Alien | Primulaceae         | Anagallis arvensis             | Scarlet Pimpernel |    |    |    |    |    |
| Alien | Asteraceae          | Anthemis cotula                | Mayweed        |    |    |    |    |    |
| Alien | Chenopodiaceae      | Atriplex suberecta             | Peregrine Saltbush |    |    |    |    |    |
| Alien | Brassicaceae        | Brassica nigra                 | Black Mustard  |    |    |    |    |    |
| Alien | Brassicaceae        | Capsella bursa-pastoris        | Shepherd's Purse |    |    |    |    |    |
| Alien | Asteraceae          | Carduus pycnocephalus          | Italian Thistle |    |    |    |    |    |
| Alien | Asteraceae          | Camphoros lanatus              | Distaff Thistle |    |    |    |    |    |
| Alien | Euphorbiaceae       | Chamaesyce maculata            | Spotted Spurge  |    |    |    |    |    |
| Native | Euphorbiaceae       | Chamaesyce serpyllifolia       | Prostrate Spurge |    |    |    |    |    |
| Alien | Asteraceae          | Chamomilla suaveolens          | Pineapple Weed  |    |    |    |    |    |
| Alien | Chenopodiaceae      | Chenopodium album              | Goosefoot       |    |    |    |    |    |
| Alien | Chenopodiaceae      | Chenopodium murale             | Goosefoot       |    |    |    |    |    |
| Alien | Asteraceae          | Cirsium vulgare                | Bull Thistle    |    |    |    |    |    |</p>
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**PERENNIAL GRASSES**

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<td>Sorghum halepense</td>
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**ANNUAL GRASSES**

| Alien | Poaceae  | Avena barbata         | Slender Wild Oat  |    |    |    |    |    |
| Alien | Poaceae  | Avena fatua           | Common Wild Oat   |    |    |    |    |    |
| Alien | Poaceae  | Avena sativa          | Cultivated Oats   | +  | +  |    |    |    |
| Alien | Poaceae  | Brachypodium distachyon | False Brome Grass | +  | +  | +  | +  |    |
| Alien | Poaceae  | Bromus catharticus    | Rescue Grass      | +  | +  | +  |    |    |
| Alien | Poaceae  | Bromus diandrus       | Ripgut Brome      | +  | +  | +  | +  | +  |
| Alien | Poaceae  | Bromus hordeaceus     | Soft Chess        | +  | +  | +  | +  | +  |
| Alien | Poaceae  | Bromus madritensis ssp. madritensis | Spanish Brome |    |    |    |    |    |
| Alien | Poaceae  | Bromus madritensis ssp. rubens | Red Brome         |    |    |    |    |    |
| Alien | Poaceae  | Bromus sterilis       | Poverty Brome     |    |    |    |    |    |
| Alien | Poaceae  | Hordeum marinum ssp. gussoneanum | Mediterranean Barley |    |    |    |    |    |
| Alien | Poaceae  | Hordeum murinum       | Foxtail Barley    | +  | +  | +  |    |    |
| Alien | Poaceae  | Hordeum vulgare       | Cultivated Barley |    |    |    |    |    |
| Alien | Poaceae  | Lolium multiflorum    | Ryegrass          | +  | +  | +  | +  | +  |
| Alien | Poaceae  | Poa annua             | Annual Bluegrass  | +  | +  | +  |    |    |
| Alien | Poaceae  | Polygopon monspeliensis | Rabbitfoot Grass |    |    |    |    |    |
| Alien | Poaceae  | Triticum aestivum     | Wheat             |    |    |    |    |    |
| Alien | Poaceae  | Vulpia bromoides      | Annual Fescue     |    |    |    |    |    |
| Native | Poaceae  | Vulpia microstachys   | Small Fescue      | +  | +  |    |    |    |
| Alien | Poaceae  | Vulpia myuros         | Rattail Fescue    | +  | +  | +  | +  | +  |

**RUSHES, SEDGES & OTHER MONOCOT HYDROPHYTES**

<p>| Native | Cyperaceae | Cyperus eragrostis | Umbrella Sedge |    |    |    |    |    |
| Native | Cyperaceae | Scirpus californicus | California Tule |    |    |    |    |    |
| Native | Cyperaceae | Scirpus cernuus    | Dwarf Bulrush   |    |    |    |    |    |
| Native | Cyperaceae | Scirpus maritimus  | Common Bulrush  |    |    |    |    |    |</p>
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<td>Common threesquare</td>
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<td>Eleocharis macrostachya</td>
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<td>Juncus bufonius</td>
<td>Toad Rush</td>
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<td>Juncus effusus ssp. pacificus</td>
<td>Soft Rush</td>
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<td>Juncus phaeocephalus</td>
<td>Brown-Headed Rush</td>
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BOTANICAL SURVEY

Slack Street
Proposed Campus Housing Site

Cal Poly State University Campus
San Luis Obispo, California

Prepared by

V.L. Holland, Ph.D
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Biological Sciences Department

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and

Michael Curto
Lecturer
Biological Sciences Department

Prepared for:

Cal Poly Master Plan

October 2000
EXECUTIVE SUMMARY

This report presents the results of a botanical survey conducted during April, May, June, and September 2000 on a site proposed for new student housing near the intersection of Grand Avenue and Slack Street at the southern entrance to the campus of Cal Poly, San Luis Obispo. Special attention was given to potential occurrences of several rare, endangered or special-status plant species known to exist within the San Luis Obispo Quadrangle (Skinner and Pavlik 1994), and to any sensitive habitats present on the site.

We identified 98 plant species (Appendix 1), 48 natives and 50 aliens, and five general plant communities: (1) coastal scrub; (2) coast live oak woodland; (3) riparian (dominated by exotic trees); (4) freshwater marsh; and (5) coastal valley grassland. Historically, the area was largely California native grassland, coastal scrub, and coast live oak woodland but historical and recent changes due to human activities and land use patterns have greatly modified the site. The site now has a large number of introduced trees, forbs, and grasses although many native plants are still present on the site. The historic California native grassland is currently being used for pasture and has been converted to grassland of mostly alien grasses and forbs. Coastal scrub is present on the upper slopes, along with some Coast live oak woodland; however, these associations have been invaded by many introduced species and Mission cactus is prevalent in several areas. Stands of eucalyptus, Peruvian pepper, and olive trees line the two seasonal drainages that traverse the site from northeast to southwest and also occur in other upland areas as well.

Although extensive serpentinite rock outcrops exist on the slope above the Slack Street site, no serpentinite outcrops, or any of the rare species known to occur on such outcrops in the San Luis Obispo area, were found on the study site.
The Slack Street study site consists of approximately 17 acres of the Cal Poly campus at the intersection of Grand Avenue and Slack Street in the southeastern quarter of Section 13 of Township 30 South from the Mt Diablo Base Line and Range 12 East from the Mt Diablo Meridian, near 35°17′50″N, 120°39′45″N. The area is bounded on the west by Grand Avenue and existing student housing, on the northwest by a private residence, on the north to east by steep hillsides of the campus, on the southeast by a private residence, and on the south by Slack Street (see site map).

From the intersection of Grand Avenue and Slack Street the slope is initially shallow but rises steeply at the foot of the main ridge that runs from northwest to southeast from Stenner Creek across Brizzolara and San Luis Obispo Creeks. Elevations range from approximately 390 to over 600 feet. The general topographic aspect is southwest. A small drainage traverses the site from northeast to southwest.

The general climate is the cool summer phase of the dry-summer Mediterranean type of humid mesothermal climates (Trewartha 1968). Winter high temperatures average near 62°F (16.7°C) with low averages near 41°F (5°C). Winter lows below 32°F (0°C) are not uncommon, and a low of 9°F (–12.7°C) has been recorded on the Cal Poly campus. Summer high temperatures average near 77°F (25°C) with low averages near 52°F (11°C). Summer highs above 90°F (32°C) are not uncommon, and a high of 109°F (42.8°C) has been recorded on the Cal Poly campus. Precipitation falls as rain primarily from October through April, and averages about 22 inches (558 mm) per year. Less than one inch of precipitation is typically recorded from May 1 to September 30, but overnight and morning fog with near 100% humidity occurs nearly every day unless drier, downsloping winds descend from the Salinas Valley over the Santa Lucia Range to overwhelm the onshore flow of marine air (Felton 1965).

Upland soils are of the Diablo-Cibo Clay Loam Series on the lower slope and of the Los Osos-Diablo Clay Loam Series in the northeast where the slopes rise. Both soil series consist of slowly permeable, well-drained, residual soils derived from sandstone, shale, or mudstone. Diablo Clay Loam is moderately alkaline, with a moderately deep A horizon to over 30 inches, but no well-defined clay (B) horizon. Los Osos Clay Loam is moderately acid and does exhibit a well-defined clay (B) horizon under the 12-inch thick A horizon. Cibo Clay Loam is neutral with a moderately deep A horizon to over 30 inches and no clay (B) horizon (Ernstrom 1977). Extensive serpentinite outcrops occur to the northeast of the site.

Present land use on the site is agricultural, and it is fenced into one large pasture for intermittent grazing by cattle. The large number of olive trees suggest that olives may have been grown on the site historically.
OVERVIEW OF VEGETATION

The vegetation of the study site has developed in response to the interaction of a complex of environmental features that are variable over the area and result in a mosaic of plant communities. Local climate (wind, temperature, rainfall, fog, etc.), topography, parent materials, soils, biotic components, fire, location of waterways, and natural historical events are all variables that have affected the vegetation on the site. Past and present land-use and other human caused events have also resulted in significant changes in the vegetation.

The former native vegetation on the site probably consisted of California native grassland on the upland slopes with a mixture of more pristine coastal scrub and coast live oak woodland. Small areas of riparian vegetation persist in the canyons and around seeps of the upper slope dominated by arroyo willows. The spring along the upper slope likely supported a small area of less disturbed freshwater marsh. Presently, the historic California native grassland is almost entirely converted to annual grassland vegetation thoroughly dominated by non-native grasses and forbs. This is the dominant vegetation cover on the site. There are two drainages that traverse the site and support highly modified riparian woodlands. Both traverse the site from northeast to southwest. One drainage traverses the center of the site, and the other is located along the northern boundary. Both are now dominated by introduced trees, grasses, and forbs, although a few native shrubs, forbs, and grasses still persist. Exotic species have also invaded the coast live oak woodland and coastal scrub on the hillsides, and the freshwater marsh has been modified by cattle grazing and trampling.

The most significant natural resource elements remaining on or near this site are the hillside spring, and the patches of coast live oak woodland and coastal scrub on the upper slopes along the northeastern boundary.

VEGETATION DYNAMICS

Plant communities are dynamic assemblages of plants that interact among themselves and their environment within a space-time boundary. Some of these communities are well defined and distinct while others are not. No two sites within a given community are exactly the same in environmental conditions, vegetation structure, or species composition. This complexity makes defining plant communities and mapping their areal coverage sometimes difficult and arbitrary.

Spatial boundaries between plant communities (also referred to as ecotones or transition areas) may be abrupt where environmental features change sharply, such as between terrestrial and aquatic habitats. However, usually there is an environmental gradient and plant communities change more gradually in response to that gradient.

Another complicating factor in vegetation analyses and mapping is that plant communities are not static but change through time in response to both natural and human induced environmental changes. As a result, some areas are mixtures of plant assemblages at varying successional stages. The invasion of exotics into native communities further complicates our study.

DESCRIPTION OF THE VEGETATION AND FLORA

The floristic inventory of the study site took place in April, May, June, and September 2000. The diversity of plant species and habitats are illustrated by the species list and vegetation map.
The vegetation and floristic survey consisted of canvassing the site on foot, recording the plant species in identifiable condition, and describing the plant communities and habitats.

We identified 98 plant species (Appendix 1), 48 natives and 50 aliens, and five general plant communities. However, it is important to note that this may not be a complete list of the plants present on the site. Plant species composition, especially herbaceous cover, varies seasonally and annually. Although our survey was both extensive and intensive, repeated surveys over one or more years would be necessary for a complete listing of the flora found on the project site.

The vegetation of the area can be somewhat arbitrarily divided into five general plant communities, as classified by Holland and Keil (1995): (1) coastal valley grassland (used as pasture); (2) coastal scrub; (3) coast live oak woodland; (4) riparian (dominated by introduced trees); (5) freshwater marsh; and (5). Each is discussed separately below.

### 1. Coastal valley grassland

Coastal valley grasslands are areas in which the dominant plants are various species of native and introduced grasses and forbs (dicot herbs). Often there are numerous species of herbaceous plants and sometimes scattered shrubs present. The grasses that dominate a grassland area may be annuals, perennials or a mixture of the two depending on location. Many of the grasslands on campus are now dominated by grasses and forbs introduced into California during the period of Spanish settlement.

Grasslands often occur on fine textured, clay rich soils of valleys and alluvial deposits at the base of hillsides. They integrate with coastal live oak woodlands on mesic hillside slopes, with coastal scrub and chaparral on xeric, steep, rocky slopes, and with riparian and freshwater marsh communities in aquatic and semi-aquatic areas along the creek. Many of the grassland species occur as understory species in the other communities.

Some areas of the Cal Poly campus have an impressive number of native grasses in the grassland areas, much more than most grasslands in other local areas. The stands of perennial, native bunch grasses, which dominated the grassland prior to Spanish settlement, have gradually been reduced on the Slack Street study site and are now found as only scattered components of the upper grasslands and coastal scrub on site. Historically, the changes in the composition of the grassland in this area are mostly a function of the introduction and invasion of alien plant species and changes in livestock grazing and their grazing patterns.

The coastal valley grassland communities of the Slack Street site have been modified by both historical and present-day human influences. These past influences and the current pastoral land-use patterns have shaped the grasslands that occur on the open, upland slopes today. Prior to this, these areas were covered by California native grasslands and perhaps larger areas of coastal scrub. However, repeated disturbance to the vegetation and soil by grazing animals maintains a pastoral influence on the grassland and results in a grassland composed of mostly introduced species tolerant to this type of repeated disturbance regime.

Communities dominated by plants introduced by humans and established or maintained by human disturbance are anthropogenic communities. The coastal valley grassland used as heavily grazed pastures reflect the influence of humans by their species composition. These grasslands are composed of a mixture of plant species typical of coastal valley grasslands along with species intentionally grown for grazing livestock to consume. In the dry-summer subtropical climate region of California, the intentionally seeded pasture grasses are all cool-season Eurasian species, and mostly annual. The perennial species used, such as *Dactylis glomerata* (orchardgrass), *Festuca arundinacea*
(tall fescue), *Lolium perenne* (perennial ryegrass), and *Phalaris aquatica* (Harding grass) generally need at least 15 inches of annual precipitation to persist. Common coastal grassland species found in these pastures are those capable of invading and tolerating the existing grazing regime. These include a variety of mostly annuals, such as *Avena* spp. (wild oats), *Bromus* spp. (bromes), and *Lolium* spp. (ryegrasses). These species persist through the dry summers as quiescent seeds that await the first autumn rains. Other invaders of pastures are frequently Eurasian forbs, but some natives are able to persist in pastures if they have some inherent chemical or physical attribute that renders them unpalatable to livestock.

Historically, these upland grassland areas were probably dominated by a mixture of the perennial grasses *Nassella lepida* (Foothill needlegrass), *Nassella pulchra* (Purple needlegrass), *Danthonia californica* (California oatgrass), *Elymus elymoides* (Squirreltail), and *Poa secunda* (Malpais bluegrass), along with many perennial and annual forbs. Prior to introduction of cattle by the Spanish, coastal California had no large mammals that grazed all year, and grasslands were never heavily grazed. Native grassland species lack adaptations to heavy grazing and have declined markedly partly because grazing during their reproductive cycle greatly reduces seed production and the stored food reserves necessary to get them through dormant phases. The annual grasses introduced from the Old World are more tolerant of grazing, reproduce quickly, and do not need to store food reserves. Over the years their seedlings have out-competed and replaced native species. Native forbs have suffered a similar fate. On the Cal Poly campus, cultivation as well pastoral land use have played roles in the nearly complete conversion to alien dominated herb lands.

Much of the Slack Street grassland areas are dominated by only a few different species. Moderately dense stands of alien *Phalaris aquatica* (Harding grass) occur throughout the lower areas where is mixes with the common alien annual grasses *Brachypodium distachyon* (False brome grass), *Bromus hordeaceus* (Soft chess), *Lolium multiflorum* (Annual ryegrass), *Avena fatua* (Common wild oats), *Hordeum murinum* (Wild barley), and *Vulpia myuros* (Rattail fescue). Other common alien forbs, such as *Picris echioides* (Bristly ox-tongue), *Foeniculum vulgare* (Fennel), and *Brassica nigra* (Black mustard), occur in stands or as scattered individuals throughout these grasslands. Other associate species are listed in Appendix 1.

Within this upland pasture, both *Nassella lepida* (Foothill needlegrass) and *Nassella pulchra* (Purple Needlegrass) persist on the steeper slopes. Other indicators of California native grasslands are no longer present.

2. Coastal Scrub

This community is typically dominated by small to medium sized (3-6 feet tall) shrubs with a herbaceous understory. Both the density and the composition of the shrub cover vary from site to site, as does the herbaceous understory. The dominant shrubs in this plant community are comparatively soft-stemmed plants that undergo significant dieback during the summer drought. For this reason, coastal scrub is sometimes referred to as “soft chaparral” as opposed to the “hard chaparral” or “true or hard chaparral”.

The coastal scrub community is the dominant vegetation on the hillsides above the Slack Street site and a portion of it extends onto the northeast portion of the site. This stand extends downslope along the drainage and mingles with a stand of coast live oak woodland invaded by *Opuntia ficus-indica* (Mission cactus), *Olea europaea* (Olive), and *Schinus molle* (Peruvian pepper-tree). The dominant shrubs of the coastal scrub stands on site are *Artemisia californica* (California sagebrush), *Baccharis pilularis* (Coyote Bush), *Salvia mellifera* (Black Sage), and *Toxicodendron diversilobum* (Poison Oak). The herbaceous associates are mostly the same introduced grasses
and forbs present in the adjacent coastal valley grassland, but some native *Eriogonum elongatum* (Tall buckwheat), *Nassella lepida* (Foothill needlegrass), *Nassella pulchra* (Purple needlegrass), *Bromus carinatus* (California brome), and *Elymus glaucus* (Blue wild rye) still persist with the shrubs. The overall quality of the coastal scrub community on the site has been modified by the invasion of Mission cactus and other exotics.

**3. Coast Live Oak Woodland**

Small stands of coast live oak woodland occur in the canyons and north facing slopes of the hillsides above the Slack Street site. These stands extend onto the study site in the northwest portion of the site where they form a mosaic with the stands of coastal scrub and grassland. Along the upper portion of the central drainage, coast live oak woodland integrates with the human made stand of eucalyptus, Peruvian pepper, and olive. In these areas, individuals and small groups of *Quercus agrifolia* (coast live oak) are found mixed with the exotic trees that form the urban mix forest. The coast live oaks in this woodland are small, mostly less than fifteen feet, and fairly uniformly sized. Along the upper drainage a few shrubby *Salix lasiolepis* (arroyo willow) occur with the oaks. *Artemisia californica* (California sagebrush) occurs as an understory along with many of the alien grasses and forbs present in the adjacent grasslands. Some native *Bromus carinatus* (California brome), *Elymus glaucus* (Blue wild rye), *Nassella lepida* (Foothill needlegrass), and *Nassella pulchra* (Purple needlegrass) still persist. Other common associates are listed in Appendix 1.

**4. Riparian**

Riparian vegetation forms a tall woodland cover of mostly alien trees along much of the two narrow seasonal drainages that originate on the steep slopes above the Slack Street site. These drainages have no surface water during summer; thus, the species composition of both the overstory trees and understory associates is different and diminished as compared with riparian communities of perennial streams such as Brizzolara Creek to the north on the Cal Poly campus.

The tree overstory is dense and dominated by four alien trees: *Eucalyptus globulus* (Blue gum), *Eucalyptus sideroxylon* (Red ironbark), *Schinus molle* (Peruvian pepper tree), and *Olea europaea* (Olive). In the upper portions of these drainages (northeast corner of the site) small patches of native riparian trees such *Platanus racemosa* (California sycamore), *Quercus agrifolia* (Coast live oak), and *Salix lasiolepis* (Arroyo willow) persist and form the riparian woodland. The understory consists of coastal scrub species, such as *Artemisia californica* (California sagebrush), *Baccharis pilularis* (Coyote bush), *Mimulus aurantiacus* (Bush monkeyflower), *Toxicodendron diversilobum* (Poison-oak), *Bromus carinatus* (California brome), and *Elymus glaucus* (Blue wild rye). Significant stands of such aliens as *Opuntia ficus-indica* (Mission cactus) have invaded the riparian woodland and adjacent coastal scrub and grassland communities in the northeastern portion of the site. *Phalaris aquatica* (Harding grass) and many of the same weeds present in the surrounding pasture are also common in the riparian areas on site. These and other associated species are listed in Appendix 1.

Historically, the narrow, seasonal drainages on the Slack Street site were probably flanked by scattered *Quercus agrifolia* (coast live oak), *Salix lasiolepis* (arroyo willow), and *Platanus racemosa* (California sycamore) with patches of coastal scrub in the open areas. This assumption is based on both the presence of these tree species along the upper portions of these drainages and by the persistence of shrub species found along these drainages under the dense alien tree canopy.

**5. Freshwater Marsh**

Freshwater marshes occur in nutrient-rich mineral soils that are saturated through much or all
of the year. These communities are best-developed in locations with slow-moving or stagnant shallow water. Such sites commonly occur along the margins of creeks or along drainages where water is allowed to pool in depressions or move very slowly downslope. In areas where freshwater marshes occur there is not always standing water throughout the year. In some cases the water table is so close to the surface that it can be tapped by marsh plants. On hillsides, there are small seep areas associated with the drainages that provide a source of water much of the year.

On the Slack Street site, a relatively small stand of freshwater marsh vegetation has developed around and downslope from a spring and also along the margin of a very small perennial stock pond created near the spring. This hillside spring probably supported some of the same plant species that still persist in the area; however, it was likely more diverse in terms of species composition before being persistently grazed and trampled by cattle. Presently, species diversity and overall plant cover is low with only a few species, such as the natives Cyperus eragrostis (Umbrella sedge), Juncus patens (Spreading rush), and Verbena lasiostachys (Vervain), along with the alien wetland indicators Cynodon dactylon (Bermuda grass), Phalaris aquatica (Harding grass), Polypogon monspeliensis (Rabbitfoot grass), and Picris echioides (Bristly ox-tongue), covering most of the saturated soil downslope of the spring. Around the small stock pond is a small colony of the large alien grass Arundo donax (Giant reed) which is a noxious weed in many riparian and wetland areas along the central coast. Other associates are listed in Appendix 1. Overall, the hillside spring is in poor condition from persistent grazing. Trampling by cattle has rendered an evident waffle pattern to the soil surface from deep hoof prints.

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**RARE AND ENDANGERED PLANTS**

Eight native plant species documented to occur northeast of the project site in Poly Canyon (DeRome 1997), or within the encompassing San Luis Obispo 7.5 minute Quadrangle (Skinner and Pavlick 1994), are sufficiently rare to have been officially recognized as such by private or governmental agencies (see list below). A rare plant is one that is limited in terms of number of individual plants still present in the wild, and also one that has a limited distribution. Usually rare plants are found in only a few highly restricted populations. This distribution is usually determined by the rarity of the habitat in which the plant is able to grow. While many rare plants are not at present threatened with extinction, they occur in such small numbers over such a limited range that they could be threatened if their remaining habitat is modified. An endangered species is one that is not only rare, but also threatened with extinction because the survival of existing populations and future reproduction are jeopardized. The main reason that most such plants in California are extinct or rare and endangered is that humans are gradually destroying their habitats through urbanization, forest destruction, agricultural practices and pollution. Attempts are being made to eliminate these practices and to protect the rare and/or endangered species in California.

**The Basis for Recognizing Rare and Endangered Plants**

Since the 1970’s the California Native Plant Society (CNPS), an organization of professional and lay botanists that is dedicated to the preservation of California’s native flora, has been involved in determining which plants in California are rare and endangered. The society has published five editions of a book entitled *Inventory of Rare and Endangered Vascular Plants of California*. The fifth edition of the CNPS Inventory (Skinner and Pavlik, 1994) lists plants in four categories: **List 1**—Plants of Highest Priority, with two sublists: **1A**—Plants Presumed Extinct in California and **1B**—Plants Rare and Endangered...
in California and Elsewhere; **List 2**—Plants Rare or Endangered in California, but More Common Elsewhere; **List 3**—Plants about which More Information is Needed; and **List 4**—Plants of Limited Distribution (A Watch List). Additionally each plant listed is given an R-E-D Code (Rarity, Endangerment, and Distribution) with numbers ranging from 1-3 in each category. For each of the values a higher number is an indication of greater sensitivity:

**R (rarity)**
1. Rare but found in sufficient numbers and distributed widely enough that the potential for extinction or extirpation is low at this time.
2. Occurrence confined to several populations or to one extended population.
3. Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.

**E (endangerment)**
1. Not endangered.
2. Endangered in a portion of its range.
3. Endangered throughout its range.

**D (distribution)**
1. More or less widespread outside California.
2. Rare outside California.
3. Endemic to California.

In November 1995, the CNPS circulated for comment a list of changes to the *Inventory* that are proposed for an upcoming 6th edition. These include proposals to add plants not previously listed, to delete plants previously listed but on the basis of new information determined to be too common for listing, and to change the status of plants previously listed. Among the seven rare species potentially found on the site, one will be a new addition that is not currently listed and two will be moved to a new list. In June 2000 the CNPS posted on its website a list of the taxa to be included in edition 6 of the Inventory: [http://www.cnps.org/rareplants/inventory/6thEdition.htm](http://www.cnps.org/rareplants/inventory/6thEdition.htm)

**U. S. Department of Fish and Wildlife**—The Endangered Species Act in 1973 resulted in listing and protecting rare plants at the federal level by the U. S. Fish and Wildlife Service (USFWS). Their categories are summarized below:

**Endangered Species (FE)** are taxa in danger of extinction throughout all or a significant portion of their range.

**Threatened Species (FT)** are taxa likely to become endangered within the foreseeable future throughout all or a significant portion of their range.

**Candidate Species** are taxa for which the Fish and Wildlife Service (Service) has sufficient information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act, but for which development of a proposed listing regulation is precluded by other higher priority listing activities.

**California Department of Fish and Game**—The California Endangered Species Act in 1984 resulted in listing and protecting rare plants at the state level with the California Department of Fish and Game (DFG). Their categories are summarized below:

**Rare Species (CR)** are taxa that are not presently threatened with extinction but occur in such small numbers that they could become endangered if habitat conditions worsen.

**Threatened Species (CT)** are taxa likely to become endangered within the foreseeable future
without special protection and management efforts.

**Endangered Species (CE)** are taxa whose prospects of survival are in immediate jeopardy for one or more reasons. These taxa are in danger of extinction throughout all or a significant portion of their range.

**California Environmental Quality Act (CEQA)**—For all plant species listed on CNPS’s List 1B and 2, it is mandatory that they be fully considered during preparation of environmental documents relating to CEQA. For species on Lists 3 and 4, CNPS strongly recommends that they be considered in preparation of such documents.

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**RARE PLANTS POTENTIALLY ON OR NEAR THE SLACK STREET PROPOSED HOUSING SITE**

No rare plants were verified to occur on the proposed Slack Street housing site¹. The rare plant species listed in the table below have documented occurrences on the Cal Poly campus in the vicinity of the project site. Impacts of the project will include students hiking off site from the dormitories and this could have impacts on the rare plants of the vicinity as described below.

Most of the rare plants listed below are typically found on soils derived from serpentinite rock. Serpentinite is a metamorphic, magnesium silicate rock, often green in color and slippery to the touch. (It is the California State rock). Serpentinite and the soils derived from it have a number of traits inimical to plant growth. It is low in some essential nutrients, especially calcium, and high in magnesium. In addition, it is often high in toxic elements such as nickel and chromium. As a result of these unusual conditions, serpentinite rock and soil support unusual, endemic floras including a large number of rare and endangered species. The hillsides adjacent to the northeastern border of the project site exhibit serpentinite outcrops and shallow soils that support some unusual plant species, many of which are listed as rare and/or endangered. Rock outcrops provide specialized habitats for both plants and animals. Some species are restricted to the rock crevices or to the bare, dry rock surfaces. Rock outcrops are mostly sparsely vegetated by extremely drought tolerant species on their surfaces and by moister requiring species in their crevices.

We have included the current listing from the 1994 *Inventory of Rare and Endangered Vascular Plants of California* (fifth edition) along with the proposed new listing (sixth edition which is available on the CNPS website) for those that are changing. For each taxon, the current listed status for California is based on the January 2000 Special Plant List by the California Department of Fish and Game, and the current federal status is taken from the United States Fish and Wildlife website as of October 2, 2000 ([http://ecos.fws.gov/webpage/webpage_usa_lists.html?#CA](http://ecos.fws.gov/webpage/webpage_usa_lists.html?#CA)). Both are indicated in the table below.

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¹ Plants of *Chlorogalum pomeridianum* were observed on the site but we were unable to determine if these are var. *minus* (dwarf soaproot). See discussion below.
### Scientific Name and Common Name

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<thead>
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<th>Scientific Name</th>
<th>Common Name</th>
<th>C.N.P.S. Listing</th>
<th>RED Code</th>
<th>State Listing</th>
<th>Federal Listing</th>
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<tr>
<td><em>Calochortus clavatus</em> ssp. <em>clavatus</em></td>
<td>club-haired mariposa lily</td>
<td>List 4</td>
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<td>Cambria morning glory</td>
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**Calochortus clavatus** ssp. **clavatus** (club-haired mariposa lily) is a bulb-forming lily that produces one or two strap-shaped green leaves in early spring. These are beginning to wither by the time the plant flowers in May or June. The flowers are cup-shaped with 3 narrow, yellow-green sepals and three, obtriangular, yellow petals marked by a jagged, transverse, purple-brown band across the inner face. Each petal bears a rounded, depressed nectary toward the base surrounded by club-shaped yellow hairs. The anthers are large and purple. After the flowers wither the ovary develops into a slender, 3-angled capsule with many dark seeds. The plant is generally completely dry by late summer. The dry remains can be identified by the shape of the capsule. Only the bulb and seeds remain alive until the next growing season.

**Calochortus clavatus** ssp. **clavatus** is restricted to San Luis Obispo County and Santa Barbara County in the western portion of the Coast Ranges, mostly on soils derived from serpentinite parent material. In San Luis Obispo County it is known from several locations in the Santa Lucia and San Luis Ranges. Four other rare subspecies occur to the north and south of subspecies **clavatus**. It is known from several sites in the area.

Club-haired mariposa lily has been documented in several sites in Poly Canyon and on the Pennington Creek Biological Reserve. It has been observed on slopes within a few minutes walk from the proposed Slack Street campus housing site. The attractive flowers of this species make it likely that it will occasionally be picked by curious students hiking in the canyon.

**Calochortus obispoensis** (San Luis Obispo mariposa lily) is a bulb-forming lily that produces one or two strap-shaped green leaves in early spring. These are beginning to wither by the time the plant flowers in May or June. The flowers are star-like with 3 narrow, yellow-green sepals and three yellow petals that are bearded with long purple and yellow hairs. After the flowers wither the ovary develops into a slender, 3-angled capsule with many dark seeds. The plant is generally completely dry by late summer. The dry remains...
can be identified by the shape of the capsule. Only the bulb and seeds remain alive until the next growing season.

San Luis mariposa lily is restricted to central San Luis Obispo County where it occurs only on the hills and mountains in the vicinity of San Luis Obispo. It generally occurs associated with dry serpentine rock outcrops and soils within chaparral, coastal scrub, and valley and foothill grassland habitats (Hickman, 1993; Skinner and Pavlik, 1994). It is a component of the serpentine California native grassland community on the Cal Poly campus. San Luis mariposa lily has been documented in several sites in Poly Canyon, near the "P", and on the Pennington Creek Biological Reserve. It has been observed on slopes within a few minutes walk from the proposed Slack Street campus housing site. The unusual flowers of this species make it likely that it will occasionally be picked by curious students hiking in the canyon.

*Calystegia subacaulis* ssp. *episcopalis* (Cambria morning glory) is a perennial herb with trailing or sometimes weakly twining stems. It has alternate, broadly triangular leaves that are minutely hairy. The cream-colored, funnel-shaped flowers are produced from April to June. After the flowers wither the plant develops small, dry capsules with dark seeds. By late summer the above-ground parts of the plants are completely dry and only seeds and an underground rootstock persist through the dry season. The plant is difficult to identify in the dry season because the dry parts shatter.

Cambria morning glory is at present known only from San Luis Obispo and northern Santa Barbara counties. In San Luis Obispo County it ranges from the Hearst Ranch in the northwestern corner of the county south to the vicinity of San Luis Obispo where it usually occurs in grassy sites with clay-rich soils often in association with serpentine parent material. It has been observed on the proposed Poly Canyon North and Poly Canyon South housing sites, in the vicinity of Smith Reservoir, and in the Pennington Creek Biological Reserve.

During April and May 2000, scattered flowering stems of *Calystegia subacaulis* ssp. *episcopalis* were observed near Poly Canyon Road in the approved housing site at that location in association with remnant California native grassland and coastal scrub. Additional non-flowering stems were observed as well.

This species was not found on the Slack Street site but is can easily be overlooked when not in flower because it is relatively small and often obscured by overtopping grasses and forbs. Individuals present in a vegetative state, but not in flower this season, may have been missed. This species also produces underground stems that may arise aboveground some distance apart so as to give the appearance of separate individuals. However, these shoots may be part of the same genetic individual.

Cambria morning glory has been observed on slopes within a few minutes walk from the proposed Slack Street campus housing site. It is likely to occur on other nearby sites, but these have not yet been investigated. Plants off site would be subject to foot traffic from residents of the proposed buildings.

*Chlorogalum pomeridianum var. minus* (dwarf soaproot) is a perennial herb that grows from a large bulb with fibrous outer bulb scales. In spring it produces a rosette of wavy-margined, strap-shaped leaves. A branched inflorescence arises from the bulb, and
flowers develop in late spring or early summer. Flower buds of dwarf soaproot are externally purple, but the open flowers are white. The flowers are nocturnal, opening in the evening and closing the next morning. Seed capsules about 5 mm diameter mature in summer. Plants of *Chlorogalum pomeridianum* are easily identified in spring by their characteristic leaves and in summer by the seed capsules. Plants of var. minus have comparatively short stems 20–40 cm tall, and the bulb coats are membranous or have relatively few fibers.

Dwarf soaproot grows mostly in grassy areas or openings in chaparral, coastal scrub, and coastal live oak woodland. It occurs from the Coast Ranges north of the San Francisco Bay region to the vicinity of San Luis Obispo. Around San Luis Obispo it occurs mostly on soils derived from serpentinite. On the Cal Poly campus dwarf soaproot is known to occur in Poly Canyon and the Pennington Creek Biological Reserve and is probably present elsewhere as well. *Chlorogalum pomeridianum* was observed within the project site but could not be determined to variety because mature inflorescences could not be found during the field survey [deer and other herbivores often eat the immature flower clusters]. Because verified populations of dwarf soaproot (var. minus) are known to grow in Poly Canyon within a few minutes walk of the proposed campus housing site, we consider it likely that the plants found on the proposed Slack Street campus housing site are var. minus as well.

Foot traffic would be likely to have a negative impact on these plants by breaking their brittle stems and crushing the bulbs and leaves.

*Chorizanthe breweti* (Brewer’s spineflower) is a brittle-stemmed annual herb. In early spring it produces a rosette of stalked, oval basal leaves. Typically a solitary flower is produced and three spreading, reddish-purple stems radiate away from the rosette. Stem leaves are generally in widely separated pairs and most are much smaller than the basal leaves. In vigorous plants the stems branch repeatedly. The tips of the branches bear clusters of tiny white to pale pink six-parted flowers, each surrounded by a tubular cluster of six red-purple, spine-tipped bractlets. Each flower produces a tiny, one-seeded dry fruit. After flowering the plant dies and only seeds survive through the dry season. The dry plant shatters very easily, but its remains can often be identified through the summer.

*Chorizanthe breweri* is an endemic to San Luis Obispo County where most occurrences are on serpentinite or serpentinite-derived soils. It occurs only in the vicinity of San Luis Obispo where it has a range similar to that of *Calochortus obispoensis*. Brewer’s spineflower is known from about twenty occurrences. This species occurs in coastal scrub, closed-cone conifer forest, chaparral and cismontane woodland communities. Brewer’s spineflower has been documented from Poly Canyon and from the Pennington Creek Biological Reserve.

Brewer’s spineflower has been observed on serpentinite slopes within a few minutes walk from the proposed Slack Street campus housing site. Foot traffic would have a negative impact on populations of these brittle-stemmed plants.

*Chorizanthe palmeri* (Palmer’s spineflower) is a brittle-stemmed annual herb. In early spring it produces a rosette of stalked, oval basal leaves. Usually a single stem 1–12 inches high arises from the rosette, and it bears one or two, well-separated rings of leaves. Typically a solitary flower is produced at the end of the main stem and three spreading,
reddish-purple stems radiate away from the upper leaf cluster. Stem leaves above this point are generally in widely separated pairs and most are much smaller than the leaves of the main stem. In vigorous plants the stems branch repeatedly. The tips of the branches bear dense, head-like clusters of tiny purple, six-parted flowers, each surrounded by a tubular cluster of six red-purple, spine-tipped bractlets. Each flower produces a tiny, one-seeded dry fruit. After flowering the plant dies and only seeds survive through the dry season. The dry plant shatters easily, but its remains can often be identified through the summer.

*Chorizanthe palmeri* is known definitely from Monterey and San Luis Obispo counties and may occur as well in San Benito and Santa Barbara counties. Most occurrences are on serpentinite or serpentinite-derived soils. In San Luis Obispo County it occurs in the Santa Lucia and San Luis Ranges from the northwestern corner of the county to the serpentinite hills around San Luis Obispo.

Palmer’s spineflower has been observed on serpentinite slopes within a few minutes walk from the proposed Slack Street campus housing site. Foot traffic would have a negative impact on populations of these brittle-stemmed plants.

*Dudleya abramsii ssp. murina* (San Luis Obispo dudleya) is a succulent perennial herb with a thick, fleshy taproot. It produces a dense rosette of narrow, fleshy, leaves with a dull, gray-green coloration. In late spring and early summer clusters of 5-petaled, cream-colored to dull purplish flowers are produced on stalks arising from the rosettes. The ovaries of these flowers mature as clusters of small, dry fruits that split open and release many tiny seeds. These plants tough it out during the dry season and their somewhat shriveled leaves and old dry flower clusters are easy to recognize.

San Luis Obispo dudleya is endemic to San Luis Obispo County and it is apparently limited to stony serpentinite soils and serpentinite rock outcrops, usually associated with California native grassland. Its range is limited to the hills bordering the San Luis Valley in the foothills of the Santa Lucia Mountains from Chorro Creek to Corral de Piedra Creek and in the San Luis Range from upper Prefumo Canyon to the Froom Ranch and the hills south of Broad Street. San Luis Obispo dudleya is known to occur in Poly Canyon and in the Pennington Creek Biological Reserve and is to be expected in similar habitats elsewhere on campus.

*Dudleya abramsii ssp. murina* has not been observed within the proposed Slack Street housing site, but it has been observed on nearby serpentinite slopes within a few minutes walk from the proposed dormitories. Foot traffic would have a negative impact on populations of these plants by crushing their succulent leaves and dislodging rocks on the hillsides where the plants grow.

*Layia jonesii* (Jones’ layia) is a slender, erect, spring-flowering herb. The basal and lower stem leaves are generally lobed and the upper have smooth margins. The stems and leaves bear a mixture of short stiff hairs and small glandular hairs. Usually there is a single main stem and several ascending branches. In April and May flowers are produced in daisy-like heads at the branch tips. There are 13–27 petal-like ray flowers in a double row around the periphery of the flower head. These are yellow with three creamy white tips. The center of the head contains many small, yellow disk flowers with purple anthers. When the plants go to seed, the flower heads shatter and the many tiny one-seeded dry
fruits drop to the ground. By late June the plants are withered and completely dry. In the dry season the remains are generally not recognizable.

Jones layia is an annual herb that occurs in Monterey and San Luis Obispo counties. It grows in chaparral and California native grassland communities, primarily on open serpentinite or clay slopes (Hickman, 1993). Within San Luis Obispo County this species occurs from the San Luis Obispo area to coastal hills north of Cayucos and the vicinity of Cypress Mountain. It occurs locally in Poly Canyon and may be expected in suitable habitats elsewhere on the Cal Poly campus including the project site.

*Layia jonesii* was not observed within the project site, but it grows in Poly Canyon within a few minutes walk from the proposed Slack Street campus housing site. The attractive daisylike flower heads of this species make it likely that it will occasionally be picked by curious students hiking in the canyon. Foot traffic would have a negative impact on populations of these plants.

*Lomatium parvifolium* (small-leaf lomatium) is a spring-flowering perennial herb with a slender, woody rootstock. Leaves are produced through beginning in March or April and flowering generally begins in April and may continue into June. The smooth green leaves have expanded, sheathing bases and blades divided into many segments. The small yellow flowers are borne in flat-topped clusters up to 5 inches across. The flattened, dry fruits are often tinged with purple and have membranous wings. The mature fruit clusters shatter during the summer as the leaves wither. By mid-summer the above-ground parts of the plants are completely dry. The old fruiting stalks may persist in identifiable condition during the drought season.

Small leaved lomatium occurs from Santa Cruz County to Santa Barbara County in the western portion of the Coast Ranges, mostly on soils derived from serpentinite parent material. It is a component of coastal scrub, chaparral, California native grassland, and rock outcrop communities. It is known from several sites in the San Luis Obispo area. On the Cal Poly campus it has been documented from Poly Canyon, Serrano Canyon, and the Pennington Creek Biological Reserve, and probably occurs in other sites as well.

*Lomatium parvifolium* was not observed on the Slack Street site, but it grows on serpentinite slopes in Poly Canyon within a few minutes walk of the proposed Slack Street campus housing site. Foot traffic is likely to impact populations of these plants by crushing the leaves and stems and dislodging rocks on the hillsides where the plants grow.

*Perideridia pringlei* (adobe yampah) is a perennial herb that arises from a deeply buried tuber. In the spring one or two basal leaves are produced from the tuber. These leaves are divided into numerous linear segments. The basal leaves often wither before the flower stalks are produced. Slender, erect flowering stems arise in late spring or early summer. The few leaves become progressively smaller and less divided up the stem. The small white flowers are borne in a flat-topped cluster that is elevated above the leaves. After the petals have fallen the ovaries develop into small, 2-seeded dry fruits that shatter when the plants dry up in summer. Old dry fruit clusters may occasionally be recognizable through the dry season.

Adobe yampah is known to occur in coastal locations from Monterey to Los Angeles counties and in the interior from Nevada to Kern counties. In San Luis Obispo County it
has been documented from a few widely scattered locations on serpentinite soils in the vicinity of San Luis Obispo, from dry hills east of Creston, and the summit of the Caliente Range. It grows in California native grasslands, open shrub-dominated communities, and rock outcrop communities. On the Cal Poly campus adobe yampah has been documented from Poly Canyon and may be expected in areas with serpentinite soils elsewhere on campus.

Perideridia pringlei was not observed within the Slack Street site. However, it grows in Poly Canyon within a few minutes walk of the proposed campus housing site. Foot traffic is likely to impact populations of these plants by crushing the leaves and stems and dislodging rocks on the hillsides where the plants grow.

Sanicula hoffmannii (Hoffmann’s sanicle) is a perennial herb 1–2 feet tall, three-parted leaves, and numerous, tiny yellow-orange flowers borne in dense, rounded balls at the ends of naked branches that emerge from a common origin like the spokes of an inverted umbrella. The fruits are small, flattened and beset with many hooked barbs around the top.

Hoffmann’s sanicle occurs within a variety of communities including, chaparral, coastal prairie, and valley foothill grassland. It commonly occurs at the ecotone between chaparral or coastal scrub and grassland communities, but sometimes grows beneath the canopy of coast live oak trees. On the Cal Poly campus it has been documented from the Stenner Creek drainage and from the Pennington Creek Biological Reserve.

Sanicula hoffmannii was not observed within or in the immediate vicinity of the Slack Street site. Although it has not been observed in Poly Canyon it is likely to be present. Foot traffic is likely to impact populations of these plants by breaking the flowering or fruiting stems.

Senecio aphanactis (rayless groundsel) is a spring-flowering annual herb with a slender taproot. Stems are simple or branched and hairless. Leaves are linear to oblong, coarsely toothed, hairless, and borne directly on the stem. The flowering heads are small, urn-shaped, and clustered at the main stem and branch tips. The outer bracts are green and surround the inconspicuous flowers that all lack ray corollas. The dry dandelion-like fruits are hairy and bear numerous whitish bristles from the top.

Rayless groundsel is an inconspicuous annual that occurs in vernally moist openings in low elevation coastal scrub on the mainland from Solano County south to northern Baja California, and on Santa Rosa, Santa Cruz, and Santa Catalina Islands. It usually occurs in sparsely vegetated areas with shallow stony soil. In San Luis Obispo County, it is known from a few widely scattered sites from Montaña de Oro State Park to Creston. On the Cal Poly campus it has been documented from serpentinite soils on “School Ridge” and on hills west of Poly Canyon. It is easily mistaken for the much more common weedy Senecio vulgaris (common groundsel).

Senecio aphanactiswas not observed within the study site but it has been documented to occur within a few minutes walk of the proposed Slack Street campus housing site. Foot traffic might have a negative impact on populations of these plants.
REFERENCES


California Department of Fish and Game. 1997. Natural Diversity Data Base. Special List Plants List.


Holland, Robert F. 1986. Preliminary Description of Terrestrial Natural Communities of California. State of California, The Resources Agency, Department of Fish and Game


Skinner, M. W. and B. M. Pavlik (eds.). 1994. Inventory of Rare and Endangered Vascular Plants
United States Department of the Interior, Fish and Wildlife Service. 1990. Endangered and
Threatened Wildlife and Plants; Review of Plant Taxa for Listing as Endangered or
Threatened Species; Federal Register 55 (35):6184-6229
United States Fish and Wildlife Service, Environmental Protection Agency, Department of the Army
## APPENDIX 1. PLANT SPECIES LIST FOR PROPOSED SLACK STREET HOUSING SITE

**CG** = Coastal Valley Grassland  
**C/O** = Coastal Scrub/Oak Woodland  
**R** = Riparian  
**M** = Freshwater Marsh (at hillside spring)

+ = occurs in that community & others;  ● = occurs in that community exclusively

### TREES

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**ANNUAL FORBS**

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| Alien  | Brassicaceae  | Brassica nigra           | Black Mustard            |    |     |   |   |
| Alien  | Brassicaceae  | Capsella bursa-pastoris  | Shepherd's Purse         |    |     |   |   |
| Alien  | Asteraceae    | Centaurea melitensis     | Tocolote                 |    |     |   |   |
| Native | Onagraceae    | Epilobium densiflorum    | Boisduvalia              |    |     |   |   |
| Alien  | Geraniaceae   | Erodium botrys           | Storkbill Filaree        |    |     |   |   |
| Alien  | Geraniaceae   | Erodium cicutarium       | Redstem Filaree          |    |     |   |   |
| Alien  | Geraniaceae   | Erodium moschatum        | Green-Stem Filaree       |    |     |   |   |</p>
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<tr>
<td>Alien</td>
<td>Fabaceae</td>
<td><em>Vicia benghalensis</em></td>
<td>Purple Vetch</td>
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<tr>
<td>Alien</td>
<td>Fabaceae</td>
<td><em>Vicia sativa</em></td>
<td>Vetch</td>
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<tr>
<td>Alien</td>
<td>Fabaceae</td>
<td><em>Vicia villosa</em></td>
<td>Vetch</td>
<td></td>
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</tbody>
</table>

### PERENNIAL GRASSES

| Alien  | Poaceae   | *Agrostis viridis*              | Water Bent Grass   |    |     |    |    |
| Alien  | Poaceae   | *Avena fatua*                   | Common Wild Oats   | + |     |    |    |
| Alien  | Poaceae   | *Brachypodium distachyon*       | False Brome Grass  | + |     |    |    |
| Alien  | Poaceae   | *Bromus hordeaceus*             | Soft Chess Brome Grass | + |     |    |    |
| Alien  | Poaceae   | *Bromus catharticus*            | Rescue Grass       |    |     |    |    |
| Alien  | Poaceae   | *Bromus carinatus*              | California Brome   |    |     |    |    |
| Alien  | Poaceae   | *Cynosus asper*                 | Bermuda Grass      | + |     |    |    |
| Native | Poaceae   | *Elymus glaucus*                | Blue Wild Rye      | + |     |    |    |
| Alien  | Poaceae   | *Festucia arundinacea*          | Tall Fescue        | + |     |    |    |
| Native | Poaceae   | *Nassella lepida*               | Foothill Needlegrass |    |     |    |    |
| Native | Poaceae   | *Nassella pulchra*              | Purple Needlegrass |    |     |    |    |
| Alien  | Poaceae   | *Pennisetum setaceum*           | Fountain Grass     |    |     |    |    |
| Alien  | Poaceae   | *Phalaris aquatica*             | Harding Grass      | + |     |    |    |

### ANNUAL GRASSES

| Alien  | Poaceae   | *Avena fatua*                   | Common Wild Oats   | + |     |    |    |
| Alien  | Poaceae   | *Brachypodium distachyon*       | False Brome Grass  | + |     |    |    |
| Alien  | Poaceae   | *Bromus hordeaceus*             | Soft Chess Brome Grass | + |     |    |    |
| Alien  | Poaceae   | *Bromus catharticus*            | Rescue Grass       |    |     |    |    |
| Alien  | Poaceae   | *Hordeum murinum*               | Wall Barley        | + |     |    |    |
| Alien  | Poaceae   | *Lolium multiflorum*            | Annual Ryegrass    | + |     |    |    |
| Alien  | Poaceae   | *Pennisetum setaceum*           | Fountain Grass     |    |     |    |    |
| Alien  | Poaceae   | *Phalaris aquatica*             | Harding Grass      | + |     |    |    |

### RUSHES / SEDGES

| Native | Cyperaceae | *Carex barbara*                 | Santa Barbara Sedge |    |     |    |    |
| Native | Cyperaceae | *Cyperus eragrostis*            | Umbrella Sedge      | + |     |    |    |
| Native | Cyperaceae | *Eleocharis macrostachya*       | Spike-Rush          |    |     |    |    |
| Native | Juncaceae  | *Juncus patens*                 | Spreading Rush      | + |     |    |    |
BOTANICAL SURVEY

Goldtree Area

Cal Poly State University Campus
San Luis Obispo, California

Prepared by

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Prepared for:

Cal Poly Master Plan
October 2000
EXECUTIVE SUMMARY

This report presents the results of a botanical survey conducted during September 2000 on the Goldtree Area of the Cal Poly campus. Special attention was given to potential occurrences of several rare, endangered or special-status plant species known to exist within the San Luis Obispo Quadrangle (Skinner and Pavlik 1994) and to any sensitive habitats present on the site.

The site contains rolling to steep hillsides west of Stenner Creek that are mostly covered by coastal valley grassland used as sheep pastures. Historically the area was covered by California native grassland but has been converted to coastal grasslands now dominated by alien grasses and forbs. Only scattered remnants of the native grasses persist. Heavy disturbance to these grasslands have resulted in the invasion of yellow star thistle, an extremely noxious, unpalatable weed that is invading many of the foothill range areas of California.

Two drainages traverse the site from northwest to southeast and support riparian and freshwater marsh vegetation. Much of the riparian corridor is dominated by a narrow band of aquatic and semi-aquatic rushes, spike-rushes, sedges, and cattails; however, the northern drainage supports a well-developed stand of coast live oak woodland. Small stands of coastal scrub are present along the same drainage in the northwestern portion of the site and form a mosaic with the coast live oak woodland in this area. Vineyards have replaced the grasslands along part of the eastern boundary of
the site, and a stand of eucalyptus grows around the human-made pond just south of the vineyards.

Although serpentinite rock outcrops exist on hilltops within the otherwise coastal valley grassland pasture, none of the contingent of rare species known to occur on such outcrops in the San Luis Obispo area were found during our survey.
The Goldtree Area consists of approximately 180 acres of the Cal Poly Campus near 35.32°N, 120.68°W, UTM Zone 10, N 3911009, E 710768, in the eastern half of Section 16 of Township 30 South from the Mt Diablo Base Line and Range 12 East from the Mt Diablo Meridian. The area is bounded on the north by the Southern Pacific Railroad tracks, on the west by the California Men's Colony, on the south by California Highway 1, and on the east by Stenner Creek (see site map). The area is named for Morris Goldtree, San Luis Obispo merchant of the late 1800's, who donated the land used as a siding by the Southern Pacific Railroad to encourage the founding of a new town that never developed (Hall-Patton 1994).

Topography is moderately undulating with rounded hills dissected by shallow-sided drainages. Two small tributaries of Stenner Creek traverse the area from northwest to southeast. The northern tributary originates in the slopes off site to the north. The southern tributary originates in the west-central portion of the Goldtree Area and traverses through the center the site to the human-made pond. Slopes are moderate, ranging from about 5% to over 25%. Elevations range from approximately 400 to 610 feet, and the largest and tallest hill is in the southern portion of the site.

The general climate is the cool summer phase of the dry-summer Mediterranean type of humid mesothermal climates (Trewartha 1968). Winter high temperatures average near 62°F (16.7°C) with low averages near 41°F (5°C). Winter lows below 32°F (0°C) are not uncommon, and a low of 9°F (−12.7°C) has been recorded on the Cal Poly campus. Summer high temperatures average near 77°F (25°C) with low averages near 52°F (11°C). Summer highs above 90°F (32°C) are not uncommon, and a high of 109°F (42.8°C) has been recorded on the Cal Poly campus. Precipitation falls as rain primarily from October through April, and averages about 22 inches (558 mm) per year. Less than one inch of precipitation is typically recorded from May through September, but overnight and morning fog with near 100% humidity occurs nearly every day unless drier, downsloping winds descend from the Salinas Valley over the Santa Lucia Range to overwhelm the onshore flow of marine air (Felton 1965).

Upland soils form a complex mosaic of Diablo Clay Loam, Los Osos Clay Loam, and Lodo Clay Loam, all slowly permeable, well-drained, residual soils derived from sandstone, shale, or mudstone. Diablo Clay Loam is moderately alkaline, with a moderately deep A horizon to over 30 inches, but no well-defined clay (B) horizon. Los Osos Clay Loam is moderately acid and does exhibit a well-defined clay (B) horizon under the 12-inch thick A horizon. Lodo Clay Loam is slightly acid, and shallow, with a depth to rock of about 12 inches, and no clay (B) horizon (Ernstrom 1977). Serpentinite outcrops occur on several hilltops in the northwest portion.

Present land use is agricultural with most of the area fenced into paddocks for sheep grazing. Active vineyards have been planted along the eastern boundary of the site near Stenner Creek.
OVERVIEW OF VEGETATION

The vegetation of the study site has developed in response to the interaction of a complex of environmental features that are variable over the area. Local climate (wind, temperature, rainfall, fog, etc.), topography, parent materials, soils, biotic components, fire, location of waterways and natural historical events are all variables that have affected the vegetation on the site. Past and present land-use and other human caused events have also resulted in significant changes in the vegetation.

The former natural vegetation of the site consisted of California native grassland on the upland slopes with a narrow band of riparian and freshwater marsh along the two small tributaries of Stenner Creek that traverse the site. Presently, the California native grassland is entirely converted to coastal valley grassland thoroughly dominated by non-native grasses and forbs. The riparian and freshwater marsh is now fragmented and thoroughly invaded by the alien grasses and forbs the grow in the adjacent grasslands.

The most significant natural resource elements remaining on or near this site are the narrow riparian and freshwater marsh areas along the two small tributaries of Stenner Creek, even though they have many invasives, and the band of coast live oak woodland along the northern tributary of Stenner Creek.

VEGETATION DYNAMICS

Plant communities are dynamic assemblages of plants that interact among themselves and their environment within a space-time boundary. Some of these communities are well defined and distinct while others are not. No two sites within a given community are exactly the same in environmental conditions, vegetation structure, or species composition. This complexity makes defining plant communities and mapping their areal coverage sometimes difficult and arbitrary.

Spatial boundaries between plant communities (also referred to as ecotones or transition areas) may be abrupt where environmental features change sharply, such as between terrestrial and aquatic habitats. However, usually there is an environmental gradient and plant communities change more gradually in response to that gradient.

Another complicating factor in vegetation analyses and mapping is that plant communities are not static but change through time in response to both natural and human induced environmental changes. As a result, some areas are mixtures of plant assemblages at varying successional stages. The invasion of exotics into native communities further complicates our study.

DESCRIPTION OF THE VEGETATION AND FLORA

The floristic inventory of the study site took place in September 2000. The diversity of plant species and habitats are indicated in the species list and on the vegetation map. The vegetation and floristic survey consisted of canvassing the site on foot, recording the plant species in identifiable condition, and describing the plant
communities and habitats.

We identified 70 plant species (Appendix 1), 26 natives, 44 aliens, and six general plant communities. However, it is important to note that this may not be a complete list of the plants present on the site. Plant species composition, especially herbaceous cover, varies seasonally and annually. During September 2000 most herbaceous plant species were represented by the dried remains of last year's stand crop. Others may have been overlooked or may bloom in spring and summer. A survey through the entire year, especially in the spring, would be necessary for a complete listing of the flora found on the project site.

The vegetation of the area can be somewhat arbitrarily divided into five general plant communities, as classified by Holland and Keil (1995): (1) coastal valley grassland; (2) coastal scrub; (3) coast live oak woodland; (4) riparian and freshwater marsh; (5) serpentineite rock outcrops; and (6) anthropogenic communities (ruderal, vineyards, and plantations). Each is discussed separately below. Additionally, serpentineite rock outcrops occur within the Anthropogenic Pastoral Community and are discussed under that heading.

1. Coastal Valley Grasslands

Coastal valley grasslands, which cover the majority of the site, are currently composed of various species of native and introduced grasses and forbs (dicot herbs), and sometimes occasional shrubs are present. The grasses that dominate this grassland include annuals, perennials, or a mixture of the two depending on location. Many of the grasslands on campus are now dominated by grasses and forbs tolerant to grazing that were introduced into California during the period of Spanish settlement.

Grasslands often occur on fine textured, clay rich soils of valleys and alluvial deposits at the base of hillsides, although they also extend on some steep hillsides. They integrate with coastal live oak woodlands on mesic hillside slopes, with coastal scrub and chaparral on xeric, steep, rocky slopes, and with riparian woodland and freshwater marsh communities in aquatic and semi-aquatic areas along the creek and reservoir. Many of the grassland species occur as understory species in the other communities.

Some areas of the Cal Poly campus have an impressive number of native grasses in the grassland areas, much more than most grasslands in locally and in California. However, the Goldtree site has few native grasses except on the surroundings steep hillsides. The stands of perennial, native bunch grasses, which dominated the grassland prior to Spanish settlement, have gradually been reduced on the study site and replaced by introduced annuals. In heavily grazed pastures, which dominate much of the grasslands on the study site, few if any native grasses have survived. However, outside these heavily grazed areas on the surrounding hillsides, stands of California native grassland persist. Historically, the changes in the composition of the grassland in this area are mostly a function of the introduction and invasion of alien plant species and changes in livestock grazing and their grazing patterns.

The Coastal valley grassland communities of the site have been used for pasture and have been modified by both historical and present-day human
influences. These past influences and the current pastoral land-use patterns have shaped the grasslands that occur on site today. Repeated disturbance to the vegetation and soil by grazing animals maintains a pastoral influence on the grassland and results in grassland composed of mostly introduced species tolerant to this type of repeated disturbance regime.

Communities dominated by plants introduced by humans and established or maintained by human disturbance are anthropogenic communities. The coastal valley grassland used as heavily grazed pastures reflect the influence of humans by their species composition. These grasslands are composed of a mixture of plant species typical of coastal valley grasslands along with species intentionally grown for grazing livestock to consume. In the dry-summer subtropical climate region of California, the intentionally seeded pasture grasses are all cool-season Eurasian species, and mostly annual. The perennial species used, such as *Dactylis glomerata* (Orchardgrass), *Festuca arundinacea* (Tall Fescue), *Lolium perenne* (Perennial Ryegrass), and *Phalaris aquatica* (Harding Grass) generally need at least 15 inches of annual precipitation to persist. Annuals, such as *Avena* spp. (Wild Oats), *Bromus* spp. (Bromes), *Lolium* spp. (Ryegrasses), persist through the dry summers as quiescent seeds that await the first autumn rains. Invaders of pastures are frequently Eurasian forbs, but some natives are able to persist in pastures owing to some inherent chemical or physical attribute that renders them unpalatable to livestock.

Goldtree grasslands are dominated by a nearly complete cover consisting of only a few different species. The annual grasses *Bromus hordeaceus* (Soft Chess), *Lolium multiflorum* (Annual Ryegrass), *Avena fatua* (Common Wild Oat), *Vulpia myuros* (Rat-tail Fescue) form the matrix across most of the area, augmented by sizable stands of *Picris echioides* (Bristly Ox-Tongue), *Foeniculum vulgare* (Fennel), *Raphanus sativus* (Wild Radish), *Dipsacus sativus* (Teasel), *Silybum marianum* (Milk Thistle), and *Brassica nigra* (Black Mustard). Thus, portions of these paddocks support large stands of weedy aliens unpalatable to sheep. Other associate species are listed in Appendix 1.

These upland pastures were originally California native grassland dominated by a mixture of mostly the perennial grasses *Nassella lepida* (Foothill Needlegrass), *Nassella pulchra* (Purple Needlegrass), *Danthonia californica* (California Oatgrass), *Elymus elymoides* (Squirreltail), and *Poa secunda* (Malpais Bluegrass), along with many perennial and annual forbs (non-grassy herbs). Historically, changes in the composition of these grasslands are mostly due to introduction and invasion of alien plant species and changes in the kinds of animals (especially grazing livestock) and their grazing patterns. Native grassland species have declined markedly because of their lack of adaptations to heavy grazing. Prior to introduction of cattle by the Spanish, coastal California had no large mammals that grazed all year. Perennial native grasses have declined in part because grazing during their reproductive cycle greatly reduces seed production and the stored food reserves necessary to get them through dormant phases. The annual grasses introduced from the Old World are more tolerant of grazing, reproduce quickly, and do not need to store food reserves. Over the years their seedlings have out-competed and replaced native species. Native forbs have suffered a similar fate. Locally, cultivation and fire have played roles in the nearly complete conversion to alien dominated herblands.

Within these upland pastures on Goldtree, both *Nassella lepida* (Foothill Needlegrass) and *Nassella pulchra* (Purple Needlegrass) persist on the steeper slopes. Other indicators of California native grassland are no longer present.
2. Coastal Scrub Community

This community is typically dominated by small to medium sized (3-6 feet tall) shrubs with a herbaceous understory. Both the density and the composition of the shrub cover vary from site to site, as does the herbaceous understory. The dominant shrubs in this plant community are comparatively soft-stemmed plants that undergo significant dieback during the summer drought. For this reason, coastal scrub is sometimes referred to as "soft chaparral" as opposed to the "hard chaparral" or "true chaparral".

The coastal scrub community is not well represented on the site but does form a sparse cover on the hillsides flanking the northern branch of Stenner Creek and mingles with the coast live oak woodland along this drainage. Therefore, we have included it in our discussion. The dominant shrubs on site are *Artemisia californica* (California sagebrush) and *Baccharis pilularis* (Coyote bush). Other shrubs present include *Epilobium canum* (California fuchsia), and *Eriophyllum confertiflorum* (Golden-yarrow). The herbaceous associates are mostly the same alien grasses and forbs present in the adjacent pastoral uplands, but some native *Nassella lepida* (Foothill needlegrass) and *Nassella pulchra* (Purple needlegrass) still persist with the shrubs.

3. Coast Live Oak Woodland

On the hillsides flanking the northern branch of Stenner Creek, a narrow band of *Quercus agrifolia* (coast live oak) forms a nearly closed canopy over the creek bed. Oak trees in this woodland are small, mostly less than fifteen feet, and fairly uniformly sized. *Artemisia californica* (California sagebrush) occurs as an understory along with many of the alien grasses and forbs present in the adjacent pastoral uplands. Some native *Nassella lepida* (Foothill needlegrass) and *Nassella pulchra* (Purple needlegrass) still persist. Other common associates are listed in Appendix 1.

4. Riparian and Freshwater Marsh

Freshwater marsh vegetation has developed around the margins of the human-made pond in the southeastern corner of the site, and in narrow bands along much of the drainage channel upstream. Consequently, this community is present in part because of human influences that have impeded the flow of these small tributaries to Stenner Creek. Freshwater marshes occur in nutrient-rich mineral soils that are saturated through much or all of the year. These communities are best-developed in locations with slow-moving or stagnant shallow water. Such sites commonly occur along the margins of creeks or along drainages where water is allowed to pool in depressions or move very slowly downslope. In areas where freshwater marshes occur there is not always standing water throughout the year. In some cases the water table is so close to the surface that it can be tapped by marsh plants. On hillsides, there are small seep areas associated with the drainages that provide a source of water much of the year.

Because perennial water is unusual in the coastal lowlands of San Luis Obispo County, riparian communities typically exhibit much greater plant species diversity as compared with the adjacent uplands. Of the 70 species catalogued during this inventory, 47 (67%) occur within the riparian and freshwater marsh communities, and 30 (43%) are present on site only in these communities.

Along the southernmost tributary to Stenner Creek are two mature, but small, individuals of *Platanus racemosa* (California sycamore). Larger individuals of this
species are common along the main channel of Stenner Creek. Surrounding the largest pond is a band of mature *Eucalyptus* spp., and large, dense stands of *Scirpus pungens* (Common threesquare), with some *Typha angustifolia* (Narrow-leaved cattail) and *Arundo donax* (Giant reed).

At the head of the southernmost tributary to Stenner Creek is a stand of *Phalaris aquatica* (Harding grass). Downstream, *Phalaris aquatica*, *Festuca arundinacea* (Tall fescue), and *Paspalum dilatatum* (Dallis grass) are common along the drainage. The smaller stock ponds of the area support stands of *Typha angustifolia* (Narrow-leaved cattail), *Crypsis schoenoides* (Swamp grass), *Polypogon monspeliensis* (Rabbitfoot grass), and *Cynodon dactylon* (Bermuda grass). This drainage is also thoroughly invaded by many of the same weeds present in the adjacent upland paddocks. These and other associate species are listed in Appendix 1.

5. **Serpentine Rock Outcrops**

Rock outcrops provide specialized habitats for both plants and animals. Some species are restricted to the rock crevices or to the bare, dry rock surfaces. Rock outcrops are mostly sparsely vegetated by extremely drought tolerant species on their surfaces and by moister requiring species in their crevices. In the case of the subject property the outcrops are mostly of serpentine. Serpentine is a metamorphic, magnesium silicate rock, often green in color and slippery to the touch. Serpentine and the soils derived from it have a number of traits inimical to plant growth. It is low in some essential nutrients, especially calcium, and high in magnesium. In addition, it is often high in toxic elements such as nickel and chromium. As a result of these unusual conditions serpentine rock and soil support unusual, endemic floras including a large number of rare and endangered species.

Several hills in the northwestern portion are topped by serpentine outcrops and shallow soils that support a few plant species not found in the surrounding coastal valley grassland matrix, but none of the rare and/or endangered species often associated with such outcrops in the San Luis Obispo area (see discussion of rare species below). One or more of these rare species may have occurred on these outcrops historically, but these sites are now so thoroughly degraded after years of livestock grazing and concomitant invasion by alien weeds that few native species persist among the rocks today. Among these are *Epilobium canum* (California fuchsia), *Lessingia filaginifolia* var. *californica* (California-aster), *Nassella lepida* (Foothill needlegrass) and *Nassella pulchra* (Purple needlegrass), and the frequent follower of disturbance, *Eremocarpus setigerus* (Turkey mullein).

6. **Anthropogenic Communities**

Communities dominated by plants introduced by humans and established or maintained by human disturbance are anthropogenic communities. Some of these are entirely artificial communities such as cultivated row-crops, lawns, vineyards, etc. Others are assemblages of weedy species that have invaded disturbed areas, sometimes in spite of human efforts to control them. Weed-dominated communities often represent the early stages of natural succession. In the absence of disturbance many weedy plants do not persist, but are gradually replaced by native vegetation. Many of man’s activities, however, cause continual disturbance.

In the case of the Goldtree area, anthropogenic communities on the project site
can be divided into the three types: pastoral, ruderal, and plantation communities. The coastal valley grasslands, discussed previously, have a pastoral influence due to human modifications. These communities occur in the upland pasture areas created from California native grassland where repeated disturbance to the vegetation and soil by grazing animals maintains a plant community of few species tolerant of this repeated disturbance regime. Ruderal communities occur where frequent disturbances, caused by vehicles, oil, dust, etc., or even a one-time tilling of the soil, causes a shift from native species intolerant of such disturbance to native or alien species, often annuals, capable of colonizing and persisting on such disturbed lands. The other anthropogenic communities include the small plantation of eucalyptus trees that surrounds the stock pond and the vineyard that has been planted along the eastern boundary of the site.

Ruderal Communities. The corridors along roads and railroads are influenced by human activities associated with past construction and ongoing maintenance. This disturbance continues to affect the roadside long after construction has ceased. Everyday cars or trains move past, each creating its own windstorm and adding its pollutants to the air and pavement. Periodically roadsides and railroad tracks are mowed or sprayed with herbicides by maintenance crews. Only plants capable of withstanding these conditions and disturbances are able to grow in ruderal communities.

Although many of California's native plant species are able to grow along transportation corridors they often fail to become established because of competition from aggressive Eurasian species. Most successful weeds produce large quantities of seeds and readily invade disturbed sites. Many have features that allow their seeds to be widely dispersed. As a result, many of the species of the ruderal communities have also invaded the adjacent coastal valley grasslands on the Goldtree site.

The most significant invader present is *Centaurea solstitialis* (Yellow Star Thistle), a spiny noxious weed that now dominates the highly disturbed area created by the construction and removal of the Goldtree Siding in the northwestern portion of the area.

Plantations: *Eucalyptus viminalis* (Manna gum) has been planted around the stock pond in the southeastern corner of the site. This area represents an area entirely created and influenced by human activities.

Vineyards: Planting of vineyards completely replaces the grassland and any native vegetation in the area. This agricultural area represents an area entirely created and influenced by human activities.

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**RARE AND ENDANGERED PLANTS**

Fourteen native plant species documented to occur northeast of the project site in Poly Canyon (DeRome 1997), or within the encompassing San Luis Obispo 7.5 minute Quadrangle (Skinner and Pavlick 1994), and with potential to occur in the Goldtree Area, are sufficiently rare to have been officially recognized as such by private or governmental agencies (see list below). A rare plant is one that is limited in terms of number of individual plants still present in the wild, and also one that has a limited distribution. Usually rare plants are found in only a few highly restricted populations. This distribution is usually determined by the rarity of the habitat in which the plant is able to grow. While many rare plants are not at present threatened with extinction, they occur in such small numbers over
such a limited range that they could be threatened if their remaining habitat is modified. An **endangered species** is one that is not only rare, but also threatened with extinction because the survival of existing populations and future reproduction are jeopardized. The main reason that most such plants in California are extinct or rare and endangered is that humans are gradually destroying their habitats through urbanization, forest destruction, agricultural practices and pollution. Attempts are being made to eliminate these practices and to protect the rare and/or endangered species in California.

**The Basis for Recognizing Rare and Endangered Plants**

**California Native Plant Society (CNPS)**—Since the 1970's the California Native Plant Society, an organization of professional and lay botanists that is dedicated to the preservation of California's native flora, has been involved in determining which plants in California are rare and endangered. The society has published five editions of a book entitled Inventory of Rare and Endangered Vascular Plants of California. The fifth edition of the CNPS Inventory (Skinner and Pavlik, 1994) lists plants in four categories: List 1—Plants of Highest Priority, with two sublists: 1A—Plants Presumed Extinct in California and 1B—Plants Rare and Endangered in California and Elsewhere; List 2—Plants Rare or Endangered in California, but More Common Elsewhere; List 3—Plants about which More Information is Needed; and List 4—Plants of Limited Distribution (A Watch List). Additionally each plant listed is given a R-E-D Code (Rarity, Endangerment, and Distribution) with numbers ranging from 1-3 in each category. For each of the values a higher number is an indication of greater sensitivity:

Categories of rarity, endangerment, and distribution are described below.

**R (rarity)**
1. Rare but found in sufficient numbers and distributed widely enough that the potential for extinction or extirpation is low at this time.
2. Occurrence confined to several populations or to one extended population.
3. Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.

**E (endangerment)**
1. Not endangered.
2. Endangered in a portion of its range.
3. Endangered throughout its range.

**D (distribution)**
1. More or less widespread outside California.
2. Rare outside California.
3. Endemic to California.

CNPS is revising its listing. In June 2000 the CNPS posted a list of the taxa to be included in the 6th edition of the CNPS Inventory but hard copies have not been published yet (http://www.cnps.org/rareplants/inventory/6thEdition.htm). This list includes the RED codes that are to be adopted in the new version of the inventory.
U. S. Department of Fish and Wildlife—The Endangered Species Act in 1973 resulted in listing and protecting rare plants at the federal level by the U. S. Fish and Wildlife Service (USFWS). Their categories are summarized below:

**Endangered Species (FE)** are taxa in danger of extinction throughout all or a significant portion of their range.

**Threatened Species (FT)** are taxa likely to become endangered within the foreseeable future throughout all or a significant portion of their range.

**Candidate Species** are taxa for which the Fish and Wildlife Service (Service) has sufficient information on their biological status and threats to propose them as endangered or

California Department of Fish and Game—The California Endangered Species Act in 1984 resulted in listing and protecting rare plants at the state level with the California Department of Fish and Game (DFG). Their categories are summarized below:

**Rare Species (CR)** are taxa that are not presently threatened with extinction but occur in such small numbers that they could become endangered if habitat conditions worsen.

**Threatened Species (CT)** are taxa likely to become endangered within the foreseeable future without special protection and management efforts.

**Endangered Species (CE)** are taxa whose prospects of survival are in immediate jeopardy for one or more reasons. These taxa are in danger of extinction throughout all or a significant portion of their range.

California Environmental Quality Act (CEQA)—For all plant species listed on CNPS's List 1B and 2, it is mandatory that they be fully considered during preparation of environmental documents relating to CEQA. For species on Lists 3 and 4, CNPS strongly recommends that they be considered in preparation of such documents.

**Rare Plants Potentially On or Near the Goldtree Area**

The rare plant species listed in the table below have documented occurrences on the Cal Poly campus or elsewhere in the vicinity of the project site. None, however, were actually located during the field survey of the project site.

Most are typically found on soils derived from serpentine rock. Serpentine is a metamorphic, magnesium silicate rock, often green in color and slippery to the touch. (It is the California State rock). Serpentine and the soils derived from it have a number of traits inimical to plant growth. It is low in some essential nutrients, especially calcium, and high in magnesium. In addition, it is often high in toxic elements such as nickel and chromium. As a result of these unusual conditions serpentine rock and soil support unusual, endemic floras including a large number of rare and endangered species. The hillsides adjacent to the north border of the project site exhibit serpentine outcrops and shallow soils that support some unusual plant species, many of which are listed as rare and/or endangered. Rock outcrops provide specialized habitats for both plants and animals. Some species are restricted to the rock crevices or to the bare, dry rock surfaces. Rock outcrops are mostly sparsely vegetated by extremely drought tolerant
species on their surfaces and by moister requiring species in their crevices.

CNPS is revising its listing. We have listed the currently listing in the 1994 *Inventory of Rare and Endangered Vascular Plants of California* (fifth edition) along with the proposed new listing (sixth edition) for those that are changing. For each taxon, the current listed status for California is based on the July 2000 Special Plant List by the California Department of Fish and Game, and the current federal status is taken from the United States Fish and Wildlife website as of 2 October 2000 (http://ecos.fws.gov/webpage/webpage_usa_lists.html?#CA). Both are indicated in the table below.

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>C.N.P. S. Listing</th>
<th>RED Code</th>
<th>State Listing</th>
<th>Federal Listing</th>
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</thead>
<tbody>
<tr>
<td><em>Calochortus clavatus</em> ssp. <em>clavatus</em></td>
<td>club-haired mariposa lily</td>
<td>List 4</td>
<td>1-1-3</td>
<td>None</td>
<td>None</td>
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<tr>
<td><em>Calochortus obispoensis</em></td>
<td>San Luis mariposa lily</td>
<td>List 1B</td>
<td>2-2-3</td>
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<td>None</td>
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<tr>
<td><em>Calystegia subacaulis</em> var. <em>episcopalis</em></td>
<td>Cambria morning glory</td>
<td>List 1B</td>
<td>3-2-3</td>
<td>None</td>
<td>Species of Concern</td>
</tr>
<tr>
<td><em>Chlorogalum pomeridianum</em> var. <em>minus</em></td>
<td>Dwarf soaproot</td>
<td>List 1B</td>
<td>2-2-3</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><em>Chorizanthe brevior</em></td>
<td>Brewer’s spineflower</td>
<td>List 1B</td>
<td>3-1-3</td>
<td>None</td>
<td>None</td>
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<tr>
<td><em>Chorizanthe palmeri</em></td>
<td>Palmer’s spineflower</td>
<td>List 4</td>
<td>1-2-3</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><em>Dudleya abramsii</em> ssp. <em>murna</em></td>
<td>San Luis Obispo dudleya</td>
<td>List 1B</td>
<td>2-1-3</td>
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<td>None</td>
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<tr>
<td><em>Hemizonia parryi</em> var. <em>congonii</em></td>
<td>Condon’s Tarplant</td>
<td>List 1B</td>
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<tr>
<td><em>Layia jonesii</em></td>
<td>Jones’ layia</td>
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<td>Species of Concern</td>
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<tr>
<td><em>Lomatium parvifolium</em></td>
<td>small-leaved lomatium</td>
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<td>None</td>
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<tr>
<td><em>Perideridia pringlei</em></td>
<td>pringle’s yampah</td>
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<td><em>Sanicula maritima</em></td>
<td>Adobe Sanicle</td>
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<td>Species of Concern</td>
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<td><em>Sanicula hoffmannii</em></td>
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<td>None</td>
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<td><em>Senecio aphanactis</em></td>
<td>rayless groundsel</td>
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</table>

**Calochortus clavatus** ssp. *clavatus* (Club-Haired Mariposa Lily) is a bulb-forming lily that produces one or two strap-shaped green leaves in early spring. These are beginning to wither by the time the plant flowers in May or June. The flowers are cup-shaped with 3 narrow, yellow-green sepals and three, obtriangular, yellow petals marked by a jagged, transverse, purple-brown band across the inner face. Each petal bears a rounded, depressed nectary toward the base surrounded by club-shaped yellow hairs. The anthers are large and purple. After the flowers wither the ovary develops into a slender, 3-angled capsule with many dark seeds. The plant is generally completely dry by late summer. The dry remains can be identified by the shape of the capsule. Only the bulb and seeds remain alive until the next growing season.

**Calochortus clavatus** ssp. *clavatus* is restricted to San Luis Obispo County and Santa Barbara County in the western portion of the Coast Ranges, mostly on soils derived from serpentinite parent material. In San Luis Obispo County it is known from several locations in the Santa Lucia and San Luis Ranges. Four other rare subspecies occur to the north and south of subspecies *clavatus*. It is known from several sites in the area. It flowers in spring.

**Calochortus clavatus** ssp. *clavatus* was not observed within or in the immediate vicinity of the Goldtree project site.
**Calochortus obispoensis (San Luis Obispo Star-Tulip)** is a bulb-forming lily that produces one or two strap-shaped green leaves in early spring. These are beginning to wither by the time the plant flowers in May or June. The flowers are star-like with 3 narrow, yellow-green sepals and three yellow petals that are bearded with long purple and yellow hairs. After the flowers wither the ovary develops into a slender, 3-angled capsule with many dark seeds. The plant is generally completely dry by late summer. The dry remains can be identified by the shape of the capsule. Only the bulb and seeds remain alive until the next growing season.

**Calochortus obispoensis** occurs only in San Luis Obispo County where most occurrences are on serpentinite or serpentinite-derived soils. It occurs only in the vicinity of San Luis Obispo where it ranges from the Cuesta Grade south to Indian Knob and northeastern Arroyo Grande and west to the summit area of the Prefumo–See Canyon Road. It flowers in spring.

**Calochortus obispoensis** was not observed within or in the immediate vicinity of the Goldtree project site.

**Calystegia subacaulis** ssp. *episcopalis* (*Cambria Morning Glory*) is a perennial herb with trailing or sometimes weakly twining stems. It has alternate, broadly triangular leaves that are minutely hairy. The cream-colored, funnel-shaped flowers are produced from April to June. After the flowers wither the plant develops small, dry capsules with dark seeds. By late summer the above-ground parts of the plants are completely dry and only seeds and an underground rootstock persist through the dry season. The plant is difficult to identify in the dry season because the dry parts shatter.

**Calystegia subacaulis** ssp. *episcopalis* is at present known only from San Luis Obispo and northern Santa Barbara counties. In San Luis Obispo County it ranges from the Hearst Ranch in the northwestern corner of the county south to the vicinity of San Luis Obispo where it usually occurs in grassy sites with clay-rich soils often in association with serpentinite parent material. The species was observed in flower during May 2000 on sites also proposed for student housing around the entrance to Poly Canyon on the sites dubbed Poly Canyon North and Poly Canyon South (see those botanical reports for details). These plants flower in the spring and early summer.

**Calystegia subacaulis** ssp. *episcopalis* was not observed within or in the immediate vicinity of the Goldtree project site.

**Chlorogalum pomeridianum var. minus** (*dwarf soaproot*) is a perennial herb that grows from a large bulb with fibrous outer bulb scales. In spring it produces a rosette of wavy-margined, strap-shaped leaves. A branched inflorescence arises from the bulb, and flowers develop in late spring or early summer. Flower buds of dwarf soaproot are externally purple, but the open flowers are white. The flowers are nocturnal, opening in the evening and closing the next morning. Seed capsules about 5 mm diameter mature in summer. Plants of *Chlorogalum pomeridianum* are easily identified in spring by their characteristic leaves and in summer by the seed capsules. Plants of var. *minus* have comparatively short stems 20–40 cm tall, and the bulb coats are membranous or have relatively few fibers.

Dwarf soaproot grows mostly in grassy areas or openings in chaparral, coastal scrub, and coastal live oak woodland. It occurs from the Coast Ranges north of the San Francisco Bay region to the vicinity of San Luis Obispo. Around
San Luis Obispo it occurs mostly on soils derived from serpentine. On the Cal Poly campus dwarf soaproot is known to occur in Poly Canyon and the Pennington Creek Biological Reserve and is probably present elsewhere as well. It flowers in spring.

*Chlorogalum pomeridianum* var. *minus* was not observed within or in the immediate vicinity of the Goldtree project site.

**Chorizanthe breweti** (Brewer's spineflower) is a brittle-stemmed annual herb. In early spring it produces a rosette of stalked, oval basal leaves. Typically a solitary flower is produced and three spreading, reddish-purple stems radiate away from the rosette. Stem leaves are generally in widely separated pairs and most are much smaller than the basal leaves. In vigorous plants the stems branch repeatedly. The tips of the branches bear clusters of tiny white to pale pink six-parted flowers, each surrounded by a tubular cluster of six red-purple, spine-tipped bractlets. Each flower produces a tiny, one-seeded dry fruit. After flowering the plant dies and only seeds survive through the dry season. The dry plant shatters very easily, but its remains can often be identified through the summer.

**Chorizanthe breweri** is an endemic to San Luis Obispo County where most occurrences are on serpentine or serpentine-derived soils. It occurs only in the vicinity of San Luis Obispo where it has a range similar to that of *Calochortus obispoensis*. Brewer's spineflower is known from about twenty occurrences. This species occurs in coastal scrub, closed-cone conifer forest, chaparral and cismontane woodland communities. Brewer's spineflower has been documented from Poly Canyon and from the Pennington Creek Biological Reserve. It flowers in late spring and early summer.

**Chorizanthe breweti** was not observed within or in the immediate vicinity of the Goldtree project site.

**Chorizanthe palmeri** (Palmer's spineflower) is a brittle-stemmed annual herb. In early spring it produces a rosette of stalked, oval basal leaves. Usually a single stem 1–12 inches high arises from the rosette, and it bears one or two, well-separated rings of leaves. Typically a solitary flower is produced at the end of the main stem and three spreading, reddish-purple stems radiate away from the upper leaf cluster. Stem leaves above this point are generally in widely separated pairs and most are much smaller than the leaves of the main stem. In vigorous plants the stems branch repeatedly. The tips of the branches bear dense, head-like clusters of tiny purple, six-parted flowers, each surrounded by a tubular cluster of six red-purple, spine-tipped bractlets. Each flower produces a tiny, one-seeded dry fruit. After flowering the plant dies and only seeds survive through the dry season. The dry plant shatters easily, but its remains can often be identified through the summer.

**Chorizanthe palmeri** is known definitely from Monterey and San Luis Obispo counties and may occur as well in San Benito and Santa Barbara counties. Most occurrences are on serpentine or serpentine-derived soils. In San Luis Obispo County it occurs in the Santa Lucia and San Luis Ranges from the northwestern
corner of the county to the serpentine hills around San Luis Obispo. It flowers in late spring and early summer.

*Chorizanthe palmeri* was not observed within or in the immediate vicinity of the Goldtree project site.

*Dudleya abramsii ssp. murina* (San Luis Obispo dudleya) is a succulent perennial herb with a thick, fleshy taproot. It produces a dense rosette of narrow, fleshy, leaves with a dull, gray-green coloration. In late spring clusters of 5-petaled, cream-colored to dull purplish flowers are produced on stalks arising from the rosettes. The ovaries of these flowers mature as clusters of small, dry fruits that split open and release many tiny seeds. These plants tough it out during the dry season and their somewhat shriveled leaves and old dry flower clusters are easy to recognize.

*Dudleya abramsii ssp. murina* is endemic to San Luis Obispo County and it is apparently limited to stony serpentinite soils and serpentinite rock outcrops. Its range is limited to the hills bordering the San Luis Valley in the foothills of the Santa Lucia Mountains from Chorro Creek to Corral de Piedra Creek and in the San Luis Range from upper Prefumo Canyon to the Froom Ranch and the hills south of Broad Street. These plants flower in the spring and early summer.

*Dudleya abramsii ssp. murina* was not observed within or in the immediate vicinity of the Goldtree project site.

*Hemizonia parryi var. congdonii* (Congdon’s Tarplant) is a prostrate to firmly erect, slender-stemmed annual herb with short, awl-like leaves borne in fascicles directly on the stems. Unlike most tarplants, Congdon’s Tarplant does not produce copious resin glands. Flowers are of two types, disk and ray, borne in heads at the branch tips, and subtended by longer awl-like bracts. Disk flowers are fairly inconspicuous, central in each head, and bear yellow anthers. Ray flowers produce conspicuous, asymmetrical, three-lobed, yellow corollas in a ring encircling the disk flowers. Fruits are small, dry, hardened, and somewhat crescent-shaped.

Historically, *Hemizonia parryi var. congdonii* occurred in grasslands from Solano County through the San Francisco Bay Area, south through coastal Monterey County, to San Luis Obispo. Today, Congdon’s Tarplant is known from only a few locations in northern Monterey County, and from near San Luis Obispo. These plants flower in the summer to autumn.

*Hemizonia parryi var. congdonii* was not observed within or in the immediate vicinity of the Goldtree project site.

*Layia jonesii* (Jones’ layia) is a slender, erect, spring-flowering herb. The basal and lower stem leaves are generally lobed and the upper have smooth margins. The stems and leaves bear a mixture of short stiff hairs and small glandular hairs. Usually there is a single main stem and several ascending branches. In April and May flowers are produced in daisy-like heads at the branch tips. There are 13–27 petal-like ray flowers in a double row around the periphery of the flower head. These are yellow with three creamy white tips. The center of the head contains many small, yellow disk flowers with purple anthers. When the plants go to seed, the flower heads shatter and the many tiny one-seeded dry fruits drop to the ground. By late June the plants are withered and completely dry. In the dry season the remains are generally not recognizable.
*Layia jonesii* is known to occur only in Monterey and San Luis Obispo Counties where it grows mostly on clay soils in areas of serpentinite. In San Luis Obispo County it is known from the vicinity of Cayucos (where it has apparently been extirpated) to the hills around San Luis Obispo. It flowers in the spring.

*Layia jonesii* was not observed within or in the immediate vicinity of the Goldtree project site.

*Lomatium parvifolium* (Small-Leaved Lomatium) is a spring-flowering perennial herb with a slender, woody rootstock. Leaves are produced through beginning in March or April and flowering generally begins in April and may continue into June. The smooth green leaves have expanded, sheathing bases and blades divided into many segments. The small yellow flowers are borne in flat-topped clusters up to 5 inches across. The flattened, dry fruits are often tinged with purple and have membranous wings. The mature fruit clusters shatter during the summer as the leaves wither. By mid-summer the above-ground parts of the plants are completely dry. The old fruiting stalks may persist in identifiable condition during the drought season.

*Lomatium parvifolium* occurs from Santa Cruz County to Santa Barbara County in the western portion of the Coast Ranges, mostly on soils derived from serpentinite parent material. It is known from several sites in the San Luis Obispo area. It flowers in the spring.

*Lomatium parvifolium* was not observed within or in the immediate vicinity of the Goldtree project site.

*Perideridia pringlei* (Adobe Yampah) is a perennial herb that arises from a deeply buried tuber. In the spring one or two basal leaves are produced from the tuber. These leaves are divided into numerous linear segments. The basal leaves often wither before the flower stalks are produced. Slender, erect flowering stems arise in late spring or early summer. The few leaves become progressively smaller and less divided up the stem. The small white flowers are borne in a flat-topped cluster that is elevated above the leaves. After the petals have fallen the ovaries develop into small, 2-seeded dry fruits that shatter when the plants dry up in summer. Old dry fruit clusters may occasionally be recognizable through the dry season.

This species is included in the CNPS List 4 (Plants of Limited Distribution). It has an R-E-D code of 1-1-3. It is not a candidate for either state or federally listing, but is included in the California Department of Fish and Game Natural Diversity Data Base list of Special Plants.

*Perideridia pringlei* is known to occur in coastal locations from Monterey to Los Angeles counties and in the interior from Nevada to Kern counties. In San Luis Obispo County it has been documented from a few widely scattered locations—serpentinite soils in the vicinity of San Luis Obispo, from dry hills east of Creston, and the summit of the Caliente Range. It flowers in the spring.

*Perideridia pringlei* was not observed within or in the immediate vicinity of the Goldtree project site.

*Sanicula hoffmannii* (Hoffmann’s sanicle) is a perennial herb 1–2 feet tall, three-parted leaves, and numerous, tiny yellow-orange flowers borne in dense, rounded balls at the ends of naked branches that emerge from a common origin
like the spokes of an inverted umbrella. The fruits are small, flattened and beset with many hooked barbs around the top.

Hoffmann’s sanicle occurs within a variety of communities including, chaparral, coastal prairie, and valley foothill grassland. It commonly occurs at the ecotone between chaparral or coastal scrub and grassland communities, but sometimes grows beneath the canopy of coast live oak trees. On the Cal Poly campus it has been documented from the Stenner Creek drainage and from the Pennington Creek Biological Reserve. It flowers in spring.

Sanicula hoffmannii was not observed within the Goldtree project site but it has been documented within the Stenner Creek drainage.

Sanicula maritima (Adobe Sanicle) is a carrot-like perennial herb with a thick root, stems to about one foot tall, leaves entire to three-parted, and numerous, tiny yellow flowers borne in dense, rounded balls at the ends of naked branches that emerge from a common origin like the spokes of an inverted umbrella. The fruits are small, flattened and beset with many hooked barbs around the top.

Historically, Sanicula maritima occurred from the San Francisco Bay area southward along the coast through Monterey County to the San Luis Obispo area. Today, the Adobe Sanicle occurs in fewer than ten locations along the coast of Big Sur, south to Morro Bay, inland to near San Luis Obispo. It flowers in the spring.

Sanicula maritima was not observed within or in the immediate vicinity of the Goldtree project site.

Senecio aphanactis (Rayless Groundsel) is a spring-flowering annual herb with a slender taproot. Stems are simple or branched and hairless. Leaves are linear to oblong, coarsely toothed, hairless, and borne directly on the stem. The flowering heads are small, urn-shaped, and clustered at the main stem and branch tips. The outer bracts are green and surround the inconspicuous flowers that all lack ray corollas. The dry dandelion-like fruits are hairy and bear numerous whitish bristles from the top.

Senecio aphanactis occurs in vernally moist openings in low elevation coastal scrub on the mainland from Solano County south to northern Baja California, and on Santa Rosa, Santa Cruz, and Santa Catalina Islands. In San Luis Obispo County it is known from the vicinity of San Luis Obispo where it occurs mostly on serpentine-derived soils. It flowers in the early spring.

Senecio aphanactis was not observed within or in the immediate vicinity of the Goldtree project site.
REFERENCES


California Department of Fish and Game. 1997. Natural Diversity Data Base. Special List Plants List.


Holland, Robert F. 1986. Preliminary Description of Terrestrial Natural Communities of California. State of California, The Resources Agency, Department of Fish and Game


## APPENDIX 1. PLANT SPECIES LIST FOR GOLDTREE AREA

**CG** = Coastal Valley Grassland  
**SO** = Serpentinite Outcrops  
**C/O** = Coastal Scrub/Oak Woodland  
**R/M** = Riparian/Marsh

+ = occurs in that community & others;  ● = occurs in that community exclusively

<table>
<thead>
<tr>
<th>ORIGIN</th>
<th>FAMILY</th>
<th>SCIENTIFIC NAME</th>
<th>COMMON NAME</th>
<th>AP</th>
<th>SO</th>
<th>C/O</th>
<th>R/M</th>
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<tr>
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<td>Quercus agrifolia</td>
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<td>Myrtaceae</td>
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<td>Baccharis pilularis</td>
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### PERENNIAL FORBS

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</table>

### ANNUAL FORBS

<p>| Alien   | Asteraceae | Carduus pycnocephalus | Italian Thistle | ● |
| Alien   | Asteraceae | Centaurea solstitialis | Yellow Star-Thistle | + | ● |
| Native  | Asteraceae | Hemizonia congesta ssp. luzulifolia | Hayfield Tarweed | + |
| Native  | Asteraceae | Hemizonia pungens ssp. pungens | Common Tarweed | + | + |
| Alien   | Asteraceae | Lactuca serriola | Prickly Lettuce | + |
| Alien   | Asteraceae | Picris echioides | Bristly Ox-Tongue | + | + |
| Alien   | Asteraceae | Silybum marianum | Milk-Thistle | + | + |
| Alien   | Asteraceae | Xanthium spinosum | Spiny Cocklebur | + | + |</p>
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<thead>
<tr>
<th>ORIGIN</th>
<th>FAMILY</th>
<th>SCIENTIFIC NAME</th>
<th>COMMON NAME</th>
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<td>Euphorbiaceae</td>
<td>Eremocarpus setigerus</td>
<td>Turkey Mullein</td>
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<td>Fabaceae</td>
<td>Lotus corniculatus</td>
<td>Bird’s Foot Trefoil</td>
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<td>Lupinus succulentus</td>
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<tr>
<td>Alien</td>
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<td>Erodium botrys</td>
<td>Storkbill Filaree</td>
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<tr>
<td>Alien</td>
<td>Geraniaceae</td>
<td>Erodium cicutarium</td>
<td>Redstem Filaree</td>
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<td>Geraniaceae</td>
<td>Erodium moschatum</td>
<td>Green-Stem Filaree</td>
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<td>Epilobium pygmaeum</td>
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<td></td>
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<tr>
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<td>Plantago elongata</td>
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<td>Plantago erecta</td>
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<tr>
<td>Alien</td>
<td>Polygonaceae</td>
<td>Polygonum arenastrum</td>
<td>Knotweed</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
</tbody>
</table>

**PERENNIAL GRASSES**

| Alien  | Poaceae   | Arundo donax   | Giant Reed            |    |    |     | ●   |
| Alien  | Poaceae   | Cynodon dactylon | Bermuda Grass      |    |    |     | ●   |
| Alien  | Poaceae   | Festuca arundinacea | Tall Fescue    |    |    |     | ●   |
| Alien  | Poaceae   | Lolium perenne  | Perennial Ryegrass  |    |    |     | ●   |
| Native | Poaceae   | Nassella lepida | Foothill Needlegrass |    |    |     | ●   |
| Native | Poaceae   | Nassella pulchra | Purple Needlegrass |    |    |     | ●   |
| Alien  | Poaceae   | Paspalum dilatatum | Dallis Grass   |    |    |     | ●   |
| Alien  | Poaceae   | Pennisetum clandestinum | Kikyiu Grass |    |    |     | ●   |
| Alien  | Poaceae   | Phalaris aquatica | Harding Grass    |    |    |     | ●   |
| Alien  | Poaceae   | Piptatherum miliaceum | Smilo          |    |    |     | ●   |

**ANNUAL GRASSES**

<p>| Alien  | Poaceae   | Avena barbata     | Slender Wild Oats  |    |    |     | ●   |
| Alien  | Poaceae   | Avena fatua       | Common Wild Oats   |    |    |     | ●   |
| Alien  | Poaceae   | Brachypodium distachyon | False Brome Grass |    |    |     | ●   |
| Alien  | Poaceae   | Bromus catharticus | Rescue Grass       |    |    |     | ●   |
| Alien  | Poaceae   | Bromus diandrus   | Ripgut Brome       |    |    |     | ●   |
| Alien  | Poaceae   | Bromus hordeaceus | Soft Chess         |    |    |     | ●   |
| Alien  | Poaceae   | Crypsis schoenoides | Swamp Grass        |    |    |     | ●   |
| Alien  | Poaceae   | Hordeum marinum ssp. gussoneanum | Mediterranean Barley |    |    |     | ●   |
| Alien  | Poaceae   | Hordeum murinum ssp. leporinum | Foxtail Barley |    |    |     | ●   |
| Alien  | Poaceae   | Lamarckia aurea   | Goldentop          |    |    |     | ●   |
| Alien  | Poaceae   | Lolium multiflorum | Annual Ryegrass   |    |    |     | ●   |
| Alien  | Poaceae   | Poa annua         | Annual Bluegrass   |    |    |     | ●   |
| Alien  | Poaceae   | Polygogon monspeliensis | Rabbitfoot Grass |    |    |     | ●   |
| Alien  | Poaceae   | Vulpia myuros     | Rattail Fescue     |    |    |     | ●   |</p>
<table>
<thead>
<tr>
<th>ORIGIN</th>
<th>FAMILY</th>
<th>SCIENTIFIC NAME</th>
<th>COMMON NAME</th>
<th>AP</th>
<th>SO</th>
<th>C/O</th>
<th>R/M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native</td>
<td>Cyperaceae</td>
<td>Cyperus eragrostis</td>
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<td></td>
<td>●</td>
</tr>
<tr>
<td>Native</td>
<td>Cyperaceae</td>
<td>Eleocharis macrostachya</td>
<td>Spike-Rush</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Native</td>
<td>Cyperaceae</td>
<td>Eleocharis parishii</td>
<td>Spike-Rush</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Native</td>
<td>Cyperaceae</td>
<td>Scirpus pungens</td>
<td>Common Threesquare</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Native</td>
<td>Juncaceae</td>
<td>Juncus patens</td>
<td>Spreading Rush</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Native</td>
<td>Juncaceae</td>
<td>Juncus phaeocephalus</td>
<td>Brown-Headed Rush</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Native</td>
<td>Juncaceae</td>
<td>Juncus bufonius</td>
<td>Toad Rush</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Native</td>
<td>Typhaceae</td>
<td>Typha angustifolia</td>
<td>Narrow-Leaved Cattail</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
</tbody>
</table>
August 2, 2000

Chris Clark
Crawford, Multari, Clark & Mohr
641 Higuera Street, Suite 202
San Luis Obispo, CA 93401

TRAFFIC, CIRCULATION AND PARKING STUDY FOR THE
CAL POLY MASTER PLAN UPDATE, SAN LUIS OBISPO, CALIFORNIA

Associated Transportation Engineers (ATE) is pleased to submit the following traffic, circulation and parking study for the Cal Poly Master Plan Update. It is our understanding that the results of the study will be incorporated into the EIR being prepared for the Master Plan Update.

We appreciate the opportunity to assist you and the University with the Master Plan Update.

Associated Transportation Engineers

Scott A. Schell, AICP
Principal Transportation Planner

Updated January 19, 2001 by Nicole Phillips based on new data from ATE
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TRAFFIC & PARKING

The following section, prepared by Associated Transportation Engineers (ATE), contains an analysis of potential traffic and parking impacts associated with the Cal Poly Master Plan Update. Existing and future traffic conditions are addressed for both on- and off-campus transportation facilities. The study also evaluates the affects of the Master Plan on parking supplies and demands throughout the campus.

ISSUES

Implementation of the Master Plan components would accommodate increases in student enrollment and faculty/staff personnel at the campus. This would increase the number of vehicular trips on streets and intersections serving the University. The project is also proposing to modify a portion of the circulation system for the campus, including the extensions of Highland Avenue and California Boulevard and planned interior street network revisions, thus existing circulation patterns will change in and around the campus. Several new parking structures are proposed for the campus to offset the loss of parking which will occur as a result of the Master Plan. The new parking structures have been located near campus access points to reduce the need for on-campus vehicle travel. Pedestrian traffic near residence halls and apartments will be regulated with designated crossing areas and proposed grade separated pedestrian crossing. Thus, reductions in on-campus conflicts between pedestrians and vehicles is anticipated with implementation of these elements of the Master Plan.

The Master Plan components include new residence apartments and halls, parking structures and surface parking areas that will serve both current and future students that live on and off-campus. The Master Plan provides for an enrollment increase of 3,000 students, all of which would be accommodated by on-campus housing. Campus redevelopment would result in a small increase in the number of parking spaces; however, the Master Plan elements are predicated upon the fact that parking demand ratios would decrease from current levels based on the proposed revisions to the campus layout, transportation demand management (TDM) plans, and parking restrictions.

SETTING

Existing Street Network

The campus is served by a circulation system comprised of highways, arterial streets, and collector streets, which are illustrated in Figure 1. The major components of the existing street network are discussed in the following text.
**U.S. Highway 101** is located one-half mile south of the University, is a multi-lane freeway which serves as a major arterial within the City of San Luis Obispo and is the principal inter_city route along the Central Coast. Within the vicinity of the campus, U.S. 101 is a four-lane freeway generally following an east-west alignment.

**State Route 1 (SR 1) - Santa Rosa Street.** State Route 1 extends north-south through the City of San Luis Obispo as Santa Rosa Street. West of Cal Poly, Santa Rosa Street is a four-lane major arterial that provides regional access to the college via Highland Drive. The Santa Rosa Street/Highland Drive and Santa Rosa Street/Foothill Boulevard intersections are controlled by traffic signals.

**California Boulevard** is a two- to three-lane arterial that serves the residential neighborhood east of the Union Pacific railroad tracks and provides one of the primary entrances to Cal Poly. The City of San Luis Obispo classifies California Boulevard as a Residential Arterial from Taft Street (near U.S. Highway 101) to the edge of the University north of Foothill Boulevard; and as an Arterial from Taft Street across U.S. Highway 101 to Monterey Street.

**Foothill Boulevard** is a two- to four-lane undivided arterial street with signalized intersections at California Boulevard and Santa Rosa Street. The City's Circulation Element classifies the roadway as either an Arterial, Parkway Arterial or Residential Arterial which varies the desired maximum speed limit, number of travel lanes and desired maximum traffic on the roadway. Foothill Boulevard serves as a major route to Cal Poly, via California Boulevard, from locations south and west of the campus.

**Grand Avenue** serves as one of the primary entrances to Cal Poly. From U.S. Highway 101, Grand Avenue is a four-lane roadway and follows a north-south alignment to its intersection with Slack Street, which is controlled by all-way stop signs. North of Slack Street, Grand Avenue narrows to a two-lane roadway and curves in a northwest-southeast alignment towards its intersection with South Perimeter Road, which is also controlled by all-way stop signs. The City of San Luis Obispo Circulation Element classifies Grand Avenue as a Residential Arterial south of Slack Street to U.S. Highway 101. The Monterey Street/Slack Street intersection is signalized.

**Perimeter Road** is a two-lane roadway that is the main roadway for on-campus vehicular travel. Perimeter Road is U-shaped, starting at College Avenue in the southwest part of campus and then curving north-south around the University's administrative buildings, eventually curving back in an east-west alignment along the north core of the campus where it terminates at Dexter Drive near the library.

**Highland Drive** is a two-lane arterial that serves the residential neighborhood west of
Santa Rosa Street and serves as one of the primary entrances to Cal Poly east of Santa Rosa Street. The City of San Luis Obispo classifies Highland Drive as an Arterial from Ferrini Road (just west of Santa Rosa Road) to the Union Pacific railroad tracks within the campus.

**Existing Roadway Operations**

Existing average daily traffic (ADT) volumes for the project-area roadways are illustrated in Figure 2. Existing ADT volumes for the project-area street segments were obtained from new traffic counts conducted by ATE. Levels of service (LOS) for the area roadways were determined based on roadway capacity standards presented in the City of San Luis Obispo Circulation Element, which are summarized in the Technical Appendix. Levels of Service A through F are used to rate roadway operations, with LOS A indicating free flow operations and LOS F indicating congested operations (more complete definitions of levels of service are included in the Technical Appendix).

The existing ADT volumes presented in Figure 2 indicate that the project-area street segments are generally operating acceptably within their respective design capacities. The four-lane segment of Grand Avenue south of Slack Street is operating in the LOS C range during peak travel periods.

**Existing Intersection Operations**

Because traffic flow on arterial street networks is most constrained at intersections, a detailed analysis of traffic flow must examine the operating conditions of critical intersections during peak travel periods. The level of service rating system discussed previously for roadway segments is also used to rate intersections.

Figure 3 and 4 illustrate the existing A.M. and P.M. peak hour turning volumes for the project-area intersections. Levels of service for the intersections were calculated using the signalized and unsignalized calculation methodology outlined in the Highway Capacity Manual (HCM)². Table 1 lists the A.M. and P.M. peak hour levels of service for each of the key intersections in the project area. Level of service calculation worksheets are contained in the Technical Appendix.

---

# Table 1

**Existing Intersection Levels of Service**

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Control Type</th>
<th>A.M.</th>
<th>P.M.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Delay</td>
<td>LOS</td>
</tr>
<tr>
<td>Santa Rosa Street (SR 1)/Highland Drive</td>
<td>Signal</td>
<td>13.8 SEC</td>
<td>LOS B</td>
</tr>
<tr>
<td>Santa Rosa Street (SR 1)/Foothill Boulevard</td>
<td>Signal</td>
<td>16.3 SEC</td>
<td>LOS B</td>
</tr>
<tr>
<td>California Boulevard/Foothill Boulevard</td>
<td>Signal</td>
<td>12.2 SEC</td>
<td>LOS B</td>
</tr>
<tr>
<td>California Boulevard/Taft Street</td>
<td>One-way stop</td>
<td>12.7 SEC</td>
<td>LOS B</td>
</tr>
<tr>
<td>California Boulevard/U.S. 101 NB Ramps</td>
<td>One-way stop</td>
<td>13.8 SEC</td>
<td>LOS B</td>
</tr>
<tr>
<td>So. Perimeter Road/Grand Avenue</td>
<td>All-way stop</td>
<td>9.4 SEC</td>
<td>LOS A</td>
</tr>
<tr>
<td>Grand Avenue/Slack Street</td>
<td>All-way stop</td>
<td>11.0 SEC</td>
<td>LOS B</td>
</tr>
<tr>
<td>Grand Avenue/U.S. 101 SB On-Ramp-Loomis</td>
<td>One-way stop</td>
<td>17.7 SEC</td>
<td>LOS B</td>
</tr>
<tr>
<td>Grand Avenue/U.S. 101 NB Off-Ramp-Abbot</td>
<td>One-way stop</td>
<td>14.1 SEC</td>
<td>LOS B</td>
</tr>
<tr>
<td>Grand Avenue/Monterey Street</td>
<td>Signal</td>
<td>12.2 SEC</td>
<td>LOS B</td>
</tr>
</tbody>
</table>

Levels of service based on average seconds of delay per vehicle.

The data presented in Table 1 indicate that the study-area intersections currently operate at LOS C or better. Vehicle delay data collected during the A.M. peak hour at the South Perimeter Road/Grand Avenue intersection shows that congestion occurs during the peak 15 to 20 minute surge period when the school classes begin. This congestion is caused by both vehicular and pedestrian traffic flows. The University assigns Public Safety Services personnel to control the intersection during this peak period.

The Grand Avenue/Slack Street intersection also experiences very sharp directional...
traffic flows each weekday morning and evening, due to University employee and staff arrivals and departures via Grand Avenue. The reported level of service (LOS B), which is considered relatively good, was validated by field observations. Many vehicles roll through the stop signs in groups of up to four vehicles (two deep, two abreast).

**THRESHOLDS OF SIGNIFICANCE**

The City of San Luis Obispo Circulation Element\(^3\) standards were used to determine the significance of project-generated traffic impacts to off-campus roadways and intersections. The City's Circulation Element has adopted LOS D as the minimum service level for the majority of roadway and intersection operations. Mitigations are required for operations at LOS E or worse (exclusive of downtown arterial roadways and intersections where LOS E is considered acceptable).

The University does not have an adopted policy for determining the significance of traffic impacts at roadways and intersections located on the campus. LOS D was considered to be the minimum service level for roadway and intersection operations in order to provide an infrastructure system on par with the City’s.

**BASELINE TRAFFIC VOLUMES**

"Baseline" traffic volumes were forecast to provide a point of comparison for measuring the effects of the additional traffic that would be generated by implementation of the Master Plan. The Baseline forecasts assume implementation of the roadway extensions and realignments proposed in the initial phases of Master Plan development. These roadway projects, which will change the traffic patterns in the project area, are listed below:

- Highland Drive Extension. Highland Drive will be extended easterly to form a new perimeter road section in the northern portion of the campus.

- California Boulevard Extension. California Boulevard will be northerly to connect with Highland Drive.

- South Perimeter Road Closure. The section of South Perimeter Road west of Slack Street is proposed to be closed to vehicular through traffic.

Table 2 compares the existing campus distribution pattern and the campus distribution

\(^3\) Circulation Element, City of San Luis Obispo Public Works Department, 1994.
pattern associated with implementation of the Master Plan roadway projects. Baseline traffic volumes are presented in Figures 5 through 7.

Table 2  
Existing & Master Plan Traffic Patterns

<table>
<thead>
<tr>
<th>Origin/Destination</th>
<th>Direction (to/from)</th>
<th>Existing Distribution Percentage</th>
<th>Master Plan Distribution Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Boulevard</td>
<td>South</td>
<td>28%</td>
<td>40%</td>
</tr>
<tr>
<td>Highland Drive</td>
<td>West</td>
<td>28%</td>
<td>20%</td>
</tr>
<tr>
<td>Grand Avenue</td>
<td>Southeast</td>
<td>39%</td>
<td>35%</td>
</tr>
<tr>
<td>Surrounding areas</td>
<td>Local</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

MASTER PLAN TRAFFIC VOLUMES

Trip Generation

Trip generation estimates for the Master Plan project were calculated using rates developed by ATE from traffic counts conducted at a resident-only parking lot located on-campus specifically for this study, as well as other trip studies collected at California colleges. These estimates are shown in Table 3.
Table 3
Master Plan Potential Trip Generation

<table>
<thead>
<tr>
<th>Master Plan Component</th>
<th>Size</th>
<th>ADT</th>
<th>A.M. Peak</th>
<th>P.M. Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rate</td>
<td>Trips</td>
<td>Rate</td>
</tr>
<tr>
<td>Upperclassmen</td>
<td>2,500 Students</td>
<td>2.504</td>
<td>6,260</td>
<td>0.074</td>
</tr>
<tr>
<td>Freshmen</td>
<td>500 Students</td>
<td>1.72</td>
<td>860</td>
<td>0.051</td>
</tr>
<tr>
<td>Faculty/Staff</td>
<td>465 Personnel</td>
<td>1.189</td>
<td>553</td>
<td>0.123</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>7,673</td>
<td>273</td>
<td>600</td>
</tr>
</tbody>
</table>

As indicated in Table 3, the Master Plan could generate 7,673 ADT, 273 A.M. peak hour trips and 600 P.M. peak hour trips. These project-generated trips would be the number expected if the reduction measures that are part of the Master Plan are not implemented.

Table 4 shows the decrease in trips that would be associated with implementation of the policies and TDM trip reductions provided for in the Master Plan. Policy guidelines include implementation of the following measures: on-campus parking restrictions for resident freshman (limiting permits issued to freshman), commuter control measures which incorporate restricted parking permits for students that live within a certain distance of the campus; implementation of a transit/shuttle service to serve key campus areas and continuation of the successful faculty/staff incentives already in-place to promote car-pooling, van-pooling, bicycle use, telecommuting, etc. for new campus personnel.
<table>
<thead>
<tr>
<th>Project Component</th>
<th>Size</th>
<th>ADT</th>
<th>A.M. Peak</th>
<th>P.M. Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rate</td>
<td>Trips</td>
<td>Rate</td>
</tr>
<tr>
<td>Freshmen</td>
<td>1,200 Students</td>
<td>1.720</td>
<td>-2,064</td>
<td>0.051</td>
</tr>
<tr>
<td>Commute</td>
<td>650 Students</td>
<td>1.170</td>
<td>-761</td>
<td>0.117</td>
</tr>
<tr>
<td>Faculty/Staff TDM</td>
<td>150 Personnel</td>
<td>1.189</td>
<td>-178</td>
<td>0.123</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>-3,003</td>
<td>-155</td>
<td>-282</td>
</tr>
</tbody>
</table>

The Master Plan trip reduction strategies rely on several elements. The trip generation analysis assumes that 10-15% of freshman would allowed to obtain parking permits (about 55% of resident freshman are currently issued parking permits). A combination of TDM measures would be implemented to decrease the number of trips generated by commuting students and faculty/staff members. Implementation of these measure would likely generate a demand for a local shuttle bus/transit service to transport those students to key campus areas during peak times. In addition to parking restrictions, enhanced bicycle facilities and an improved on-campus commercial environment and community atmosphere, as well as telecommuting incentives, would reduce trips to and from the campus. The trip generation analysis assumes continuation of the TDM program for faculty and staff. Survey data indicate that approximately 35-40% of faculty and staff members utilize alternative transportation modes (carpool, vanpool, bicycle, walk, local transit, etc). The trip generation analysis assumes between 30 and 35% of new faculty/staff personnel would continue in this same trend.

The net change in traffic expected by implementation of all the Master Plan components and policies is summarized in Table 5.
Table 5
Master Plan Trip Generation

<table>
<thead>
<tr>
<th>Project Component</th>
<th>ADT</th>
<th>A.M. Peak Hour Trips</th>
<th>P.M. Peak Hour Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master Plan Additions</td>
<td>7,673</td>
<td>273</td>
<td>600</td>
</tr>
<tr>
<td>Master Plan Reductions</td>
<td>-3,003</td>
<td>-155</td>
<td>-282</td>
</tr>
<tr>
<td>Net Project Change</td>
<td>+4,670</td>
<td>+118</td>
<td>+318</td>
</tr>
</tbody>
</table>

As shown, the Master Plan is expected to generate a net increase of 4,670 ADT, 118 A.M. peak hour trips and 318 P.M. peak hour trips.

Trip Distribution

Table 6 and Figure 8 show the trip distribution percentages used to assign the Master Plan traffic to the project-area street system. Project trip distribution percentages are based on the analysis of existing trip distributions throughout the campus, the planned roadway extensions and realignments outlined in the Master Plan, as well as existing/proposed locations of on-campus housing and parking.

Table 6
Master Plan Trip Distribution

<table>
<thead>
<tr>
<th>Origin/Destination</th>
<th>Direction</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Boulevard</td>
<td>South</td>
<td>40%</td>
</tr>
<tr>
<td>Highland Drive</td>
<td>West</td>
<td>20%</td>
</tr>
<tr>
<td>Grand Avenue</td>
<td>Southeast</td>
<td>35%</td>
</tr>
<tr>
<td>Surrounding areas</td>
<td>Local</td>
<td>5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

The concentration of Master Plan traffic (as well as existing traffic rerouted due to roadway changes) would be expected on the extension of California Boulevard for several reasons: 1) new on-campus housing facilities are centralized northeast of N.
Perimeter Road and the re-alignment of Highland Drive creates a more direct route to California Boulevard; 2) the location of proposed surface parking facilities and structures are near the campus entry-points on California Boulevard; and 3) the eventual closure of South Perimeter Road, south of Grand Avenue, would further circulate campus traffic through to California Boulevard.

Figures 9, 10 and 11 present the Master Plan generated traffic volumes for the study-area roadways and intersections.

**BASELINE + PROJECT TRAFFIC OPERATIONS**

Roadways Operations

Figure 12 illustrates the Baseline + Project ADT volumes. Table 7 presents the results of the Baseline and Baseline + Project roadway analyses.

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Roadway Type</th>
<th>Scenario</th>
<th>Baseline ADT</th>
<th>Master Plan Added ADT</th>
<th>Baseline + Master Plan ADT</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grand Ave</td>
<td>4-Lane Res. Art.</td>
<td>12,200 ADT</td>
<td>1,485 ADT</td>
<td>13,700 ADT</td>
<td>LOS A</td>
<td></td>
</tr>
<tr>
<td>California Blvd</td>
<td>2-Lane Res. Art.</td>
<td>14,800 ADT</td>
<td>1,870 ADT</td>
<td>16,700 ADT</td>
<td>LOS C</td>
<td></td>
</tr>
<tr>
<td>Highland Dr</td>
<td>2-Lane Arterial</td>
<td>6,500 ADT</td>
<td>935 ADT</td>
<td>7,400 ADT</td>
<td>LOS A</td>
<td></td>
</tr>
<tr>
<td>Foothill Blvd</td>
<td>2-Lane Arterial</td>
<td>20,600 ADT</td>
<td>935 ADT</td>
<td>21,500 ADT</td>
<td>LOS A</td>
<td></td>
</tr>
<tr>
<td>Santa Rosa - North</td>
<td>4-Lane Highway</td>
<td>24,600 ADT</td>
<td>390 ADT</td>
<td>25,000 ADT</td>
<td>LOS D</td>
<td></td>
</tr>
<tr>
<td>Santa Rosa - South</td>
<td>4-Lane Arterial</td>
<td>30,400 ADT</td>
<td>755 ADT</td>
<td>31,200 ADT</td>
<td>LOS A</td>
<td></td>
</tr>
</tbody>
</table>

All of the project-area roadways are forecasted to operate at acceptable levels of service under Baseline and Baseline + Project operating conditions.

**Campus Roadways**

South Perimeter Road. The closure of South Perimeter Road, as identified for the latter phase of the Master Plan, would displace approximately 5,000 ADT. This campus-related traffic originates primarily at Highland Drive, where vehicles use South Perimeter to gain access to California Boulevard and the existing parking lots located along South Perimeter. The extension of California Boulevard and realignment of Highland Drive,
along with the relocation of parking areas as proposed in the Master Plan Update, would reduce the need to use South Perimeter to "cut-through" to California Boulevard.

Phasing of the Master Plan should be implemented to ensure that the extension of California Boulevard and realignment of Highland Drive are completed prior to the closure of South Perimeter Road.

**Intersection Operations**

Figures 13 and 14 present the Baseline + Project peak hour traffic volumes and Table 8 compares the Baseline and Baseline + Project levels of service for the A.M. and P.M. peak hour periods.

**Table 8**  
Baseline and Baseline + Project Intersection Levels of Service

<table>
<thead>
<tr>
<th>Intersection</th>
<th>A.M. Peak Hour</th>
<th>P.M. Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Baseline +</td>
</tr>
<tr>
<td></td>
<td>Delay$/LOS</td>
<td>Project Delay$/LOS</td>
</tr>
<tr>
<td>Santa Rosa Street (SR 1)/Highland Drive</td>
<td>7.4/LOS A</td>
<td>7.6/LOS A</td>
</tr>
<tr>
<td>Santa Rosa Street (SR 1)/Foothill Boulevard</td>
<td>16.0/LOS B</td>
<td>16.5/LOS B</td>
</tr>
<tr>
<td>California Boulevard/Taft Street</td>
<td>14.0/LOS B</td>
<td>14.2/LOS B</td>
</tr>
<tr>
<td>California Boulevard/U.S. 101 NB Ramps</td>
<td>15.5/LOS C</td>
<td>15.9/LOS C</td>
</tr>
<tr>
<td>So. Perimeter Road/Grand Avenue</td>
<td>8.8/LOS A</td>
<td>9.1/LOS A</td>
</tr>
<tr>
<td>Grand Avenue/Slack Street</td>
<td>10.2/LOS B</td>
<td>10.5/LOS B</td>
</tr>
<tr>
<td>Grand Avenue/U.S. 101 NB Off-Ramp-Abbot</td>
<td>12.7/LOS B</td>
<td>13.2/LOS B</td>
</tr>
<tr>
<td>Grand Avenue/Monterey Street</td>
<td>12.5/LOS B</td>
<td>12.3/LOS B</td>
</tr>
</tbody>
</table>
The data presented in Table 8 indicate that all of the project-area intersections are forecast to operate at acceptable levels based on City criteria. The Master Plan roadway network changes would also improve operations at the South Perimeter Road/Grand Avenue intersection and at the Grand Avenue/Slack Street intersection. The intersections in the California Boulevard corridor are forecast to operate at acceptable levels of service with the forecast volumes.

**Campus Intersections**

**Mount Bishop Road/Highland Drive.** This location will need to have all-way stop-control removed at some time prior to full implementation of the Master Plan. The delay on Highland Drive will increase due to directional peak traffic flows as future volumes are realized. Further study would need to be completed at this location to determine the appropriate traffic control measure for implementation. Implementation of traffic signals or possibly a roundabout at this location would be dependent upon roadway slopes, intersection geometry and future traffic volumes.

**California Boulevard/Highland Drive.** The extension of California Boulevard to Highland Drive would result in a new at-grade three-way intersection. Monitoring the intersection's operation during the course of Master Plan implementation will be required to determine the appropriate traffic control device. The A.M. and P.M. peak hour traffic volumes associated with the Baseline + Project scenarios, as well as the intersection geometrics (T-configuration) suggest a likely location for traffic signal control.

**Via Carta/Highland Drive.** Via Carta north of its intersection with Highland Drive will need to be widened to Master Plan specifications to accommodate vehicular and pedestrian traffic associated with the new residential and parking areas. The new intersection, with the extension of Highland Drive, should be monitored during the course of Master Plan implementation to determine if signalization is necessary. Due to the slope of Via Carta, a roundabout design at this location would not be recommended.

**South Perimeter Road/Grand Avenue.** Implementation of the roadway projects that are included in the Master Plan would reduce traffic at this location, a beneficial impact.

**Grand Avenue/Slack Street.** Implementation of the roadway projects that are included in the Master Plan would reduce traffic at this location, a beneficial impact.

*Levels of service based on average seconds of delay per vehicle.*
TRANSIT CENTER AND ON-CAMPUS SHUTTLE

Currently the majority of on-campus bus stops are located on South Perimeter Road and Grand Avenue. The expected closure of South Perimeter would necessitate alternative shuttle or bus stop locations. It is recommended that on-campus transit facilities operate from centralized hub locations; preferably at the primary campus centers (Central District, Northwest Satellite Center, Northeast Satellite Center and the Residential Centers). Cal Poly will need to work with SLO Transit (City operated local bus service) and CCAT (Central Coast Area Transit) to develop the transit plan for the campus.

In addition to public transit facilities, it is recommended that the University establish a shuttle service that would provide frequent on-campus service between housing and instructional areas. The shuttle service should provide access to/from the off-campus areas within a one-mile radius (approximate) in order to make the Master Plan traffic and parking reduction strategies successful.

PEDESTRIAN CIRCULATION

Pedestrian crossings and vehicle conflicts has been a long-standing issue on Grand Avenue approaching South Perimeter Road and Perimeter Road near the student housing and parking areas. Primary on-campus pedestrian circulation routes would be throughout the redeveloped campus core area. Housing areas and parking facilities would be accessed from major traffic-controlled pedestrian crossings. Pedestrian traffic control devices should be installed at various locations along Grand Avenue (to cross from dormitory housing to parking facilities) and on both Perimeter Road and Highland Drive. Currently the Master Plan envisions approximately 8 traffic-controlled pedestrian crossing facilities along these roadways. These would adequately accommodate pedestrian crossings if designed and placed properly. It is recommended that some pedestrian crossing devices be interconnected along the major vehicular routes to reduce vehicular delays during peak travel periods.

The need for grade-separated crossings should monitored at the Grand Avenue/South Perimeter Road and the Poly Canyon Road/Highland Drive intersections. The need for grade-separated crossings at these locations should monitored as the Master Plan elements are implemented and the campus develops and evolves.

PARKING ANALYSIS

Existing Parking Supply

A total of 5,802 permanent and temporary spaces are currently provided on the
campus. This number does not include the 931 spaces that will be provided in the new parking structure that is currently under construction. When this structure is completed, 6,733 parking spaces would be available on the campus.

**Existing Parking Demands**

Table 9 shows the peak parking occupancies for the campus. This data was collected by Cal Poly parking staff in the 2000 Winter Quarter.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Spaces</th>
<th>Number Occupied</th>
<th>Occupancy Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Conditions</td>
<td>5,802</td>
<td>5,692</td>
<td>98%</td>
</tr>
</tbody>
</table>

The data show that peak parking occupancies were measured at 98% of the supply. Although there were some spaces available, parking facilities are generally considered full when such levels are reached unless lot access is controlled and the facility has real-time occupancy equipment. Thus, the parking demands in the core area are fully utilized during peak daytime periods.

**Master Plan Parking Supply**

Table 10 summarizes the parking supply statistics proposed in the Master Plan. The spaces lost by the campus redevelopment are shown as a negative number.
### Table 10
**Master Plan Parking Supply**

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Parking Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Parking Spaces</td>
<td>5,802</td>
</tr>
<tr>
<td>Parking Structure I</td>
<td>+931</td>
</tr>
<tr>
<td>Lost Spaces</td>
<td>-3,185</td>
</tr>
<tr>
<td>Absorbed Redevelopment Areas</td>
<td>+700</td>
</tr>
<tr>
<td>Absorbed Housing Areas</td>
<td>+300</td>
</tr>
<tr>
<td>Parking Structure P1</td>
<td>+1,236</td>
</tr>
<tr>
<td>Parking Structure P2</td>
<td>+700</td>
</tr>
<tr>
<td>Surface Lots</td>
<td>+700</td>
</tr>
<tr>
<td><strong>TOTAL FUTURE SUPPLY</strong></td>
<td><strong>7,184</strong></td>
</tr>
<tr>
<td><strong>NET INCREASE</strong></td>
<td><strong>1,382</strong></td>
</tr>
</tbody>
</table>

### Master Plan Parking Demands

Table 11 shows the parking demand analysis completed for the Master Plan. The parking demands were forecast assuming the increase in students, faculty and staff proposed under the Master Plan. The data presented in the table also accounts for the decrease in existing and future parking demands associated with implementation of the policies and TDM trip reductions provided for in the Master Plan. As reviewed previously, these policy guidelines include implementation of on-campus parking restrictions for resident freshman (limiting permits issued to freshman), commuter control measures which incorporate restricted parking permits for students that live within a certain distance of the campus; implementation of a transit/shuttle service to serve key campus areas and continuation of the successful faculty/staff incentives already in-place to promote car-pooling, van-pooling, bicycle use, telecommuting, etc.
for new campus personnel. Parking supply and demand calculation worksheets are included in the Technical Appendix for reference.

**Table 11**  
**Master Plan Parking Demands**

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Parking Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Demands</td>
<td>5,692</td>
</tr>
<tr>
<td>Interim Dorms/Structure Projects</td>
<td>+277</td>
</tr>
<tr>
<td>Future Upperclassmen (80% Permits)</td>
<td>+2,000</td>
</tr>
<tr>
<td>Future Freshman (60% Permits)</td>
<td>+300</td>
</tr>
<tr>
<td>Future Faculty/Staff (85% Peak Demand)</td>
<td>+425</td>
</tr>
<tr>
<td><strong>Subtotal Future Demand</strong></td>
<td>8,694</td>
</tr>
<tr>
<td>Freshman Restrictions</td>
<td>-1,200</td>
</tr>
<tr>
<td>Commuter Students</td>
<td>-650</td>
</tr>
<tr>
<td>Faculty/Staff TDM Measures</td>
<td>-150</td>
</tr>
<tr>
<td><strong>Subtotal Future Reductions</strong></td>
<td>-2,000</td>
</tr>
<tr>
<td><strong>TOTAL FUTURE DEMAND</strong></td>
<td>6,694</td>
</tr>
</tbody>
</table>

Table 12 summarizes the future parking supply and demand forecasts for the Master Plan. As shown, the Master Plan parking supply is forecast to accommodate future demands. Therefore, no parking impacts would be generated.
**Table 12**

**Future Parking Conditions Summary**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Spaces Supplied</th>
<th>Peak Demand</th>
<th>Percent Occupancy</th>
<th>Reserve Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Conditions</td>
<td>5,802</td>
<td>5,692</td>
<td>98.1%</td>
<td>110</td>
</tr>
<tr>
<td>Existing + Parking Structure</td>
<td>6,733</td>
<td>5,969</td>
<td>88.7%</td>
<td>764</td>
</tr>
<tr>
<td>Master Plan</td>
<td>7,184</td>
<td>6,694</td>
<td>93.2%</td>
<td>490</td>
</tr>
</tbody>
</table>

**CUMULATIVE TRAFFIC CONDITIONS**

Cumulative traffic volumes were forecast assuming development of approved and pending projects located within the San Luis Obispo area, as provided by City Staff. Traffic generated by the approved and pending projects was added to existing traffic volumes to estimate cumulative conditions. Table 13 lists the project description and City planning log number, the ADT, A.M. and P.M. peak hour trips associated with each development project.

**Table 13**

**Pending Projects**

<table>
<thead>
<tr>
<th>(Planning Log #) - Project Description</th>
<th>ADT</th>
<th>A.M. Trips</th>
<th>P.M. Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. (1-00) SLO Senior Housing - 19 unit complex</td>
<td>66</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2. (9-00) Apple Farm - 58 room hotel</td>
<td>477</td>
<td>33</td>
<td>36</td>
</tr>
<tr>
<td>3. (11-99) SLO Housing - 11-unit apartments</td>
<td>73</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>4. (12-98) 8,437 SF office project</td>
<td>93</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>5. (17-98)* Gas station remodel w/new conv. mart</td>
<td>169</td>
<td>92</td>
<td>122</td>
</tr>
<tr>
<td>6. (21-00) 2-Story 14.5 KSF commercial building</td>
<td>590</td>
<td>55</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>------------------------------------------------------------------------------</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>7.</td>
<td>(32-00)* 2,047 SF am/pm w/6 pump stations</td>
<td>1,259</td>
<td>41</td>
</tr>
<tr>
<td>8.</td>
<td>(38-00) 4,319 SF office/retail building</td>
<td>113</td>
<td>4</td>
</tr>
<tr>
<td>9.</td>
<td>(75-00) Expand exist. Motel by 15-units</td>
<td>123</td>
<td>8</td>
</tr>
<tr>
<td>10.</td>
<td>(90-99) 9,925 SF Office building</td>
<td>109</td>
<td>16</td>
</tr>
<tr>
<td>11.</td>
<td>(93-99) Child care center - 6,240 SF</td>
<td>203</td>
<td>36</td>
</tr>
<tr>
<td>12.</td>
<td>(97-99) New 20 KSF office building</td>
<td>220</td>
<td>31</td>
</tr>
<tr>
<td>13.</td>
<td>(114-99) 5,300 SF Expansion school facilities</td>
<td>290</td>
<td>19</td>
</tr>
<tr>
<td>14.</td>
<td>(120-98) 6,000 SF Bank Building</td>
<td>939</td>
<td>24</td>
</tr>
<tr>
<td>15.</td>
<td>(138-98)* Gas station w/conv. Store - 12 pumps</td>
<td>2,604</td>
<td>82</td>
</tr>
<tr>
<td>16.</td>
<td>(146-98) 10-Single Family Homes</td>
<td>96</td>
<td>8</td>
</tr>
<tr>
<td>17.</td>
<td>(152-99) New 7,876 SF Office Building</td>
<td>91</td>
<td>14</td>
</tr>
<tr>
<td>18.</td>
<td>(153-98) Mall Redevelopment - Replace 150 KSF Retail Space (assume 70%</td>
<td>4,270</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>existing vacancy rate)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>(156-98) New Motel - 74 Units</td>
<td>609</td>
<td>41</td>
</tr>
</tbody>
</table>

* Pass-by reduction included in calculations.

Table Continued on Following Page
Table 13 (Continued)
Pending Projects

<table>
<thead>
<tr>
<th>Pending Project Description</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>20. (165-98) 8,750 SF Office Complex</td>
<td>96</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td>21. (176-97) 13 KSF Car Dealership</td>
<td>488</td>
<td>29</td>
<td>36</td>
</tr>
<tr>
<td>22. (192-99) Housing complex - 8 apartments - 8 double-occ. dwelling</td>
<td>107</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>23. (207-98) New Hotel - 25 rooms</td>
<td>206</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>24. (067-121-022)* Marketplace Project - 500 KSF Retail</td>
<td>16,202</td>
<td>389</td>
<td>1,412</td>
</tr>
<tr>
<td>25. Cuesta College - 2,300 student enrollment increase</td>
<td>3,680</td>
<td>115</td>
<td>294</td>
</tr>
<tr>
<td>26. (217-98)* 1,787 SF Convenience store to replace existing pumps (3-bays removed)</td>
<td>618</td>
<td>15</td>
<td>38</td>
</tr>
</tbody>
</table>

*a Pass-by reduction included in calculations

Cumulative traffic volumes are shown in Figures 15, 16 and 17; while Cumulative + Project volumes are shown in Figures 18, 19 and 20.

Cumulative Roadway Operations

Table 14 shows the Cumulative and Cumulative + Project roadway traffic volume forecasts and levels of service. The data presented in the table show that all of the project-area roadway segments are forecast to operate within their respective design capacities with Cumulative and Cumulative + Project traffic. No cumulative roadway impacts would be generated.
### Table 14
Cumulative Roadway Volumes

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Roadway Type</th>
<th>Scenario</th>
<th>Cumulative ADT</th>
<th>Project Added ADT</th>
<th>Cumulative + Project ADT</th>
<th>Roadway LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grand Ave</td>
<td>4-Lane Res. Art.</td>
<td></td>
<td>14,100 ADT</td>
<td>1,485 ADT</td>
<td>15,735 ADT</td>
<td>LOS A</td>
</tr>
<tr>
<td>California Blvd</td>
<td>2-Lane Res. Art.</td>
<td></td>
<td>17,100 ADT</td>
<td>1,870 ADT</td>
<td>18,970 ADT</td>
<td>LOS D</td>
</tr>
<tr>
<td>Highland Dr</td>
<td>2-Lane Arterial</td>
<td></td>
<td>6,900 ADT</td>
<td>935 ADT</td>
<td>7,835 ADT</td>
<td>LOS A</td>
</tr>
<tr>
<td>Foothill Blvd</td>
<td>2-Lane Arterial</td>
<td></td>
<td>21,800 ADT</td>
<td>935 ADT</td>
<td>22,735 ADT</td>
<td>LOS E</td>
</tr>
<tr>
<td>Santa Rosa - North</td>
<td>4-Lane Highway</td>
<td></td>
<td>27,500 ADT</td>
<td>390 ADT</td>
<td>27,890 ADT</td>
<td>LOS A</td>
</tr>
<tr>
<td>Santa Rosa - South</td>
<td>4-Lane Arterial</td>
<td></td>
<td>34,200 ADT</td>
<td>755 ADT</td>
<td>34,955 ADT</td>
<td>LOS E</td>
</tr>
</tbody>
</table>

### Cumulative Intersection Operations

Table 14 summarizes the Cumulative and Cumulative + Project level of service forecasts. As shown, two of the project-area intersections are forecast to operate below acceptable levels (based upon City Standards) under Cumulative + Project conditions. Both the California Boulevard/Taft Street and California Boulevard/U.S. 101 NB Ramps intersections are forecast to operate at LOS E during the P.M. peak hour under Cumulative + Project conditions.

<table>
<thead>
<tr>
<th>Intersection</th>
<th>A.M. Peak Hour</th>
<th>P.M. Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cumulative Delay*/LOS</td>
<td>Cumulative + Project Delay*/LOS</td>
</tr>
<tr>
<td>Santa Rosa Street (SR 1)/Highland Drive</td>
<td>7.8/LOS A</td>
<td>7.9/LOS A</td>
</tr>
<tr>
<td>Santa Rosa Street (SR 1)/Foothill Boulevard</td>
<td>16.8/LOS B</td>
<td>16.8/LOS B</td>
</tr>
<tr>
<td>Location</td>
<td>LOS A</td>
<td>LOS B</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>California Boulevard/Foothill Boulevard</td>
<td>16.3</td>
<td>16.8</td>
</tr>
<tr>
<td>California Boulevard/Taft Street</td>
<td>15.0</td>
<td>15.3</td>
</tr>
<tr>
<td>California Boulevard/U.S. 101 NB Ramps</td>
<td>18.1</td>
<td>18.5</td>
</tr>
<tr>
<td>So. Perimeter Road/Grand Avenue</td>
<td>8.4</td>
<td>8.7</td>
</tr>
<tr>
<td>Grand Avenue/Slack Street</td>
<td>10.4</td>
<td>10.6</td>
</tr>
<tr>
<td>Grand Avenue/U.S. 101 SB On-Ramp-Loomis</td>
<td>11.1</td>
<td>11.4</td>
</tr>
<tr>
<td>Grand Avenue/U.S. 101 NB Off-Ramp-Abbot</td>
<td>13.9</td>
<td>14.6</td>
</tr>
<tr>
<td>Grand Avenue/Monterey Street</td>
<td>12.1</td>
<td>11.8</td>
</tr>
</tbody>
</table>

*a Levels of service based on average seconds of delay per vehicle.

**Cumulative Mitigation Measures**

**California Boulevard/Taft Street.** The peak hour traffic forecasts meet traffic signal warrants (signal warrant calculations are provided in the Technical Appendix). Installation of traffic signals would provide for LOS B-C operations during the P.M. peak hour under Cumulative + Project conditions (LOS calculations are provided in the Technical Appendix for reference).

**California Boulevard/U.S. 101 NB Ramps.** The peak hour traffic forecasts meet warrants for consideration of traffic signals (signal warrant calculations are provided in the Technical Appendix). Installation of traffic signals would provide LOS B-C operations during the P.M. peak hour under Cumulative + Project conditions (LOS calculations are provided in the Technical Appendix for reference).
REFERENCES AND PERSONS CONTACTED

Associated Transportation Engineers

Scott A. Schell, AICP, Principal Transportation Planner
Dick Pool, P.E. Principal Engineer
Dan Dawson, Senior Transportation Planner
Heather O’Connell, Civil Engineer II
Andrew Orfila, Traffic Technician

References

Traffic Volumes on California State Highways, California Department of Transportation, 1999.

Circulation Element, City of San Luis Obispo Public Works Department, November 1994.


Traffic, Circulation and Parking Study for the Cal Poly San Luis Obispo Sports Complex, Associated Transportation Engineers, August 1996.

Traffic and Parking Study for the Cal Poly Student Housing Complex Project, Associated Transportation Engineers, June 1996.

Traffic & Circulation Study for the UCSB San Rafael Housing Project, Associated Transportation Engineers, June 1998.


**Persons Contacted**

Bochum, Tim, Deputy Director of Public Works, City of San Luis Obispo
Campbell, Cindy, Cal Poly San Luis Obispo Parking and Commuter Services, Cal Poly
Codron, Michael, Planning Technician, City of San Luis Obispo
Dalton, Linda, Vice Provost for Institutional Planning, Cal Poly
Hanson, Jim, Associate Transportation Engineer, City of San Luis Obispo
Sanville, Terry, City of San Luis Obispo
Stinson, Bret, RRM Design Group
TECHNICAL APPENDIX

CONTENTS:

ROADWAY DESIGN CAPACITIES

LEVEL OF SERVICE DEFINITIONS

INTERSECTION LEVEL OF SERVICE CALCULATION WORKSHEETS:

Reference 1 - Santa Rosa Street (Highway 1)/Highland Drive
Reference 2 - Santa Rosa Street/Foothill Boulevard
Reference 3 - California Boulevard/Foothill Boulevard
Reference 4 - California Boulevard/Taft Street
Reference 5 - California Boulevard/U.S. 101 NB Ramps
Reference 6 - So. Perimeter Road/Grand Avenue
Reference 7 - Grand Avenue/Slack Street
Reference 8 - Grand Avenue/101 SB On-ramp - Loomis Street
Reference 9 - Grand Avenue/101 SB Off-ramp - Abbott Street
Reference 10 - Grand Avenue/Monterey Street

TRAFFIC SIGNAL WARRANT CALCULATION WORKSHEETS

PARKING DATA INFORMATION
CUMULATIVE + PROJECT A.M. PEAK HOUR TRAFFIC VOLUMES

ASSOCIATED TRANSPORTATION ENGINEERS

FIGURE 19
URBEMIS 7G: Version 3.1

File Name: calpoly.URB
Project Name: Master Plan
Project Location: San Luis Obispo County

DETAIL REPORT - Summer

Total Land Use Area to be Developed (Estimated): 797 acres
Institutional Square Footage: 759,000
Housing Units: 755

AREA SOURCE EMISSION ESTIMATES (Summer Pounds per Day, Unmitigated)

<table>
<thead>
<tr>
<th>Source</th>
<th>ROG</th>
<th>NOx</th>
<th>CO</th>
<th>PM10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Gas</td>
<td>0.83</td>
<td>10.7</td>
<td>4.6</td>
<td>0.002</td>
</tr>
<tr>
<td>Wood Stoves - No summer emissions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fireplaces - No summer emissions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Landscaping</td>
<td>0.27</td>
<td>0.01</td>
<td>1.79</td>
<td>0.01</td>
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</tbody>
</table>

TOTALS (ppd, unmitigated)

<table>
<thead>
<tr>
<th>Source</th>
<th>ROG</th>
<th>NOx</th>
<th>CO</th>
<th>PM10</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTALS (ppd, unmitigated)</td>
<td>1.1</td>
<td>10.7</td>
<td>6.39</td>
<td>0.012</td>
</tr>
</tbody>
</table>

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2020  Temperature (F): 85  Season: Summer

EMFAC Version: EMFAC7G (10/96)

Summary of Land Uses:

<table>
<thead>
<tr>
<th>Unit Type</th>
<th>Trip Rate</th>
<th>Size</th>
<th>Total Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing</td>
<td>1.00 trips / dwelling unit</td>
<td>755.00</td>
<td>755.00</td>
</tr>
<tr>
<td>Cal Poly</td>
<td>5.10 trips / 1000 sq. ft.</td>
<td>759.000</td>
<td>3,870.90</td>
</tr>
</tbody>
</table>

Vehicle Assumptions:

Fleet Mix:

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Percent</th>
<th>Type</th>
<th>Non-Catalyst</th>
<th>Catalyst</th>
<th>Diesel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light Duty Autos</td>
<td>75.00</td>
<td>1.16</td>
<td>98.58</td>
<td>0.26</td>
<td></td>
</tr>
<tr>
<td>Light Duty Trucks</td>
<td>10.00</td>
<td>0.13</td>
<td>99.54</td>
<td>0.33</td>
<td></td>
</tr>
<tr>
<td>Medium Duty Trucks</td>
<td>3.00</td>
<td>1.44</td>
<td>98.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lite-Heavy Duty Trucks</td>
<td>1.00</td>
<td>19.56</td>
<td>40.00</td>
<td>40.44</td>
<td></td>
</tr>
<tr>
<td>Med.-Heavy Duty Trucks</td>
<td>1.00</td>
<td>19.56</td>
<td>40.00</td>
<td>40.44</td>
<td></td>
</tr>
<tr>
<td>Heavy-Heavy Trucks</td>
<td>5.00</td>
<td></td>
<td></td>
<td></td>
<td>100.00</td>
</tr>
<tr>
<td>Urban Buses</td>
<td>2.00</td>
<td></td>
<td></td>
<td></td>
<td>100.00</td>
</tr>
<tr>
<td>Motorcycles</td>
<td>3.00</td>
<td>100.00%</td>
<td>all fuels</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Travel Conditions

<table>
<thead>
<tr>
<th></th>
<th>Home-Work</th>
<th>Home-Shop</th>
<th>Home-Other</th>
<th>Commute</th>
<th>Commercial Non-Work</th>
<th>Customer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Trip Length (miles)</td>
<td>12.0</td>
<td>7.8</td>
<td>10.0</td>
<td>10.0</td>
<td>4.7</td>
<td>4.7</td>
</tr>
<tr>
<td>Rural Trip Length (miles)</td>
<td>15.0</td>
<td>10.0</td>
<td>10.0</td>
<td>15.0</td>
<td>15.0</td>
<td>15.0</td>
</tr>
<tr>
<td>Trip Speeds (mph)</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>% of Trips - Residential</td>
<td>27.4</td>
<td>17.7</td>
<td>54.9</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

% of Trips - Commercial (by land use)

- Cal Poly: 20.0 10.0 70.0

### UNMITIGATED EMISSIONS

<table>
<thead>
<tr>
<th></th>
<th>ROG</th>
<th>NOx</th>
<th>CO</th>
<th>PM10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing</td>
<td>10.50</td>
<td>17.20</td>
<td>49.09</td>
<td>0.70</td>
</tr>
<tr>
<td>Cal Poly</td>
<td>19.59</td>
<td>52.21</td>
<td>152.15</td>
<td>2.03</td>
</tr>
</tbody>
</table>

TOTAL (lbs/day) 30.09 69.41 201.24 2.73

Does not include correction for passby trips.

Does not include double counting adjustment for internal trips.
Mitigation Monitoring Program  
Master Plan Update Final EIR  
California Polytechnic State University, San Luis Obispo

Section 21081.6 of the Public Resources Code requires all state and local agencies to establish monitoring or reporting programs whenever approval of a project relies upon a mitigated negative declaration or an environmental impact report (EIR). The monitoring or reporting program must ensure implementation of the measures being imposed to mitigate or avoid the significant adverse environmental impacts identified in the mitigated negative declaration or EIR.

The mitigation monitoring program (MMP) is required for all mitigation measures adopted by California Polytechnic State University San Luis Obispo (Cal Poly) as conditions of the project. Should Cal Poly adopt the Final EIR (FEIR), Cal Poly would agree to adopt all mitigation measures identified in the FEIR for the Master Plan Update and the mitigation measures shall be required to avoid potentially significant adverse environmental impacts.

A memorandum will be prepared at the specified phase of construction or planning which will state that each of the listed mitigation measures has been satisfactorily completed.

<table>
<thead>
<tr>
<th>Discussion</th>
<th>When to Implement</th>
<th>Responsible Person/Agency</th>
<th>Report Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geology</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Landslide. Mitigation measures would need to be developed on the basis of site-specific study of the landslide. The general degree of required mitigation would depend on the findings, which could range from: 1) finding that the existing landslide is relatively stable and therefore no significant mitigation is needed; to 2) the existing landslide is marginally stable and will require extensive strengthening and/or subsurface drainage improvements to provide adequate factors of safety for design and construction. This EIR therefore recommends that such a study be performed to estimate the factor of safety of the existing landslide for existing static and earthquake loading conditions, and to evaluate what impact the proposed site improvements could have on the stability of the landslide. The study will specify mitigation measures for any site improvements that are needed.</td>
<td>Planning of H-4, H-6 and Grand/Slack ancillary facilities</td>
<td>Cal Poly</td>
<td>Completion</td>
</tr>
<tr>
<td>Biological Resources</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goldtree. A site-specific spring botanical survey will be completed prior to construction. Areas supporting sensitive plant species shall be avoided; disturbed populations will be replanted in a suitable area at a ratio deemed appropriate by a qualified biologist.</td>
<td>Planning/design</td>
<td>Cal Poly</td>
<td>Completion</td>
</tr>
<tr>
<td>Drainage plan. Prior to construction of the Bull Test facility, a construction and operational drainage plan will be drafted with contingencies for storm event and system failures.</td>
<td>Construction/operation</td>
<td>Cal Poly</td>
<td>Completion</td>
</tr>
<tr>
<td>Limitation of Cattle Access. Cattle will not be allowed to enter the creek.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discussion</td>
<td>When to Implement</td>
<td>Responsible Person/Agency</td>
<td>Report Due</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>--------------------</td>
<td>---------------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Reservoir maintenance should be scheduled outside of the breeding and nesting periods of sensitive species that may inhabit the area, and should be approved by jurisdictional agencies where appropriate.</td>
<td>Ongoing</td>
<td>Cal Poly</td>
<td>Prior to initiation of activity</td>
</tr>
<tr>
<td>Future development at the Design Village shall be restricted to areas not limited by serpentine soils, Army Corps jurisdictional wetlands greater that 1/10th of an acre in size, and other areas populated by sensitive plant species, unless impacts to plants can be mitigated by replanting and/or relocation. Prior to construction, a site-specific biological and jurisdictional wetlands delineation shall be prepared.</td>
<td>Construction</td>
<td>Cal Poly</td>
<td>Initiation</td>
</tr>
<tr>
<td>Pedestrian Restriction. The northern and eastern portions of the H-1 and H-2 projects will be designed to prevent direct pedestrian access to the native grassland and biological preserve. In general, access to buildings and recreation areas will be oriented towards the main campus and away from sensitive areas to the north and east. Pedestrian traffic in the area of Brizzolara Creek will be designed in accordance with the “Goals and Guidelines for the Cal Poly Creek Management and Enhancement Plan” included as Appendix F. Signs will be posted to indicate the sensitivity of the areas.</td>
<td>Planning/design</td>
<td>Cal Poly</td>
<td>Completion</td>
</tr>
<tr>
<td>Plant Population Restoration. Suitable areas exist on campus for replanting of Calochortus obispoensis. Any populations or individuals of Calochortus obispoensis disturbed by the construction of the H-1 and H-2 housing projects will be replanted in suitable areas at ratios deemed suitable by a qualified biologist.</td>
<td>Planning/design</td>
<td>Cal Poly</td>
<td>Completion</td>
</tr>
<tr>
<td>The Highland Drive realignment shall be designed with drainage systems sensitive to the creek corridor. Drainage shall incorporate silt and grease traps and/or vegetative buffer strips to prevent pollution and sedimentation of the creek. Landscaping shall consider native vegetation compatible with the riparian area where it is appropriate. Inlets that drain to the creek will be marked accordingly.</td>
<td>Planning/design</td>
<td>Cal Poly</td>
<td>Completion</td>
</tr>
<tr>
<td><strong>Cultural Resources</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buildings deemed potentially eligible for listing on the NRHP will be studied to determine their significance. If they are determined to be significant, Cal Poly will undertake proper documentation of the resource. Given the number of buildings on campus that are over 50 years old, determination of historical significance shall be made by a historic architect (with a historic preservation background) prior to removal or substantial remodeling of any such structure.</td>
<td>Planning/design</td>
<td>Cal Poly</td>
<td>Completion</td>
</tr>
<tr>
<td>Prior to design, Phase II archaeological studies will be completed at known sites; determination of significance will be made, and appropriate mitigation measures followed, as suggested by the archaeologist.</td>
<td>Planning/design</td>
<td>Cal Poly</td>
<td>Completion</td>
</tr>
<tr>
<td>Where soil surfaces are undeveloped and visible and where no previous survey has been completed, Phase I archaeological surveys will take place prior to construction.</td>
<td>Construction</td>
<td>Cal Poly</td>
<td>Completion</td>
</tr>
<tr>
<td><strong>Circulation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mount Bishop Road/Highland Drive. This location will need to have all-way stop control removed at some time prior to the full implementation of the Master Plan.</td>
<td>Planning/design</td>
<td>Cal Poly</td>
<td>Completion</td>
</tr>
<tr>
<td>California Boulevard/Highland Drive. The extension of California Blvd. to Highland would result in a new at-grade three-way intersection. Monitoring the intersection will be required; however, it seems likely that a signal</td>
<td>Planning/design</td>
<td>Cal Poly</td>
<td>Completion</td>
</tr>
</tbody>
</table>
Discussion

When to Implement | Responsible Person/Agency | Report Due
--- | --- | ---
will be needed.
Via Carta/Highland Drive. Via Carta north of its intersection with Highland Drive will need to be widened to accommodate vehicular and pedestrian traffic. The intersection should be monitored to see if signalization is necessary.

The University will need to implement a campus shuttle or other alternative transportation modes to accomplish parking reduction goals.

The following mitigation measures has been added to reinforce the need for improved transit and reduced parking:

Cal Poly will institute the following measures, or measures achieving equivalent results, in order to meet its stated policy of 2,000 parking space reduction, in addition to improving circulation on local streets: freshman restrictions, Bike/pedestrian enhancement, geographic controls, continued bus subsidy, car/vanpools, faculty/staff incentives, parking fee increases, entertainment/services on campus, on-campus shuttle, modified enrollment scenarios, city transit improvements, and remote parking.

California Boulevard/Taft Street. The peak hour traffic forecasts meet warrants for consideration of traffic signals.
California Boulevard/U.S. 101 north bound ramps. The peak hour traffic forecasts meet warrants for consideration of traffic signals.

Air Quality

No additional mitigation are required for traffic-related impacts.

Stationary source emissions. Cal Poly shall implement the following or similar APCD-approved energy-reducing measures to reduce stationary source emissions:

- Shade tree planting along the southern exposures of buildings
- Building orientation to take advantage of natural light and heating and cooling

Design. The structures shall be designed with multiple exits in order to reduce the time required to vacate the cars. Walls should be generally open allowing for free passage of outside air through the structures.

Parking payment options. Prepayment of parking fees should be considered to prevent vehicle queuing when leaving.

Reduction of exit time. The University shall incorporate management strategies contained in Section 2 of the Cal Poly Parking and Commuter Services Event Parking Management Plan (Draft) for the structures.
Prior to construction, specific air quality models will be conducted for the off-campus housing projects.

<table>
<thead>
<tr>
<th>Discussion</th>
<th>When to Implement</th>
<th>Responsible Person/Agency</th>
<th>Report Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mustang Stadium. A specific noise analysis and mitigation plan will be developed for the Stadium when the relocation is proposed. Design recommendations at this time include the following:</td>
<td>Planning/design</td>
<td>Cal Poly</td>
<td>Completion</td>
</tr>
<tr>
<td>Public Address System. In general, speakers should be oriented towards the interior of the stadium and/or directed downward. More speakers with a smaller output dispersed throughout the stadium would have less external noise than a few, louder speakers.</td>
<td>Planning/design</td>
<td>Cal Poly</td>
<td>Completion</td>
</tr>
<tr>
<td>Building Orientation. The stadium should be designed to be oriented away from sensitive receptors. Design should minimize noise directed towards these areas.</td>
<td>Planning/design</td>
<td>Cal Poly</td>
<td>Completion</td>
</tr>
<tr>
<td>Off campus housing facilities north of Highland and at Highland and Highway 1 should be sited to minimize noise and should incorporate acoustic design intended to reduce interior noise to acceptable levels.</td>
<td>Planning/design</td>
<td>Cal Poly</td>
<td>Completion</td>
</tr>
</tbody>
</table>

**Aesthetics**

All exterior lighting associated with the proposed Master Plan shall be hooded. No unobstructed beam of light shall be directed toward sensitive uses (e.g., Brizzolara Creek, Drumm Reservoir, environmental and Horticultural Sciences (EHS), and neighborhoods). The use of reflective materials in all structures shall be minimized (e.g., metal roofing, expanses of reflective glass on west-facing walls).

Parking Structures. All interior lighting associated with proposed parking structures shall be directed internally with lamp “cut-off shields.” Unobstructed beams of light shall not be directed toward land uses outside the structures and shall not interfere with vehicular traffic on nearby streets. Examples of specifications for minimizing light and glare include the following:

All lights must be shielded to avoid glare and light spill-over onto adjacent areas and onto public right-of-way areas; Landscape illumination should be done with low level, unobtrusive fixtures; Parking structure lighting shall be designed to provide the minimum safe lighting levels. Per IES standards, this is 6 foot-candles (fc) maintained throughout internal to the structure, and 1 fc minimum on the roof; The use of reflective materials on the exterior of all structures shall be minimized; Internal lightwells will be provided to maximize the amount of natural light; Light fixtures will include a vertical component to create an even distribution of light; Solid rails shall be included around the perimeter to block light spillage from headlights on cars within the structure; and All roof light fixtures shall be located on the interior columns to keep light from spilling out on to adjacent areas, and will include “cut-off” shields.
<table>
<thead>
<tr>
<th>Discussion</th>
<th>When to Implement</th>
<th>Responsible Person/ Agency</th>
<th>Report Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mustang Stadium. If this project were to occur, final design should include measures to reduce light and glare visible to area residents. The stadium will be redesigned from that which is shown in the Heery Plan in order to accomplish the following measures:</td>
<td>Planning/ design</td>
<td>Cal Poly</td>
<td>Plan check/ Environmental review</td>
</tr>
<tr>
<td>All lights must be shielded to avoid glare and spillover onto adjacent areas and onto public right of way areas. The use of reflective materials will be minimized. Landscape illumination will be accomplished with low-level, unobtrusive fixtures. Minimum safe lighting levels will be used in adjacent parking and other facilities.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Further analysis of the lighting and glare impacts would be required as part of future environmental review for this project.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highway 1 (Gateway to the City of San Luis Obispo)</td>
<td>Design/ planning</td>
<td>Cal Poly</td>
<td>Completion</td>
</tr>
<tr>
<td>City Consultation. Prior to design finalization, the University shall consult with the City regarding the visual impact of the proposed off-campus housing on the City gateway.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compliance with County Guidelines. If the proposed facilities lie within 100 feet of Highway 1, the bull test and Goldtree facility will comply with County Guidelines for design near scenic highways. In any case, the University shall consult with the County regarding reduction of visual impacts to sensitive areas such as the Highway 1 corridor.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Services</td>
<td>Prior to buildout of the Plan</td>
<td>Cal Poly</td>
<td>Completion</td>
</tr>
<tr>
<td>Police. The University will provide for at least the equivalent of 3.3 additional police personnel to serve the anticipated growth. The University will work with the campus police to determine an adequate level of service ratio for the campus and will plan for provision of needed personnel.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Because future water demand will begin to tax the University’s supply of Whale Rock water, the following programs should be instituted:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Water Conservation Program. The University should develop a program designed to reduce overall water consumption on campus. The program will incorporate water-saving fixtures into new development, retrofit older facilities over time, and modify landscaping irrigation requirements.</td>
<td>Prior to buildout of the plan or during a drought event;</td>
<td>Cal Poly</td>
<td>Inception</td>
</tr>
<tr>
<td>- Drought contingency plan. As part of implementation of the Master Plan, the University will draft a drought contingency plan to address potential water shortages associated with extended drought conditions.</td>
<td>conservation program as part of early implementation of the Plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional Water Supply. The University should investigate the availability of additional water supplies over the next twenty-year horizon.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Construction Impacts

**Aesthetics.** Off-campus Projects. Construction at the Goldtree and off-campus housing facilities will locate stockpiling and staging areas shall be located out of view where feasible.

<table>
<thead>
<tr>
<th>Discussion</th>
<th>When to Implement</th>
<th>Responsible Person/Agency</th>
<th>Report Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Contractor Plan check</td>
<td>Construction</td>
<td>Contractor</td>
<td>Plan check</td>
</tr>
<tr>
<td><strong>Air Quality</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DUST CONTROL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Employ measures to avoid the creation of dust and air pollution.</td>
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<td>B. Unpaved areas shall be wetted down, to eliminate dust formation, a minimum of twice a day to reduce particulate matter. When wind velocity exceeds 15 mph, site shall be watered down more frequently.</td>
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<td>C. Store all volatile liquids, including fuels or solvents in closed containers.</td>
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<td>D. No open burning of debris, lumber or other scrap will be permitted.</td>
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<td>E. Properly maintain equipment to reduce gaseous pollutant emissions.</td>
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<td>F. Exposed areas, new driveways and sidewalks shall be seeded, treated with soil binders, or paved as soon as possible.</td>
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<td>G. Cover stockpiles of soil, sand and other loose materials.</td>
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<td>H. Cover trucks hauling soil, debris, sand or other loose materials.</td>
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<td>I. Sweep project area streets at least once daily.</td>
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<td>J. Appoint a dust control monitor to oversee and implement all measures listed in this Article.</td>
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<td>K. The Contractor shall maintain continuous control of dust resulting from construction operations. Particular care must be paid to door openings to prevent construction dust and debris from entering the adjacent areas.</td>
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<td>L. When wind conditions create considerable dust, such that a nuisance would generate complaints, the Contractor shall either suspend grading operations, and/or water the exposed areas.</td>
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<td>M. Water down the project site, access routes, and lay down areas whenever generate dust becomes a nuisance.</td>
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<td>N. The campus reserves the right to request watering of the site whenever dust complaints are received.</td>
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<td>O. It shall be the University's sole discretion as to what constitutes a nuisance.</td>
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In addition to the measures listed above, CMCM recommends the following be added to standard construction contracts:

**EQUIPMENT EMISSION CONTROL**

To the extent feasible, the applicant shall utilize newer construction equipment (manufactured after 1990) that produces fewer emissions, especially for the highest emitting pieces of diesel-fired heavy equipment. In any case, all equipment shall be properly tuned and maintained. Additional measures that would reduce construction-related emissions include, but are not limited to:

- Retarding fuel injection timing two degrees from the manufacturer's recommendation.
<table>
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<tr>
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<tr>
<td>Using high-pressure fuel injectors.</td>
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<td>The use of reformulated diesel fuel.</td>
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<td>The use of Caterpillar pre-chamber, diesel-fired engines (or equivalent low NOx engine design) in heavy equipment used to construct the project to further reduce NOx emissions.</td>
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<tr>
<td>The project shall require that all fossil-fueled equipment shall be properly maintained and tuned according to manufacturers specifications.</td>
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<tr>
<td>The project proponent shall require that all off-road and portable diesel-powered equipment including but not limited to bulldozers, graders, cranes, loaders, scrapers, backhoes, generator sets, compressors, auxiliary power units, shall be fueled exclusively with CARB certified diesel fuel.</td>
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<tr>
<td>During construction activities at each of the locations identified above where equipment emissions are projected to exceed the District’s thresholds, the project proponent shall install catalytic soot filters on the two pieces of equipment (per site) projected to generate the greatest emissions. Where the catalytic soot filters are determined to be unsuitable, the project proponent shall install and use an oxidation catalyst. Suitability is to be determined by an independent California Licensed Mechanical Engineer who will submit for District approval, a Suitability Report identifying and explaining the particular constraints to using the preferred catalytic soot filter.</td>
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</table>

**DUST CONTROL**

Dust generated by construction activities shall be kept to a minimum by full implementation of the following measures:

- During construction, the amount of disturbed area shall be minimized.
- Onsite vehicle speeds should be reduced to 15 mph or less;
- Exposed ground areas that are left exposed after project completion should be sown with a fast-germinating native grass seed and watered until vegetation is established;
- After clearing, grading, earth moving, or excavation is completed, the entire area of disturbed soil shall be treated immediately by watering or revegetating or spreading soil binders to minimize dust generation until the area is paved or otherwise developed so that dust generation will be minimized;
- All roadways, driveways, and sidewalks associated with construction activities should be paved as soon as possible. In addition, building and other pads shall be laid as soon as possible after grading, unless seeding or soil binders are used.

<p>| Construction drainage plan. Prior to construction, the contractor shall draft a drainage and activity plan to protect channels on the Goldtree, Grand/Slack, H-1, H-2 and H-3 housing sites, Highland Drive, Parking Structure III and the Brizzolara Creek Enhancement Projects and their associated habitats. The plan will emphasize avoidance, and erosion and runoff control. The University will consult with appropriate jurisdictional agencies prior to activity. | Construction | Contractor | Plan check |</p>
<table>
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<tr>
<th>Discussion</th>
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<tr>
<td>Grand/Slack – northern drainage. The University will consult with the Army Corps of Engineers well in advance of construction to determine permitting requirements.</td>
<td>Planning</td>
<td>Cal Poly</td>
<td>Completion</td>
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<tr>
<td><strong>Biological Resources.</strong> Develop, for each enhancement project and other direct alteration, a set of performance standards, incorporating the following requirements:</td>
<td>Planning</td>
<td>Cal Poly</td>
<td>Plan check</td>
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<td>• Timing – Highly invasive activities shall be scheduled to avoid breeding and nesting periods of sensitive species, including steelhead, and southwestern pond turtle</td>
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<td>• Erosion control – Erosion of banks and streambed will be minimized through approved methods (per agencies listed above)</td>
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<td>• Revegetation – Disturbed areas shall be revegetated with native species to provide nesting habitat, and connections to adjacent areas for migration</td>
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<td><strong>Noise.</strong> Cal Poly shall apply the following during construction:</td>
<td>Construction</td>
<td>Contractor</td>
<td>Plan Check</td>
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<td><strong>Cal Poly Standard Requirements</strong></td>
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<td>A. The requirements of the Article are in addition to those of Article 4.02 of the Contract General Conditions.</td>
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<td>B. Maximum noise levels within 1,000 feet of any classroom, laboratory, residence, business, adjacent buildings, or other populated area; noise levels for trenchers, pavers, graders and trucks shall not exceed 90 dBA at 50 feet as measured under the noisiest operating conditions. For all other equipment, noise levels shall not exceed 85 dBA at 50 feet.</td>
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<td>C. Equipment: equip jackhammers with exhaust mufflers and steel muffling sleeves. Air compressors should be of a quiet type such as a &quot;whisperized&quot; compressor. Compressor hoods shall be closed while equipment is in operation. Use electrically powered rather than gasoline or diesel powered forklifts. Provide portable noise barriers around jack hammering, and barriers constructed of 3/4-inch plywood lined with 1-inch thick fiberglass on the work side.</td>
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<td>D. Operations: keep noisy equipment as far as possible from noise-sensitive site boundaries. Machines should not be left idling. Use electric power in lieu of internal combustion engine power wherever possible. Maintain equipment properly to reduce noise from excessive vibration, faulty mufflers, or other sources. All engines shall have properly functioning mufflers.</td>
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<td>E. Scheduling: schedule noisy operations so as to minimize their duration at any given location, and to minimize disruption to the adjoining users. Notify the Trustees and the Architect in advance of performing work creating unusual noise and schedule such work at times mutually agreeable.</td>
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<td>F. Do not play radios, tape recorders, televisions, and other similar items at construction site.</td>
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<td>G. When work occurs in or near occupied buildings, the Contractor is cautioned to keep noise associated with any activities to a minimum. If excessively noisy operations that disrupt academic activities are anticipated,</td>
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they must be scheduled after normal work hours.

H. All work in the area of the residence halls will be restricted to 10:00 a.m. to 10:00 p.m., seven days per week, throughout the year. No work will be allowed in the residence hall areas during the finals week. University reserves the right to stop construction work, including but not limited to noisy work, during the following events: Spring and Winter Commencement, Open House, Finals Week, residence hall move-in, or at other times that may be identified by the University. University reserves the right to stop noisy work at any time when said work disrupts classes or other planned events.

In addition to these standard measures, the following measures are recommended:

- A haul route plan shall be prepared for review and approval by the University which designates hall routes as far as possible from sensitive receptors.

- Stockpiling and vehicle staging areas shall be located as far as practical from occupied structures.

- Whenever practical, the noisiest construction operations shall be scheduled to occur together in the construction program to avoid continuous periods of noise generation. Scheduling of noisier construction activities shall also take advantage of summer sessions and other times when classes are not in session.

- Project construction activities that generate noise in excess of 60 dB at the project site boundary shall be limited to the hours of 7 a.m. to 6 p.m.

Pile Driver Use. If possible, the use of pile drivers shall be minimized in construction. Alternative techniques that produce less noise, such as drilled or bored piles, shall be considered.

Circulation Plan. Where vehicle and pedestrian routes and residential areas conflict with construction activities, a circulation plan will be developed, which will include warning signs and detours, as well as efforts to minimize noise in residential areas.

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What happens next?
How will Cal Poly continue to work with the campus and community as we implement the Master Plan?
How will we monitor progress and update the Plan?
What further analysis needs to be done?
IMPLEMENTATION ACTIVITIES

Introduction

The Master Plan establishes a number of principles and expectations regarding the future of the campus that require a number of additional detailed plans to implement. The Physical Plan elements in Chapter 5 identify many of these. However, many of them involve operational issues that are too specific for the Master Plan and require further study. Thus, the Master Plan focuses on the purposes and principles, with the expectation that follow up studies and plans will provide the necessary operational flexibility to achieve the desired results.

Design Guidelines and Facility Standards

The most visible outcome of the Master Plan will be in the design and details of future projects. Design Guidelines and Facility Standards will be the primary tool to achieve the aesthetic vision of the Master Plan. Campus construction did not stop during the three-year Master Plan process and future facilities and site improvements are now on the drawing boards. The development of Design Guidelines and Facility Standards is the next critical step in the implementation of the Master Plan. See the end of this chapter for a list of proposed Design Guidelines and Facility Standards.

Focused Studies

Issues as diverse as bicycle transportation and Best Management Practices (BMPs) for water quality will be the subject of Focused Studies. This Master Plan and Environmental Impact Report used studies that addressed campus-wide, regional, or multi-impact issues. Future Focused Studies will delve deeper with a narrower focus and will be used to implement the Master Plan or meet other regulatory and reporting requirements. See the end of this chapter for a list of possible Focused Studies.

Area Studies

The Master Plan identifies areas for redevelopment and enhancement. Detailed Area Studies of a sector, node or corridor will be undertaken as required by the timelines of project implementation. Aided by Design Guidelines and Focused Studies, these future Area Studies will enable the realization of the Master Plan vision. See the end of this chapter for a list of possible Area Studies.
Phasing Strategies

Master Plan phasing strategies will be published in future 5-year and 10-year Capital Outlay Proposals, updated annually. The discussion below presents some assumptions and considerations that will affect phasing.

Assumptions and Present Funding Practices for State-Funded Projects

Timing -- State-Funded Projects

- Major capital outlay requests are submitted to the Chancellor’s Office for review by the Trustees approximately two years prior to initial funding.
- Projects are funded for completion during a three-year design and construction period.
- Thus, Cal Poly follows the following schedule for a major project. Funding years coincide with the start of the fiscal year (July 1), and depend on authorization as part of the annual State Budget Act.
  
  - Year -1 - submittal
  - Year 0 - approval
  - Year 1 - initial funding, including design
  - Year 2 - construction
  - Year 3 - construction, including equipment funding
  - Year 4 - fall occupancy

- No growth project can be submitted prior to the approval of the new master plan.

State-Funded Projects in the Queue Prior to Expected Approval of the Master Plan Update Will Continue as Scheduled (e.g., College of Engineering replacement building).

Master Plan Phasing Considerations

- Provide enrollment growth potential to meet some portion of Tidal Wave II demand prior to peak. The number of high school graduates will reach a peak in 2007 and 2008, which means that the effect on college education will peak from approximately 2007 through 2014.
- Obtain operating budget support for enrollment in the disciplines identified for enrollment growth.
- Relocate facilities or uses in a form to meet future needs prior to demolition or removal of facilities from existing site.
• Free-up sites for enrollment growth and housing projects.
• Link enrollment growth to amount of housing that can be provided based on sites available.
• Obtain funding for enrollment growth project prior to committing to housing construction for that phase.
• Meet support needs associated with enrollment growth and housing through facilities and/or policy adjustments (e.g., parking).
• Accommodate renovation and replacement requirements for major capital outlay funds as well as enrollment growth projects.

**Phasing Characteristics**

• Each phase may have the following components:
  • Relocation of existing facilities or uses to free up space for new use.
  • Instruction/instructional support facility to accommodate increase in enrollment during the academic year.
  • Student housing and related services to accommodate Fall headcount associated with enrollment growth.
  • Operating budget to provide for instruction and support services (faculty, staff and equipment)
  • Parking and alternative transportation programs for students, faculty and staff to accommodate increase in enrollment during the academic year.
  • Renovation and replacement to enhance existing capacity.
  • Non-state funded projects that contribute toward instructional and related needs.

• Each phase may focus on a particular site planning area, but may involve projects in additional locations to support the primary components of the phase.

• Each phase should enable subsequent phases.

• In order to meet instructional needs for both major and service courses, and instructional support requirements, all instructional buildings must combine classrooms, laboratories, offices, etc. for related disciplines.

**Project Financing and Delivery Considerations**

As a public institution, the California State University system must follow State requirements with respect to project financing and delivery.
However, to the extent possible, the University should explore a range of alternatives, such as public-private partnerships, Foundation support, enterprise partnerships and collaborative “design-build” project development techniques.

**Future Environmental Review**

Many projects developed under the Master Plan will need little or no additional environmental review. Larger construction projects (large buildings, parking structures) will need negative declarations or, at most, focused EIRs. This analysis will be conducted just before a specific project is undertaken. Presuming the project was contemplated under the Master Plan, the analysis would relate directly to the individual project site and general issues would be referred back to, or “tiered” off the Program EIR. This means there will be no further need for broad analysis of campus impacts in such areas as long-term air quality, traffic/parking, housing, and cumulative impacts (unless, of course, there are dramatic changes in the information relied upon). For example, the focused analysis would deal with site geology, but there would be no need to discuss regional seismic issues, as these would be covered in the Program EIR.

**Records and Archives**

Data collection and record keeping support all implementation efforts but are activities in themselves. Data types include digital Graphical Information System (GIS), historical Master Plan documents, and records of planning processes. The goals are:

- Appropriate and consistent level of detail for all Cal Poly land.
- Open and accessible storage of data for use in implementing the Master Plan and any other academic uses. Extensive use of the WorldWide Web in publishing the data.
- Accessible catalog of data collected to date. Maintain and publish the catalog as additional data is collected. Establish ‘ownership’ of data with a clear understanding of expectations for currency, maintenance and access. There will be a variety of owners for different areas.
- Use of student projects and faculty research and projects where possible and appropriate.
COMMUNICATIONS AND CONSULTATION

Introduction

Planning and project review process issues that have arisen during the Master Plan Update process can be grouped in two categories: (1) communication with the broader community regarding physical planning issues, and (2) structure on campus for consultation, comment and recommendations regarding such issues. The campus should establish the detailed structure and procedures for addressing physical planning issues through a set of Land Use and Project Review Procedures as part of the implementation of the Master Plan.

Community Communications

The Master Plan and specific projects generate significant interest on and off campus. Because Cal Poly is the largest institution in the local area, anything the University does with respect to enrollment and its physical facilities is highly visible.

Cal Poly’s impact can be measured in at least the following ways:

- Housing units occupied
- Purchases made
- Jobs created and jobs needed
- Tax revenues generated
- Events attracted to the area
- Community leadership provided
- Community organizations to which students, faculty and staff contribute
- Services offered and services used
- Resources consumed and waste generated
- Miles traveled/trips taken; cars driven; bicycles and buses ridden

It is no wonder then, that residents, businesses, organizations, and local government agencies in San Luis Obispo city and county are very interested in Cal Poly’s activities.

Cal Poly’s impact on the community can be seen as a balance between benefit and burden. To be sure, Cal Poly adds to traffic congestion, uses resources, requires public services, and its students, faculty, and staff compete with other local households for housing. At the same time, though, the University clearly contributes to the intellectual life of the community, the regional economy and tax base, and it provides community leadership and service.

A study by the College of Business estimated conservatively that Cal Poly accounted for a contribution of over $485 million to the City and County economy in 1998-99, up from $400 million in 1996-97.
At the same time as it is a member of its local community, Cal Poly is first and foremost a member of the higher education community. As a university in the California State University system it is accountable to its Board of Trustees, State elected officials, and, ultimately, California voters and taxpayers. The campus should balance its role in the community with its responsibility as a state institution of higher education. Thus, campus enrollment and physical planning take place within both local and State contexts.

Communication Principles

Cal Poly wants to enjoy a friendly and constructive relationship with its surrounding community and adjoining jurisdictions. Within the framework of its academic mission, the University recognizes that it is also a part of a larger community, sharing the same regional environment with many neighbors. To this end, the University will work to maintain good communication and relations with the City of San Luis Obispo, the county, and its immediate neighbors. This section sets forth principles that will guide University communications with its many publics.¹

Communication

The University will seek opportunities to broaden its communication both on and off campus. These include:

- Regular communication with the elected officials of the city and county about the physical plans Cal Poly is considering.
- Meetings with neighbors early in project planning and design about projects that may affect them and cooperative discussions on ways to relieve possible impacts.
- Widely published information about campus plans, activities and process - available on the Web and through other media.

Planning

The University will include the City and County of San Luis Obispo and its immediate neighbors in discussions about its physical plans for the future. The development of the Master Plan has been shared broadly

¹ These principles address issues identified by campus and community members during Fall 1998, at public meetings during Winter 1999, during task force discussions in Spring 1999, and at subsequent meetings with campus and community groups in Fall 1999 and Winter 2000. Two campus/community task forces in particular - Neighborhood Relations and Intergovernmental Relations - recommended a number of very specific processes and procedures for physical planning and project review with the community. Some of these were too specific for the Master Plan, while others will be addressed as part of Master Plan implementation.
Consultation
The University will provide the City and County of San Luis Obispo and permitting authorities with a clear avenue of consultation regarding physical planning projects on campus. Cal Poly recognizes that it is a large organization with many divisions. Cal Poly will identify appropriate personnel and procedures through a set of Land Use and Project Review Procedures as part of the implementation of the Master Plan so that those interacting with the University are able to do so effectively and efficiently.

Cal Poly follows two formal consultation processes that involve local elected officials and the broader community - the Campus Planning Committee and environmental assessments.

Campus Planning Committee
The Campus Planning Committee serves review functions typically provided by both a city planning commission and a design review committee in local government. Its responsibilities include review of the campus Master Plan, five-year capital improvement program, environmental assessments related to major capital outlay projects, and design review of major capital outlay projects at the programming, conceptual and schematic design phases. The Campus Planning Committee is a standing committee of the University, mandated by the Board of Trustees. Members include the President, all four Vice Presidents, Vice Provost for Institutional Planning, Director of Facilities Planning, two deans (Agriculture and Architecture and Environmental Design), two faculty (appointed by the Academic Senate), an ASI student representative, a CSU system representative, the official campus architect, and City and County representatives. Once projects are formulated, the Facilities Planning Office places them on the agenda of the Campus Planning Committee for review, comment, and recommendations before the President forwards them to the CSU Chancellor’s Office. With the completion of the Master Plan update, Cal Poly will post Campus Planning Committee meeting schedules and agendas in a timely manner in advance of meetings and will make summary minutes available on a Web site.

Environmental Assessment
Cal Poly follows the requirements of the California Environmental Quality Act (CEQA) with respect to physical planning and major capital
A study by the College of Business estimated conservatively that Cal Poly accounted for a contribution of over $485 million to the City and County economy in 1998-99, up from $400 million in 1996-97.

outlay projects. The California State University Board of Trustees serves as the lead agency for certifying environmental determinations regarding projects subject to CEQA. Cal Poly prepares initial studies, “negative declarations” and environmental impact reports with the assistance of the campus environmental consultant and forwards these to the CSU. Cal Poly notifies and invites comments during the review process from elected officials, public agencies and the public, consistent with CEQA requirements.

Campus Planning Structure

Campus physical planning at Cal Poly follows both administrative and consultative processes. Ultimate responsibility for Master Plan approval lies with the California State University Board of Trustees - or the California Post-Secondary Education Commission for decisions associated with enrollment capacity. On campus, the Facilities Planning office in the Division of Administration and Finance is responsible for physical planning. This office works in consultation with the Provost’s Office regarding academic projects and implications of all physical planning projects on academic issues. Within the Provost’s Office, the Office of Institutional Planning and Analysis provides enrollment and space studies that inform campus planning efforts.

College and University Interests

The Master Plan addresses campus land uses beyond the instructional core at some length. The Natural Environment element identifies environmentally sensitive areas. The Outdoor Teaching and Learning element describes uses of campus lands by nearly all colleges. Some colleges clearly have jurisdiction over certain activities - e.g., agricultural units, botanical garden, Design Village. However, outdoor teaching and learning uses also overlap with one another on some lands - e.g., grasslands used for grazing and field study. In addition, students, faculty and staff, and members of the larger community take advantage of Cal Poly’s natural setting for outdoor recreation - hiking, mountain biking, horseback riding. Sometimes these overlapping uses come into conflict, particularly when issues of environmental protection, degradation, and restoration arise, but also when one user proposes a change that affects others - e.g., conversion of grasslands to cultivated crops.

The implementation of the Master Plan will establish a structure in the Land Use and Project Review Procedures to review and adjudicate these land use management issues, based on analysis of the academic needs that are served by outdoor teaching and learning lands.
Land Use and Project Review Procedures

The Land Use and Project Review Procedures to be established to implement the Master Plan will include the following considerations.

- Establishment of a project development team that represents all affected University interests;
- Identification of responsibility for liaison with elected officials and local and regional agencies, as appropriate to the nature of the project;
- Identification of the appropriate neighborhood areas that may be affected by the project so that meetings may be held early in project planning and design regarding ways to relieve possible impacts;
- Determination of which implementation guidelines and standards are applicable to the project.

Master Plan Monitoring and Review

One of the responsibilities of the Campus Planning Committee (CPC) is to monitor the implementation of the Master Plan. The CPC sees project proposals as part of the five-year capital improvement program, submitted annually to the California State University (CSU). When a specific building or landscape project is being designed, the CPC assesses its consistency with the Master Plan and sees the environmental assessment. If the proposal differs from the Master Plan, the campus, with CPC approval, may forward a request for amendment to the CSU Board of Trustees. As the CSU is most concerned with enrollment capacity and physical construction, the system requires campus review of enrollment levels and facilities annually.

The Campus Planning Committee will assume responsibility for an annual review of the assumptions underlying the master plan and its policies, so as to advise the campus when a major update may be required. This annual review will include an update on compliance with the Master Plan environmental mitigation monitoring program. The Academic Senate has urged that the University assess the impacts of enrollment growth on academic quality for each phase of Master Plan implementation. This analysis should occur as part of Cal Poly’s assessment and accountability efforts, including academic program review.
STUDIES, STANDARDS AND GUIDELINES

Introduction
Following is a list of proposed activities that may be useful in implementing the Master Plan. Critical activities are shown in underlined italics, in-progress or complete activities are shown in bold.

Design Guidelines and Facility Standards

Design Guidelines
Guidelines that refer to the architectural, urban and campus design aspects of the University. These may include, but not be limited to, site planning issues, architectural treatment, campus furnishings and amenities, signage, urban design elements, resource conservation and sustainability.

Campus Landscape Plan
Includes the design and development of a Campus Landscape Plan to enrich the campus’s aesthetic beauty and provide a cohesive treatment of exterior space and a living laboratory for study.

Facility Standards
Nuts and bolts standards dealing with everything from door hardware to high voltage electrical connections. Typically re-evaluated and republished for each major capital project.

Focused Studies

Access and Alternative Transportation
Alternative transportation evaluation and recommendations including operational issues and financial feasibility of alternative transportation options.

Agriculture Facilities Plan
Prepare a facilities plan for the entire college and Campus Farm, incorporating all elements described in the 2000 report issued to the master planning team including a thorough inventory of existing facilities and fields.
Air Conditioning Plan
Evaluate current and projected needs for air conditioned spaces and implications to the campus infrastructure.

Best Management Practices (BMP’s)
BMP’s for environmentally sensitive areas, including riparian areas.

Bicycle System
Study of bicycle routes, access, and storage.

Botanical Preserve Study
Mapping of existing preserves, and evaluation of potential new preserves.

Creek Management and Enhancement Plan
Coordinate with Biological Sciences Advisory Committee, Landscape Advisory Committee, College of Agriculture Land Use Committee and other interested groups to develop and implement stream protection programs.

Design Village Development Standards
Standards to protect the natural resources of the site while allowing its’ continued use for building experimental structures.

The Foundation Element of the Master Plan
Planning the role of the Cal Poly Foundation in the implementation of the Master Plan.

Grazing Land Management Program
Implementing best practices for grazing while maintaining the ecological value of the land.

Historical Building and District Study
Inventory and evaluate all campus facilities over fifty years old.

Inventory of Natural Resources
Assist the Biological Sciences Department and College of Agriculture to identify and map various natural resource areas and assist in developing management and use guidelines including a thorough inventory of sensitive plants, animals, and habitats.

Inventory of Outdoor Teaching and Learning Land Use
Inventory of student and faculty ‘contact hours’ with outdoor facilities.
Life-Cycle Costing and Energy Efficiency

**Parking Management**

Pedestrian System
Focus on pedestrian access to campus.

Recreational Trails Plan
Identification of appropriate recreational trails, hiking, biking and the necessary management procedures on all Cal Poly lands. Coordinate with San Luis Obispo County Trails Plan.

**Shuttle Service**
Area and Related Service Connections.

**Student, Faculty and Staff Housing Studies**
Periodic update of local housing market conditions, supply and demand, preferences and affordability.

**Utility Capacity and Distribution Studies**
Includes water conservation program, drought contingency plan and evaluation of potential future additional water supplies.

**Water Quality Management Plan**
As required by the Regional Water Quality Control Board.

**Area Studies**

Agriculture Pavilion
Work with the College of Agriculture to refine program and prepare site plan studies, including traffic circulation, parking facility layout.

**Brizzolara Creek Enhancement Plan**
Coordinate with Biological Sciences Advisory Committee and Landscape Advisory Committee to establish boundaries, program and site plan for Brizzolara Creek.

**Bull Test Facility at Chorro Creek Watershed**
Work with CAG to refine program and prepare site design studies, including traffic access, parking and facility layout, and drainage and runoff retention plan.
California Boulevard
Prepare parking impact and relocation studies in preparation to connect through to highland.

Centennial Green
In coordination with The Center for Science and Mathematics project, refine the green space and building placement plan for this redevelopment area.

Dexter Green
Prepare a refined plan for this central green space.

East Ridge Landslide Study
Mapping and evaluation of the ancient landslide that underlies the eastern edge of campus.

Engineering III Parking Expansion
Prepare parking studies to capture interim parking space east of Engineering III.

Goldtree Area
Concepts for program use, development potential, environmental issues, access and coordination with Master Plan Team, various colleges and foundations.

Grand Avenue Corridor
Develop a plan for the corridor of similar nature to the Highland Drive plan.

Highland Drive Corridor
Coordinate with University, City, CalTrans on the design requirements at the entrance to Cal Poly from Highway 1.

Highway 1 Faculty / Staff Housing Sites
Coordination with Foundation Architects, prepare density and product studies, CalTrans and City coordination integration with Master Plan.

Kennedy Library Expansion
Prepare refined study for building footprint and space needs.

Key Intersections
Via Carta and Highland Drive, California Boulevard and Highland Drive, California Boulevard and Foothill Boulevard.
Northeast Area
Prepare detailed study of concept building footprints, site plan, product and density-3D sketches of area.

Northwest Area
Prepare detailed study of concept building footprints, site plan, product and density-3D sketches of area.

R-1 Parking Lot
Prepare lot efficiency studies, reconfiguration, grading and traffic flow to integrate new H-5 housing and increased demand.

Southwest Corner
Child care facility, alumni center, mustang stadium, housing, air conditioning facility. Studies to accommodate expansion and new child care services, site planning and concept designs.

Sports Arena and Parking Structure III
Study ingress and egress, refined site design parking structure capacity and connection to new sports arena.

University Union Plaza and South Perimeter
Prepare study for the entire area similar to California Boulevard or Highland Drive.

University Union & Student Services Plan
A plan for the future of the University Union and the expansion of student services as the campus develops.

Via Carta Corridor
Develop a plan for the corridor of similar nature to the Highland Drive plan.
GOALS AND GUIDELINES FOR THE CAL POLY CREEK MANAGEMENT AND ENHANCEMENT PLAN

INTRODUCTION

There are a number of significant creeks and tributaries that traverse Cal Poly lands and support biologically diverse aquatic and semi-aquatic habitats comprising communities of hydrophilic trees, shrubs, herbs and the associated diversity of animal life. This report provides some goals and guidelines that should be implemented in a Creek Management and Enhancement Plan for the Cal Poly campus.

CREEK HABITATS—AN OVERVIEW

Riparian and creek ecosystems support a diversity of plant and wildlife species. These ecosystems are complex habitats that provide water and moist areas in otherwise arid areas of the campus. The variety of vertical habitats created by the trees, shrubs and herbs provide nesting and foraging sites for a diversity of animal species. These habitats are critical for many wildlife species because they provide a rather permanent source of water and moist microhabitats in otherwise dry environments.

Many riparian and wetland plants and animals are restricted to the creek channel, banks, and/or flood plains of waterways; others integrate with the riparian community from adjacent upland areas. Sometimes the riparian trees are tall and dense forming a forest-like community, and at other times the trees form more open woodland. The lateral extent of the riparian vegetation depends on the size and nature of the creek banks and flood plain of the creek, the amount of water carried by the creek and on the depth and lateral extent of subterranean aquifers. Additionally historical patterns of land use and human impacts often determine the actual extent of the existing riparian and stream corridor, an important consideration on Cal Poly lands. The extent of the riparian and wetland communities varies depending on the interaction of the above factors, as well as others not listed.

There are several creeks and drainages on the Cal Poly campus that support various forms of riparian and wetland vegetation ranging from broad corridors of dense riparian forests to small corridors of mostly aquatic and semi-aquatic shrubs and herbs. Freshwater marsh habitats are found along creeks where permanent, slow moving pools of standing water occur. In these areas, the riparian woodland and freshwater marsh communities overlap and form a mosaic along the creek. Small freshwater marsh areas occur in scattered locations along the creeks on the Cal Poly campus.

Riparian communities have a significant effect on the environment along creeks or streams. There is seasonal fluctuation in light available to riparian understories because most of the dominant trees are deciduous. When the trees are in their winter-dormant leafless condition, direct sunlight can reach the ground or the water surface of the stream. Some herbaceous species and shrubs actively grow and flower while the trees are leafless.
When deciduous trees are in full leaf, they cast dense shade, reducing the light energy that reaches the ground or water and moderating diurnal temperature fluctuation. Daytime temperatures beneath the tree canopy are often several degrees lower than temperatures in full sunlight. The tree cover also decreases wind velocity. Relative humidity is increased in a riparian corridor by moisture evaporated from leaves, the soil, and water. The evaporation also tends to decrease the temperature. Overall, the environment within a riparian woodland or forest is more mesic than that in adjacent areas. The presence of mesic conditions along streams permits some plants from adjacent communities to grow as riparian species in areas that are otherwise outside their limits of drought tolerance. For example, *Quercus agrifolia* (coast live oak) and *Umbellularia californica* (California bay-laurel), which occur in upland woodlands, are common in many riparian areas on Cal Poly lands.

Unlike the plants of many other communities of California, riparian dominants are summer-active and winter-dormant. Many of the understory plants are similarly summer growing species. The availability of either surface water or shallow subsurface water in a riparian corridor allows the plants to remain metabolically active at times of the year when moisture stress is extreme in adjacent upland areas. Most of the riparian dominants, however, lose their leaves during the winter when active growth is taking place among the members of many lowland communities. Consequently the riparian plants often seem out of phase with the surrounding vegetation.

Riparian areas are very important as wildlife habitats. The multilayered canopy provided by the assorted trees, shrubs, and herbs provides a diversity of nesting and feeding sites for birds and mammals. Riparian areas are productive habitats, especially at times when plants of other communities are dormant. The moisture of the stream is an important summer water source in the dry California landscape. The nutrients added to the stream and the alternating shaded and sunny zones of the patchy vegetation are important in stream ecology. The vegetation is an important component of the habitat for fish and other aquatic animals as well as terrestrial species.

Riparian woodland vegetation influences fish habitats by moderating the temperature and providing cover and food. Loss of riparian trees and shrubs and undercut banks can decrease the amount of suitable habitat, reducing creek productivity and decreasing fish populations. Riparian vegetation is also an important source of fish food and nutrients. Small fish use slower water along margins of larger rivers and depend on terrestrial organisms such as insects that live in the riparian vegetation for food because most aquatic other organisms escape them.

Stream flow velocity, water depth, and riparian cover are important factors that affect fish populations. In general, vegetation cover slows the water velocity, providing resting areas for fish and increasing habitat complexity, which can lead to greater species diversity. Riparian vegetation provides hiding places for both adult fish and fry to escape predation and may also provide increased substrate for fish food and for egg attachment.
Riparian vegetation decreases erosion from stream banks and adjacent uplands, which important in maintaining stream purity and decreased sedimentation. This is very important because streams that are inundated by heavy silt loads become useless as fish and invertebrate habitat.

**RIPARIAN AND FRESHWATER MARSHES ARE SENSITIVE HABITATS**

Over half of the wetland and riparian vegetation in the coterminous 48 States and over 90% of the wetlands in California have been destroyed, and few of the remaining riparian and wetland areas have not been adversely impacted. Because of their location in floodplains, destruction of riparian ecosystems is largely associated with human activities, especially clearing for agriculture, building structures and paving in flood plains, stream-channel modifications, water impoundments, mining, and urbanization. Even recreational development can destroy natural plant diversity and structure, lead to soil compaction and erosion, and disturb wildlife.

Wise management of remaining riparian ecosystems and restoration of disturbed riparian areas is extremely important because of their high value as fish and wildlife habitat as well as important values to humans and human existence. Riparian ecosystems generally compose a minor proportion of surrounding areas, but typically are more structurally diverse and more productive in plant and animal biomass than adjacent upland areas. Riparian areas supply food, cover, and water (especially important in arid regions) for a large diversity of animals, and serve as migration routes and forest connectors between habitats for a variety of wildlife.

The area occupied by riparian communities in California has decreased over 90 percent in the past 100 years. There has been a similar decrease in area occupied by freshwater marshes. With the loss of these wetland communities has come a comparable decrease in the habitat available for various types of wildlife, particularly resident and migratory birds. Today riparian communities occupy less than one percent of California, but in pre-colonial times these communities occupied considerably larger areas.

Much of the decrease in riparian and freshwater wetlands has been incremental — a little bit here, a little bit there. Individually these changes are minor. Collectively they represent a serious loss of wetland habitats. Freshwater marshes, riparian and other wetland areas are important wildlife habitats. They are particularly important to migratory birds of the Pacific Flyway. The piecemeal draining of marsh areas and removal of riparian woodlands throughout California along with the massive draining of marshlands in some areas of California such as the Central Valley have reduced the overall area covered by marshes by over 90 percent. Still other areas of marshland are threatened by pollution. Loss of these wetlands in California makes the protection and management of those on Cal Poly lands even more significant.

The original riparian forests in California covered several million acres. Today they are measured in thousands, and many of the remaining riparian ecosystems have been degraded as a result of human activities. Prior to 1960 few people showed any concern for the
demise of California’s Riparian Woodlands and very little biological data was collected. Today many scientists and governmental agencies are expressing concerns that have led to several symposia and workshops dealing with the ecology and conservation of riparian communities in California. Both the California Department of Fish and Game and the U. S. Fish and Wildlife Service consider Riparian and freshwater marsh communities to be sensitive habitats. The sensitivity of riparian woodlands and marshlands makes it extremely important that Cal Poly take a leadership role in addressing the proper management, enhancement, and protection of these habitats on the Cal Poly lands.

**CAL POLY STREAMS AND HABITATS**

Several of the largest tributaries in the San Luis Obispo Creek and Chorro Creek watersheds traverse significant sections of Cal Poly lands. The survival and sustainability of the diversity of riparian, aquatic, and semi-aquatic biota found along these creeks depend upon Cal Poly’s proper management, protection, and enhancement of the stream and streamside habitats. Protection of these sensitive wetland habitats must involve creating and maintaining critical habitat features such as high quality water, sufficient water to support the aquatic and semi-aquatic plant and animal life, and high quality riparian habitats. The riparian habitats and buffer zone along these creeks must be large enough to protect the creek and provide essential wildlife habitats, including habitat for the special status and sensitive species. This will require developing a comprehensive Creek Management and Enhancement Plan based on wise, science-based land and water use decisions by Cal Poly. This plan should develop acceptable management and enhancement goals and guidelines for the creek systems that are found on Cal Poly lands.

As a leading institution of higher education, Cal Poly must acknowledge and address the regional impacts the campus may have on the creek systems that traverse our lands. We must recognize how activities on our campus affect freshwater aquatic, estuarine, and marine habitats downstream in the both the City and the County of San Luis Obispo and in the Morro Bay area. The potential impacts on the Morro Bay estuary from Cal Poly’s land use activities in the Chorro Creek drainage and on the marine environment near Avila Beach from Cal Poly’s activities in the San Luis Creek drainage must be evaluated.

The sensitive riparian and aquatic habitats found on Cal Poly lands must be addressed not only as sensitive creek habitats that support rare, threatened, and endangered species but also because they provide a diversity of educational opportunities for our students, staff, faculty, and the community.

**GOALS AND GUIDELINES FOR THE CAL POLY CREEK MANAGEMENT AND ENHANCEMENT PLAN**

The comprehensive Cal Poly Creek Management and Enhancement Plan should include the following management and enhancement goals and the guidelines for the creek systems that are found on Cal Poly land. The preceding discussion provides the scientific basis for the following goals and guidelines that might affect all present and future projects undertaken by Cal Poly near the steam and riparian ecosystems.
1. Develop a Creek Management and Enhancement Plan.

2. Reestablish natural flood plain areas for flood control purposes while protecting the Instructional Campus Core.

3. Protect the streams, stream channels, and adjacent banks, flood plains, and riparian habitats on campus, and be consistent with sound, long-term hydrologic principles.

4. Maintain and/or create stream and riparian corridors that provide adequate buffer zones that protect habitats for the riparian and aquatic plant and animal species.

5. Within the stream and riparian ecosystem maintain and create essential habitat features which include water quality, water flow, water temperature, and complex vertical and horizontal plant cover.

6. Reduce point and non-point sources of pollution to ensure that only high quality water enters the stream and riparian ecosystem in accordance with best management practices developed in the Cal Poly Water Quality Management Plan.

7. Identify and control stream bank and upland area soil erosion that may contaminate or add sediments to the stream and riparian system.

8. Control exotic invasive species within stream and riparian ecosystem.

9. Provide habitat for the special status species known to occur or likely to occur in the stream and riparian ecosystem.

10. Develop a maintenance program as part of the Cal Poly Creek Enhancement and Management Plan.

11. Identify all structures, concrete, pavement, etc. that affect the stream and riparian ecosystems. Obstacles to proper management and/or enhancement shall be removed from designated stream and riparian corridors.

12. Maximize the use of the stream and riparian ecosystem as a living laboratory and educational resource.

13. Provide limited public access to and from the housing units on designated paths and bridges, designed to have insignificant affect on the stream and riparian ecosystem. These paths should be outside buffer zones as much as feasible.

14. Provide access areas for the public as well as well as designated wildlife areas with limited human access.

15. Restrict safety lighting and light spillage, where possible, to designated paths and bridges only.
16. Restrict recreational use of riparian and creek areas to designated trails. Recreation uses will be restricted to passive or resource based recreation such as nature walks and hiking.

SUMMARY

A Cal Poly Creek Enhancement and Management Plan shall be prepared that addresses methods to protect, restore, manage, and enhance the biodiversity and stability to the creek and riparian corridor on the campus. Protection of existing riparian and creek ecosystems from impact by creating adequate riparian and buffer zones should be of utmost importance.

All disturbed sections of the creeks shall be restored and enhanced as directed by the plan. One of the main problems when restoring disturbed creek and riparian ecosystems to their pre-disturbance condition is that the historical conditions of creeks is not well known. Investigations of relatively undisturbed sections of the creek near the restoration and enhancement areas may be useful in gaining some knowledge of predisturbance conditions of the creeks.

The plan shall address methods to restore riparian habitat diversity and stability to the creek corridors and shall provide methods and procedures to manage, restore, and enhance valuable biological habitats that will support a diversity of plant and animal species, including sensitive species. The plan shall also create public trails and lookouts in appropriate but restricted areas that will provide resource-based recreation for the campus residents and visitors to the site, such as bird watching and hiking. The plan, once implemented will be monitored and the area managed to make sure the goals of the plan are achieved. Success of the plan will be evaluated regularly.

Restoration involves returning the ecosystem to as near predisturbance conditions as possible and involves revegetation and the removal of exotic, invasive vegetation. Enhancement of riparian ecosystems consists of improving existing conditions to increase habitat values. This is usually accomplished by increasing plant or community diversity for plants, wildlife, fish, and other animal life. Managing riparian and creek ecosystems typically involves enhancement techniques as well as proper management and monitoring. However, in some areas creation and restoration projects may involve use of techniques considered more management-oriented (e.g., land shaping and fencing until planted vegetation of the created or restored wetland is established).