Draft

SONOMA STATE UNIVERSITY MASTER PLAN REVISION

Environmental Impact Report

SCH # 93013045

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Prepared for

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CHAPTER I

INTRODUCTION

A. ENVIRONMENTAL REVIEW

The proposed project consists of a revision to the existing Sonoma State University Master Plan. Like the existing approved Master Plan, the proposed Master Plan revision would maintain a maximum student population of 10,000 full-time equivalents (FTE). The Master Plan revision would not involve an increase in the rate of student enrollment above that anticipated by the existing approved Master Plan. The Master Plan identifies the facilities and actions required to accommodate the University's development from the existing student capacity of approximately 5,400 FTE to the ultimate student capacity of 10,000 FTE. In addition to new facilities proposed on its main campus, this revision proposes new development on 89.3 acres of property north of the main campus across Copeland Creek, including the proposed Center for the Musical Arts (to be located on 54.7 acres of existing campus property) and university housing (to be located on 34.6 acres on property to be acquired by the University). This project level approval is for the total campus Master Plan, including the Schematic Project Plan approval for construction of the Center for the Musical Arts. In concert with these proposed changes to the physical Master Plan, associated revisions to the pedestrian/bicycle circulation, parking, vehicular circulation and open space components are incorporated.

The California Environmental Quality Act (CEQA) requires that before a decision can be made to approve a project with potentially significant environmental effects, an Environmental Impact Report (EIR) must be prepared that fully describes the environmental effects of the project. The EIR is a public information document for use by governmental agencies and the public to identify and evaluate potential environmental consequences of a proposed project, to recommend mitigation measures to lessen or eliminate adverse impacts, and to examine feasible alternatives to the project. The information contained in the EIR is reviewed and considered by the governing agency prior to the ultimate decision to approve, disapprove, or modify the proposed project.

CEQA requires that the Lead Agency [California State University (CSU) Trustees] shall neither approve nor implement a project as proposed unless the project's significant environmental effects have been reduced to a less-than-significant level, essentially "eliminating, avoiding, or substantially lessening" the expected impact. If the Lead Agency approves the project despite residual significant adverse impacts that cannot be mitigated to less-than-significant levels, the agency must state the reasons for its action in writing. This "Statement of Overriding Considerations" must be included in the record of project approval, including specific findings that state the justification for accepting the remaining significant impacts.

On July 26, 1999, Sonoma State University sent a Notice of Preparation (NOP) to governmental agencies and organizations and persons interested in the project. The NOP is included as Appendix A. The NOP requested those agencies with regulatory authority over any aspect of the project to describe that authority and to identify the relevant environmental issues that should be addressed in the EIR. The written responses to the NOP are included Appendix B. The Initial Study completed for the project is included as Appendix C.

During the time the Draft EIR is available for public review, written comments on the adequacy of the Draft EIR may be submitted to the University at the address indicated on the notice. Responses to all substantive comments received on the adequacy of the Draft EIR and submitted within the specified review period will be prepared and included in the Final EIR. Comments from public agencies will be responded to at least 10 days prior to action by the Lead Agency as per requirements of Public Resources Code Section 21092.5(a). The Board of Trustees of the CSU will then review and consider the Final EIR for certification based on its fulfillment of CEQA requirements. Prior to approval of the project, the Board of Trustees of the CSU must certify the Final EIR and adopt a reporting and monitoring program for mitigation measures identified in this report in accordance with the requirements of Public Resources Code Section 21081.

B. THIS EIR

This environmental impact report (EIR) provides the environmental information and evaluation necessary for the development and implementation of the Master Plan revision (the "project"). The project sponsor is Sonoma State University (hereinafter referred to as the University), representing the trustees of CSU (the Lead Agency). This EIR has been prepared by the University as Lead Agency in conformance with the California Environmental Quality Act. This EIR is intended to provide the information and environmental analysis necessary to assist public agency decision-makers in considering all of the approvals necessary to implement the proposed project. Further, this EIR is intended to serve as a Project EIR (*CEQA Guidelines*, Section 15161), and it is anticipated that no further environmental review under CEQA would be necessary to implement any aspect of the project.

In conformance with CEQA, California *Public Resources Code*, Section 21000 *et. seq.*, this EIR provides objective information addressing the environmental consequences of the proposed project and possible means of reducing or avoiding its potentially significant impacts.

The guidelines for implementing CEQA help define the role of this EIR:

- **15121 (a) Information Document.** An EIR is an informational document which will inform public agency decision-makers and the public generally of the significant environmental effect(s) of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project. The public agency shall consider the information in the EIR along with other information which may be presented to the agency.

- **15151 Standards for Adequacy of an EIR.** An EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure.

Plans for development of the project have proceeded to a degree sufficient to permit environmental analysis in conformance with CEQA. Accordingly, this EIR presents reasonable assumptions (as described in Chapter III, Project Description) for the University to undertake the proposed project and describes the attendant environmental impacts. The analyses, where necessary, are based on conservative assumptions that tend to overstate project impacts.

The *CEQA Guidelines*, Section 15382, define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project. . ." Therefore, in identifying the significant impacts of the project, this EIR concentrates on its substantial physical effects and upon mitigation measures to avoid, reduce, or otherwise alleviate those effects. Although CEQA does not require that the EIR discuss, or that the Lead Agency impose, mitigation measures for non-physical impacts, or physical impacts that are less than significant, this EIR also evaluates and identifies such measures for some non-physical and less-than-significant impacts.

C. RANGE OF ALTERNATIVES

The California Environmental Quality Act requires that a reasonable range of alternatives be discussed in an EIR. This EIR identifies and analyzes such a reasonable range of alternatives; discusses the environmental effects of each alternative; and compares the environmental effects of each alternative with the environmental setting, with the effects of each other alternative, and with the project. The determinations of the University concerning the feasibility, acceptance, or rejection of each and all alternatives considered in this EIR will be addressed and resolved in the Trustees findings, as required by CEQA. The alternatives consist of the following:

- Alternative 1: No Project Alternative;
- Alternative 2: No Development in Northwest Acquisition Area Alternative; and
- Alternative 3: No Development in Northwest Acquisition Area, and Increase Housing Density on Main Campus Alternative.

D. USE OF THE DRAFT EIR

The EIR provides the environmental information and evaluation necessary for development and implementation of the project. The EIR provides the CEQA compliance documentation upon which the Trustees consideration of, and action on, all approvals shall be based. These include without limitation all those approvals set forth in this EIR, as well as any additional approvals necessary. Likewise, this EIR provides the environmental information and evaluation needed by responsible agencies acting on permits relative to the project and project site.

E. PUBLIC PARTICIPATION

Public participation in the planning and environmental review processes is strongly encouraged. Opportunities will be provided for the public to present comments and concerns regarding the CEQA process through a CEQA public review and comment period as required by CEQA. Written public comments may be submitted to the University at any time during the public review and comment period. Written and spoken comments may be presented at public meetings, if any are held.

F. ORGANIZATION OF THE DRAFT EIR

This environmental impact report is organized so as to allow the reader to quickly and logically review a summary of the analysis, review the recommended mitigation measures, and identify the residual environmental impacts after mitigation, if any. Those readers who wish to read the Draft EIR in greater detail are directed to the main body of the document. This Draft EIR has been organized into the following chapters.

Chapter I, Introduction: This chapter provides an overview that describes the intended use and organization of this EIR, and sets forth some of the assumptions critical to the environmental analysis.

Chapter II, Summary: The Summary summarizes the EIR by providing an overview of the project, the environmental impacts that would result from the project, the mitigation measures identified to reduce or eliminate these impacts, and the alternatives to the project.

Chapter III, Project Description: This chapter discusses the project objectives, provides background data on the proposed project location, describes the operational and physical characteristics of the proposed project, and identifies required project approvals.

Chapter IV, Environmental Setting, Impacts, and Mitigation: This chapter describes the existing setting, discusses the environmental impacts of the project, describes cumulative impacts through 2015 (when applicable), and identifies mitigation measures for the environmental impacts examined in this EIR. The issue areas addressed in the EIR are land use and planning; geology, soils and seismicity; hydrology and water quality; traffic, circulation and parking; air quality; noise; visual quality; biological resources; hazardous materials; public services; utilities and service systems; energy; and cultural resources. Within each impact section contained in Chapter IV of this EIR, potential impacts are identified in bold type. Following the discussion of each stated impact, feasible measures that could avoid, alleviate or lessen the severity of identified impacts are identified. If mitigation measures could in themselves generate significant impacts, these impacts are also identified. Unless otherwise indicated, mitigation measures are assumed for purposes of analysis to be included as part of the proposed project.

Chapter V, Alternatives: This chapter presents a reasonable range of alternatives to the proposed project, provides discussion of the environmental impacts associated with each alternative, reviews alternative sites considered but rejected as infeasible, and compares the relative impacts of each alternative to those of the project and the other alternatives.

Chapter VI, Impact Overview: This chapter presents discussions of growth inducement, and summarizes discussions of cumulative impacts, significant unavoidable impacts, and effects found not to be significant.

Chapter VII, Report Preparation: This chapter lists report preparers and identifies persons and organizations consulted during report preparation.

CHAPTER II
SUMMARY

A. PROJECT OVERVIEW

The proposed project consists of a revision to the existing Sonoma State University Master Plan. Like the existing approved Master Plan, the proposed Master Plan revision would maintain a maximum student population of 10,000 full-time equivalents (FTE). The Master Plan revision would not involve an increase in the rate of student enrollment above that anticipated by the existing approved Master Plan. The Master Plan identifies the facilities and actions required to accommodate the University's development from the existing student capacity of approximately 5,400 FTE to the ultimate student capacity of 10,000 FTE. In addition to new facilities proposed on its main campus, this revision proposes new development on 89.3 acres of property north of the main campus across Copeland Creek, including the proposed Center for the Musical Arts (to be located on 54.7 acres of existing campus property) and university housing (to be located on 34.6 acres on property to be acquired by the University). This project level approval is for the total campus Master Plan, including the Schematic Project Plan approval for construction of the Center for the Musical Arts. In concert with these proposed changes to the physical Master Plan, associated revisions to the pedestrian/bicycle circulation, parking, vehicular circulation and open space components are incorporated.

B. SUMMARY OF PROJECT IMPACTS, MITIGATION MEASURES, AND LEVELS OF IMPACT AFTER MITIGATION

Table II-1 presents the summary impact and mitigation measures identified in the EIR. A detailed discussion of the impacts and mitigation measures appear in Chapter IV. Levels of significance are determined by comparing the impact to the thresholds of significance described in Chapter IV. The Master Plan revision, if implemented, could result in significant adverse environmental impacts. Mitigation measures proposed as part of the project, as well as measures identified by this EIR, would avoid or reduce most of the impacts to a less-than-significant level. As listed below, certain impacts in the categories of utilities (Impact K.4), traffic (Impacts D.1, D.3 and D.4), air quality (Impacts E2 and E4) and noise (Impact F.5) would remain significant after mitigation. Since the proposed Master Plan revision would maintain a maximum student population of 10,000 full-time equivalents (FTE), and would not involve an increase in the rate of student enrollment above that anticipated by the existing approved Master Plan, similar significant impacts would occur with these utilities, air quality, traffic peak-hour level of service and potential safety impacts, and noise impacts, either with or without the project (see Alternatives, Chapter V, for a detailed comparison of environmental impacts of the existing approved Master Plan to the proposed Master Plan revision).

It should be noted that, since the proposed Master Plan proposes more on-campus housing than the existing approved Master Plan, it would generate less off-site weekday traffic volumes compared to the existing approved Master Plan, particularly during a.m. and p.m. peak hours, during which the majority of additional students housed on-site would not be making the "home to school" and "school to home" trips. Therefore, the significant impacts to weekday peak-hour levels of service at the study intersections (particularly along East Cotati Avenue) would be less than that which would occur under the existing approved Master Plan.

As discussed in Chapter IV.D, Traffic, Circulation and Parking, the primary traffic impacts associated with special events would be limited to the campus entrance intersections, would be infrequent, of limited duration and would occur during off-peak traffic periods. It should be noted that many of the mitigation measures for the local roadway system to improve levels of service that are identified in this EIR are also identified as recommended improvements in the Draft City of Rohnert Park General Plan Update.

C. MITIGATION RESPONSIBILITY

CEQA provides that each public agency shall mitigate or avoid the significant effects on the environment of projects it approves or carries out whenever it is feasible to do so (Public Resources Code Section 21002.1[b]). In mitigating or avoiding a significant effect of a project on the environment, a public agency may exercise only those express or implied powers provided by law other than under CEQA (PRC Section 21004). The California State University (CSU) has specific powers to mitigate effects that occur within its jurisdiction, namely within the campus, but limited powers for those that occur outside of the project site. Because of these limitations, it is not feasible for the CSU to mitigate off-site impacts, as is further discussed below. In addition, the State of California has a clear constitutional and statutory assignment of responsibilities for various public works and methods for allocating revenues to pay for these facilities.

Local agencies frequently impose fees for the mitigation of project specific and cumulative impacts to finance the fair share costs of infrastructure improvements needed to accommodate growth. Such imposition of fees can occur only for those entities that are within the jurisdiction of that local agency. The CSU as a state agency is not within the jurisdiction of local agencies. The California Constitution, Article 9, Section 6, prohibits the University, as a component of the State's public school system, from being placed under the jurisdiction of a local government or other non-educational agency. Similarly, the courts have held that the CSU is exempt from property taxes generally and from most special assessments, such as impact mitigation fees. However, the Legislature in Government Code Section 5499 et. seq. has allowed local entities to negotiate with the State for the imposition of "capital facilities fees" for the connection of specified utility services. Therefore, insofar as CSU agrees with a local entity for a capital facilities fee, that amount may be assessed by CSU. Utilities covered under Section 54999 include water, light, heat, communications, power, garbage services, flood control, drainage, sanitation and sewage collection, treatment and disposal. With regard to the project site, the CSU would negotiate with the local agencies as established by statute.

In order for the State, including CSU, to expend State money, the State must receive in return a benefit that has some relationship to the amount spent. The California Constitution in Article XVI, Section 6, forbids the State from making a gift of public funds. Although the courts have been liberal in finding a public purpose for expenditures which have been made, there is a limit to that liberality. If there is no legal duty to pay and the State then makes a payment, the issue of whether a gift of public funds arises. Beyond the constitutional proscription is a statutory issue as to whether money has been appropriated in a State budget for making a payment.

The CSU is funded to provide public higher education. Its mission is set forth in Education Code Section 66608. Its revenue is basically from the State general fund appropriation (including appropriation of student fee income). Unlike cities and counties it does not directly receive income from sale, transient occupancy, real estate, or gasoline taxes.

The provision of regional and local roads is not within the jurisdiction of the CSU. Funding and construction of city and county roads is not a responsibility of the CSU as this lies within the cities and counties in which they are located. Therefore, transportation-related mitigation measures suggested within this EIR are the responsibility of those local jurisidictions.

In summary, CSU is only subject to capital fees as defined under Government Code Section 54999.1 and the manner in which its contributions are determined are provided in that code. These sections do not include contributions for transportation, schools (K-12), police, fire, or similar fee and assessment contributions exacted from private developers. Correspondingly, the CSU does exact financial contributions from local governments or developers for construction of University facilities.

While Sonoma State University cannot, for the reasons described above, commit project funds for improvements to local streets and roadways, the University will work cooperatively with the impacted agencies to identify and pursue other potential funding sources of funds for such improvements.

D. ALTERNATIVES

The California Environmental Quality Act (CEQA) requires that a reasonable range of alternatives be discussed in an EIR. This EIR identifies and analyzes such a reasonable range of alternatives; discusses the environmental effects of each alternative; and compares the environmental effects of each alternative with the environmental setting, with the effects of each other alternative, and with the project. The determinations of the University concerning the feasibility, acceptance, or rejection of each and all alternatives considered in this EIR will be addressed and resolved in the Trustees findings, as required by CEQA. The alternatives consist of the following:

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TABLE II-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
Land Use and Planning		
A.1: The project would result in the conversion of existing agricultural land to non-agricultural use. (Less than Significant)	None Required.	
A.2: The project would increase the residential population on the project site and the local community. (Less than Significant)	None Required.	
A.3: The project could be incompatible with existing or approved development in the project vicinity. (Less than Significant)	None Required.	
Geology, Soils and Seismicity		
B.1: In the event of a major earthquake in the region, seismic groundshaking could potentially injure persons at the project site due to resulting structural damage, structural collapse or falling of the existing facility structures. Groundshaking could potentially expose persons and property to seismic-related hazards, including localized liquefaction, related ground failure and seismically-induced settlement. (Significant)	The proposed construction under the project shall comply with site-specific recommendations and standards for seismic design as provided by the project geotechnical engineer; the seismic design requirements of the California Code of Regulations, Title 24; and as recommended by the CSU Seismic Review Board.	Less than Significant
B.2: Proposed construction under the project could be subjected to the geologic hazards related to expansive soils, differential settlement and corrosivity. (Significant)	The proposed construction under the project shall comply with site-specific recommendations and standards for soils and foundation engineering as provided by the project geotechnical engineer; the California Code of Regulations, Title 24; and as recommended by the CSU Seismic Review Board.	Less than Significant

TABLE II-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

ENVIRONMENTAL IMPACT	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
Hydrology and Water Quality		
C.1: The proposed project would increase stormflows to Copeland Creek, increasing the potential for flooding of the natural channel portion of Copeland Creek during a 100-year event. (Significant)	a: The project shall include a suitable drainage infrastructure system in the northern acquisition area, in conformance with the Sonoma County Water Agency drainage design criteria, that will discharge stormwater runoff from this area by gravity to Copeland Creek. b: The project drainage system shall include an on-site detention system, in conformance with the Sonoma County Water Agency drainage design criteria, that will limit the 100-year peak flow into Copeland Creek.	Less than Significant
C.2: The project would introduce new development, including proposed University housing, within a designated 100-year flood zone. (Significant)	The northern acquisition area, in particular the western portion proposed for University housing, shall be designed with grades and landforms sufficient to prevent stormwater breakout from a 100-year flood flow.	Less than Significant
C.3: The project would increase the load on the existing drainage systems on the main campus. (Significant)	On-site storm drain infrastructure for the main campus shall be upgraded per the recommendations specified in the University's 1995 *Utility System Master Plan*.	Less than Significant
C.4: Operation of the project could result in increased nonpoint source pollution entering the stormwater runoff to Copeland Creek and the regional stormwater drainage system, creating the potential for degradation of water quality. (Significant)	a: New drainage structures, curb inlets and drop inlets shall be equipped with filters that have the ability to separate out oil and grease from storm water runoff prior to its entering the drainage system. Periodic maintenance of these filters would be incorporated into the maintenance routine normally associated with the University facilities. b: The University would expand its pesticide and fertilizer management plans and practices to include the proposed landscaped areas.	Less than Significant

TABLE II-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
	c: To help minimize the amount of runoff containing nonpoint source pollutants, project roadways and parking areas should be frequently cleaned using street sweeping equipment and the collected material properly disposed.	
C.5: Construction of the proposed project buildings and parking areas could result in increased erosion and sedimentation, with subsequent impacts to water quality during construction. Additionally, release of fuels or other hazardous materials associated with construction equipment could reduce water quality. (Significant)	The University would develop and implement a Stormwater Pollution Prevention Plan (SWPPP), as required by the State Water Resources Control Board, for areas to be disturbed by construction activities of five acres or more.	Less than Significant
C.6: The proposed project would contribute to cumulative changes in runoff characteristics and water quality. (Significant)	Implement Mitigation Measure C.1 through C.5.	Less than Significant
<u>Transportation, Parking and Circulation</u>		
D.1: Project-generated vehicle trips would contribute to delays at study intersections during the a.m. and p.m. peak hours under Cumulative (Future With Project) conditions. (Significant)	a: Prior to project buildout, at the intersection of Rohnert Park Expressway/Snyder Lane, add an additional through lane in the northbound and southbound directions, and change the existing north-south split-phase signal operation to protected left-turn phasing.	Significant
	b: Prior to project buildout, at the intersection of Rohnert Park Expressway/Future University North Entrance, install either a traffic signal or a single-lane modern roundabout.	

TABLE II-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
	c: Prior to project buildout, at the intersection of Rohnert Park Expressway/Petaluma Hill Road, add an additional through lane in both the northbound and southbound directions on Petaluma Hill Road, install separate right and left turn lanes on the eastbound approach of Rohnert Park Expressway, and change phasing to include a right turn overlap between the northbound left turn and eastbound right turn. d: Prior to project buildout, at the intersection of East Cotati Avenue/Petaluma Hill Road, install an additional through lane in the northbound and southbound directions on Petaluma Hill Road, and install separate right and left turn lanes on the eastbound approach of East Cotati Avenue. e: Prior to project buildout, at the intersection of East Cotati Avenue/Sequoia Way, install either a traffic signal or single-lane modern roundabout.	
D.2: The project would create a demand for additional on-campus parking facilities. (Less than Significant)	None required.	
D.3: The project could exacerbate existing safety concerns related to off-site parked vehicles on Petaluma Hill Road and East Cotati Avenue adjacent to the campus. (Significant)	a: Prohibit parking on Petaluma Hill Road. There is sufficient capacity on campus to accommodate the parking demand. b: Either prohibit parking on East Cotati Avenue or provide frontage improvements that buffer the parking from pedestrian and bicycle activity while still providing appropriate traffic operation along the road.	Significant

TABLE II-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

ENVIRONMENTAL IMPACT	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
D.4: Special events at the proposed Center for the Musical Arts would generate surges of traffic prior to and/or following the events, resulting in traffic delays at one or more campus entrance intersections before and/or following the event. For events of between 400 and 1,300 attendees, an average delay of five to 15 minutes would occur for vehicles exiting the campus at the intersection of Rohnert Park Expressway/proposed University north entrance following the event. For the occasional events of between 1,300 and 3,000 attendees, an average delay of ten to 20 minutes would occur for vehicles exiting the campus at the intersection of Rohnert Park Expressway/proposed University north entrance following the event. For the occasional summer festivals of between 3,000 and 10,000 attendees, instances of delays over 20 minutes could occur for vehicles exiting the campus at the intersections of Rohnert Park Expressway/proposed University north entrance, East Cotati Avenue/Sequoia Way, and East Cotati Avenue/Cypress Drive. (Significant)	a: Events proposed on weekdays at the Center for the Musical Arts that are projected to draw more than 400 attendees should start no earlier than 7:00 p.m. b: For events at the Center for the Musical Arts that are projected to draw between 400 to 1,300 attendees, provide adequate traffic control personnel at the north entrance during the conclusion of the event to facilitate demand-responsive traffic control. c: For events at the Center for the Musical Arts that are projected to draw between 1,300 to 3,000 attendees, provide adequate traffic control personnel at the north entrance prior to the start of the event and following conclusion of the event to facilitate demand-responsive traffic control. d: For events at the Center for the Musical Arts that are projected to draw more than 1,300 attendees, if there is a median present on Rohnert Park Expressway at the proposed secondary driveway west of the primary north entrance, it should be constructed with a removable barrier to allow for left turns with traffic control personnel assistance. e: For events at the Center for the Musical Arts that are projected to draw more than 3,000 attendees, provide adequate traffic control personnel along Rohnert Park Expressway and along East Cotati Avenue before, during and after events to facilitate demand-responsive traffic control and the movement of traffic and access to parking.	Significant

TABLE II-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

ENVIRONMENTAL IMPACT	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
D.5: Parking demand for special events of greater than 7,400 attendees at the proposed Center for the Musical Arts may exceed the University's interim on-site parking supply (until the planned University parking Lot F expansion is completed), thereby creating an off-site parking demand, and causing potential traffic safety impacts in the surrounding area. (Significant)	a: For special events at the proposed Center for the Musical Arts of greater than 3,500 attendees, provide on-site shuttle service between parking Lots "F" and "J" and the Center. b: For special events at the proposed Center for the Musical Arts of greater than 7,400 attendees that occur prior to the ultimate "F" lot expansion, provide off-site parking locations and shuttle service between these off-site locations and the Center for the Musical Arts. c: Provide proper advance notification to alert non-event related University traffic of potential alternate on-campus parking lots to use during the times the special events at the Center for the Musical Arts are proposed. d: Prohibit parking on Rohnert Park Expressway along the campus frontage.	Less than Significant
D.6: Construction activity associated with the proposed project would temporarily increase traffic volumes on roadways in the project vicinity. (Less than Significant)	None required.	
D.7: The project would accommodate an increase in vehicular traffic, bicyclists and pedestrians within the campus roadways over existing conditions, which would increase the potential for conflicts between these travel modes. (Significant)	a: Install pedestrian crossing improvements at locations on Redwood Circle where heavy pedestrian volumes would occur (e.g., along Redwood Circle adjacent to the student housing complexes, at the northern side of the "J" parking lot, the Redwood Circle/Sequoia Way intersection, and the northern periphery of the large "F" parking lots) in order to enhance pedestrian safety.	Less than Significant

TABLE II-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
	b: Construct pedestrian paths within the campus with an adequate width to accommodate the high pedestrian volumes present between classes, particularly in areas adjacent to Darwin, Stevenson, and Salazar Halls.	
	c: Monitor pedestrian and bicycle interaction in high volume areas as enrollment increases, and if necessary, prohibit bicyclists from riding in heavy traffic areas within the campus.	
	d: Install a single-lane roundabout at the intersection of Redwood Circle/Sequoia Way to maximize pedestrian and vehicular safety at this location.	
D.8: The project would generate an increase in demand for transit service over existing conditions. (Less than Significant)	None required.	
Air Quality		
E.1: Construction activities under the project would generate substantial amounts of dust, which would result in potential health and visibility impacts in the immediate vicinity of construction sites. (Significant)	a: The University should determine whether asbestos was used in the construction of the Ruben Salazar Building and, if applicable, shall comply with the requirements of BAAQMD Regulation 11, Rule 2 in connection with renovation of that building and should demonstrate compliance in the form of documentation of its consultation with the BAAQMD.	Less than Significant
	b: The University should require construction contractors to implement a dust abatement program.	
E.2: Development under the project would increase criteria air pollutant emissions associated with the University relative to existing conditions. (Significant)	a: The University should select the mixed use or higher-density housing scenarios in the northwest acquisition area.	Significant

TABLE II-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

ENVIRONMENTAL IMPACT	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
	b: The University should offset expected increases in emissions from vehicular traffic by increasing the energy efficiency of future buildings. The following measures that are proposed as part of the project or that are identified in this report would reduce emissions associated with energy consumption under the project: 1. All new buildings shall be developed in accordance with the CSU Design Standards (Proposed as Part of the Project). These standards are intended to achieve greater energy-efficiency than required under Title 24 (i.e., California Energy Code). As such, the CSU Design Standards would reduce the possibility of wasteful energy use with respect to building heating, cooling, and lighting. 2. To avoid unnecessary consumption of energy during construction phases of individual building projects, the University should direct construction contractors to minimize idling of construction equipment when not in use (unless turning the equipment off would result in damage to the equipment) (Identified in This Report). 3. The University should review and revise its policies regarding the purchase of electricity to maximize the extent to which electricity consumed at the University is derived from renewable energy resources. 4. The University should use high-albedo (reflective) roofing and road surface materials where feasible for such projects as new buildings, new parking lots and roadways, and resurfaced roadways. This measure would implement one of the control measures identified in the 1997 Clean Air Plan.	

TABLE II-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

ENVIRONMENTAL IMPACT	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
	c: The University should implement the following measures to facilitate transit use: 1. Coordinate with the Sonoma County Transit (SCT) to provide for a potential public transit stop, including a transit shelter along the north entrance, adjacent to the proposed Center for the Musical Arts, and potential additional queuing space at the existing transit stop at the southern campus entrance 2. Encourage the continuance of SCT's free transit ride program to the University's students, faculty and staff. 3. Additional transit use could also be realized upon establishment of light rail service on the Northwestern Pacific railroad. Should the proposed train service begin operation, it is recommended that a University-sponsored shuttle service be established between campus and the nearest light rail station, which would be on East Cotati Avenue. It should be noted that the City of Cotati is currently developing a Specific Plan for the area surrounding the future rail station on East Cotati Avenue.	
E.3: Motor vehicle emissions generated by project traffic would increase carbon monoxide concentrations at intersections in the project vicinity. (Less than Significant)	None Required.	
E.4: The project would contribute to cumulative increases in regional emissions of criteria air pollutants. (Significant)	Implement Mitigation Measures E.2a-c.	Significant

TABLE II-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
Noise		
F.1: Development under the project would result in temporary and localized noise impacts during individual construction projects. (Significant)	a: Construction activities should be limited to a schedule that minimizes disruption as much as possible to noise-sensitive uses on the University and in the vicinity. b: To reduce daytime noise impacts due to construction, the University should require that construction contractors muffle or otherwise control noise from construction equipment through implementation of the following measures: 1. Equipment and trucks used for construction should utilize the best available noise control techniques (*e.g.*, improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible and necessary). 2. Impact tools (*e.g.*, jack hammers, pavement breakers, and rock drills) used for construction should be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust should be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves should be used where feasible, and this could achieve a reduction of 5 dBA. Quieter procedures should be used such as drilling rather than impact equipment whenever feasible.	Less than Significant

TABLE II-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
	3. Stationary noise sources should be located as far from sensitive receptors as possible. If they must be located near sensitive receptors, they should be muffled to the extent feasible and enclosed within temporary sheds.	
	c: The University should require that construction contractors schedule loading and unloading so as to minimize disruptions to on-campus activities, where feasible.	
F.2: Growth and development under the project would result in a long-term increase in noise levels. (Significant)	a: The University should ensure that mechanical equipment noise associated with new buildings would not conflict with adjacent uses.	Less than Significant
	b: The University should orient sound amplification systems at the new soccer stadium to the north.	
	c: The University should not allow special events at the soccer stadium to extend past 10:00 p.m. on weekdays (Sunday through Thursday) or 11:00 p.m. on Friday or Saturday if such events prove to be clearly audible at the nearest noise-sensitive uses.	
F.3: The project would introduce new noise-sensitive uses into an area where noise levels exceed 60 DNL. (Significant)	The University should extend Title 24 Noise Insulation Standards to all new residential development under the project.	Less than Significant
F.4: Outdoor sound amplification systems at the Center for the Musical Arts could result in nuisance-type impacts if residential uses were to be developed north of Rohnert Park. (Significant)	The University should not allow special events at the Center for the Musical Arts to extend past 10:00 p.m. on weekdays (Sunday through Thursday) or 11:00 p.m. on Friday or Saturday if such events prove to be clearly audible at the nearest noise-sensitive uses.	Less than Significant
F.5: The increase in traffic due to University and area-wide growth and development would result in cumulative increases in roadside noise levels. (Significant)	a: Implement Mitigation Measure E.2c in Section IV.E., Air Quality, of this EIR.	Significant

TABLE II-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

ENVIRONMENTAL IMPACT	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
	b: The University should encourage the City of Rohnert Park to address future cumulative noise levels along Rohnert Park Expressway during annexation and subsequent development.	
Visual Quality		
G.1: The project would alter the existing visual character of the site and result in a change to the scenic vistas of which the proposed project site is a part. (Less than Significant)	None required	
G.2: The proposed project would result in an increase in the production of light and glare at the project site. (Less than Significant)	None required.	
Biological Resources		
H.1: Development of the project could result in impacts to potentially jurisdictional wetlands/waters of the U.S. and streambeds under the jurisdiction of the Corps of Engineers and the California Department of Fish and Game. (Significant)	a: A verified wetland delineation for the portion of the project site north of Copeland Creek will be completed and made available prior to any site planning and construction of facilities within or adjacent to potential jurisdictional wetlands, which includes seasonal ponding areas, permanent ponded areas, drainage ditches, and relict streams and creeks. b: Facilities will be planned and sited to avoid wetland and waters of the U.S. to the extent possible. c: Where impacts to wetlands and waters of the U.S. cannot be avoided, such losses will be compensated for, on-site if feasible, according to ratios established by the U.S. Army Corps of Engineers for the project.	Less than Significant

TABLE II-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
H.2: Development of facilities under the project could result in the loss of natural communities, such as riparian forest and wetland/marsh habitat. (Significant)	a: Avoid any temporary or permanent impact to the wetland/marsh habitat, and, as much as possible, avoid impacts to Copeland Creek. Where bridges are proposed to be constructed across Copeland Creek, minimize the extent of construction impacts within the Copeland Creek protection area. b: All proposed utilities crossing Copeland Creek shall either be supported by bridge structures or constructed using directional bore methods to avoid disturbance of Copeland Creek.	Less than Significant
H.3: Development of project facilities could adversely impact habitat for sensitive animal species. (Significant)	Carry out preconstruction surveys in areas of suitable habitat to ascertain the presence or absence of sensitive species, and either relocate them out of the construction zone (amphibians, reptiles and insects) or delay construction until nesting activity is completed (i.e., construct during the period July through February).	Less than Significant
H.4: Construction within the project area may reduce potential upland refugia for adult and breeding pools for tadpoles of foothill yellow-legged frog (FHYLF), a state and federal species of concern. (Less than Significant)	a: To reduce impacts to the FHYLF, complete avoidance of the freshwater marsh/meadow shall be implemented. (Identified By This Report) b: Construction activity within the Copeland Creek Protection Area shall be minimized, and will be carried out to minimize potential impact to the FHYLF. If avoidance of impact to Copeland Creek is infeasible, the following mitigation guidelines prior to and during construction will reduce impacts to both species.	

TABLE II-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

ENVIRONMENTAL IMPACT	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
	1. Within the Copeland Creek Protection Area, the construction boundary will be fenced with silt fencing to prohibit the movement of animals into the construction area and control siltation and disturbance to wetland habitat. Following installation of fencing, its proper location will be verified by a biologist. The monitor will ensure that at no time during construction is vegetation removed outside of the fenced area. If variance in construction requires removal of vegetation outside the fence, the monitor will determine if additional mitigation is warranted. The permitting agencies will also be contacted in the event of any significant deviation from permitting conditions. 2. Pre-construction surveys within the construction zone will be conducted by a qualified biologist. If no animals are detected during these surveys then construction related activities will proceed. If adult special-status animals are found within the construction disturbance zone they will immediately be moved passively, or captured and moved, to suitable upstream sites by the project biologist. 3. All construction adjacent to wetland vegetation will be regularly monitored to ensure that impacts do not exceed those included in the project description. Work within 100 feet of wetlands during ponding will be monitored by qualified staff who will document pre-project and post-project conditions to ensure adequate restoration of disturbed aquatic habitat.	

TABLE II-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

ENVIRONMENTAL IMPACT	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
	4. During construction, a biological monitor will be on site at all times when construction takes place in aquatic habitat. Any activity within ordinary high water will be photo-documented by the site monitor. In addition, a biologist with the appropriate permits to relocate animals will be available for consultation as needed. The monitor and biologist will provide an environmental protection workshop for workers prior to construction activities. 5. Vehicles will be confined to existing roads and areas that do not provide upland aestivation habitat, when possible.	
H.5: The proposed project may result in the removal of, or root damage to significant trees (i.e., trees greater than 12-inch diameter at breast height). (Significant)	The University will avoid all significant trees within the proposed project area to the extent feasible. If infeasible, placing new buildings or sidewalks outside the drip-line and away from tree roots would reduce or avoid damage to significant trees within the proposed project area. (Identified By This Report) The University will adhere to the following limitations for construction within and around significant trees (i.e., trees greater than 12-inch diameter at breast height): 1. For all development that will encroach into the feeder root zone (drip-line) or a twelve foot radius from the trunk whichever is greater of any significant tree, special construction techniques to allow roots to breathe and obtain water shall be required: use hand equipment for trenching, protect natural resources with highly visible protective fencing, allow only one pass through an area with protected or heritage trees.	Less than Significant

TABLE II-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
	2. The existing ground surface within the drip-line of any significant tree will not be cut, filled or compacted. Excavation adjacent to such trees, when permitted, will be in such a manner that will cause only minimal root damage. 3. There shall be no parking or storing vehicles, equipment, machinery or construction materials, construction trailers, mechanical excavation, construction of buildings, dumping of oils or chemicals within the drip-lines of any significant trees. 4. Prior to the start of any clearing, stockpiling, trenching, grading, compaction, paving or change in ground elevation on a site with significant trees, install fencing at the drip-line. Tree removal shall not occur during March through June without a bird survey to determine that the tree is unused during the breeding season by avian species that are protected under California Fish and Game Codes 3503, 3503.5 and 3511.	
<u>**Hazardous Materials**</u>		
I.1: Disturbance of any remaining contaminated areas during building demolition, site grading and construction on the undeveloped University property north of the campus could inadvertently expose construction workers or the environment to residual hazardous waste or health and safety concerns. (Significant)	As identified in the Phase II investigation, prior to construction, remove petroleum-impacted soils on APN 047-131-08, APN 047-131-20 and APN 047-131-23.	Less than Significant

TABLE II-1 (Continued) SUMMARY OF IMPACTS AND MITIGATION MEASURES

ENVIRONMENTAL IMPACT	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
I.2: Under the Master Plan revision, development and expansion of on-campus facilities will necessitate an increase in the quantities of hazardous chemicals used, stored and disposed by University facility operations. Additionally, the student population proposed under the revision will increase the number of persons potentially exposed to hazards related to the inadvertent release, upset, or improper use of hazardous materials. (Less than Significant)	As recommended in the Phase II investigation work, the "dug" groundwater well on APN 047-131-20 should be investigated further and abandoned.	Less than Significant
<u>Public Services</u>		
J.1: The project would increase demand for fire protection services. (Less than Significant)	None required.	
J.2: The project would increase demand for police protection services. (Less than Significant)	None required.	
J.3: During construction, the project would generate construction and demolition debris. (Less than Significant)	None required.	
J.4: Operation of the proposed project would increase the amount of non-hazardous solid waste generated at the project site. (Less than Significant)	None required.	
J.5: The proposed project could increase demand for public open space and recreational facilities in the local area. (Less than Significant)	None required.	
J.6: The project could add to local public elementary and secondary school enrollment. (Less than Significant)	None required.	

TABLE II-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

ENVIRONMENTAL IMPACT	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
Utilities and Service Systems		
K.1: The proposed project would increase potable water demands that would exceed the University's existing potable water storage capacity. (Significant)	Add additional potable water storage capacity of at least 305,800 gallons.	Less than Significant
K.2: The proposed project would increase groundwater extraction rates at the project site. (Less than Significant)	None required.	
K.3: The proposed project would increase non-potable water demands, and require additional on-site potable and non-potable water infrastructure. (Less than Significant)	None required.	
K.4: With the proposed project, the University would increase its exceedance of its current wastewater treatment allocation, and could exceed its future wastewater treatment allocation designated by the subregional wastewater treatment system, unless an increase in treatment capacity is received. (Significant)	a: The University shall arrange with the City of Rohnert Park to be included in its application for its share of the increase in treatment capacity provided by the Brown Pond Expansion project and Geysers Pipeline projects. b. The University shall arrange with other members of the subregional system to temporarily borrow capacity equivalent to the projected Average Dry Weather Flows in excess of its designated allocation until such time as an increase in allocation directly to the University becomes available.	Significant
K.5: The proposed project would increase wastewater flows to on- and off-site wastewater collection infrastructure, and require additional on-site wastewater infrastructure. (Less than Significant)	None Required.	

TABLE II-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

ENVIRONMENTAL IMPACT	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
Energy		
L.1: Development under the project would increase energy consumption, most of which would be derived from non-renewable resources. (Less than Significant)	None Required.	
L.2: Development under the project would increase peak demands on the electricity and natural gas infrastructure. (Significant)	The University shall coordinate with PG&E for all required infrastructure improvements.	Less than Significant
Cultural Resources		
M.1: Project construction could affect previously undiscovered historic or archaeological resources. (Significant)	a: For any project construction on the project site either 1) within 300 feet of Copeland Creek, or 2) on the site of the four buildings in the northern acquisition area or the building on the main campus indicated in historical maps: A qualified archaeologist will be on-site during earthwork activities (i.e., grading, excavating and trenching). In the event that any undiscovered historic or prehistoric materials are encountered during monitoring, the archaeologist will be authorized to direct construction to other areas, away from the find, until an assessment of the situation is made. If it is determined to be significant by the qualified archaeologist, then representatives of the University and the qualified archaeologist shall meet to determine the appropriate course of action.	Less than Significant

TABLE II-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

ENVIRONMENTAL IMPACT	MITIGATION MEASURES	LEVEL OF SIGNIFICANCE AFTER MITIGATION
	b: For any project construction outside of the area identified in Mitigation Measure M.1a: During construction, should any undiscovered evidence of historic or prehistoric materials be encountered, construction in the vicinity of the find be halted, and the University shall consult a qualified archaeologist to assess the significance of the find. If it is determined to be significant by the qualified archaeologist, then representatives of the University and the qualified archaeologist shall meet to determine the appropriate course of action. c: For any project construction on project site: If human remains are encountered during project construction, the Sonoma County Coroner will be notified immediately. The coroner will determine if the remains are those of a Native American, and if they are, will notify the Native American Heritage Commission. The Native American Heritage Commission will make a determination regarding the individual's "most likely descendant" who will then make recommendations for the disposal of the remains.	

CHAPTER III
PROJECT DESCRIPTION

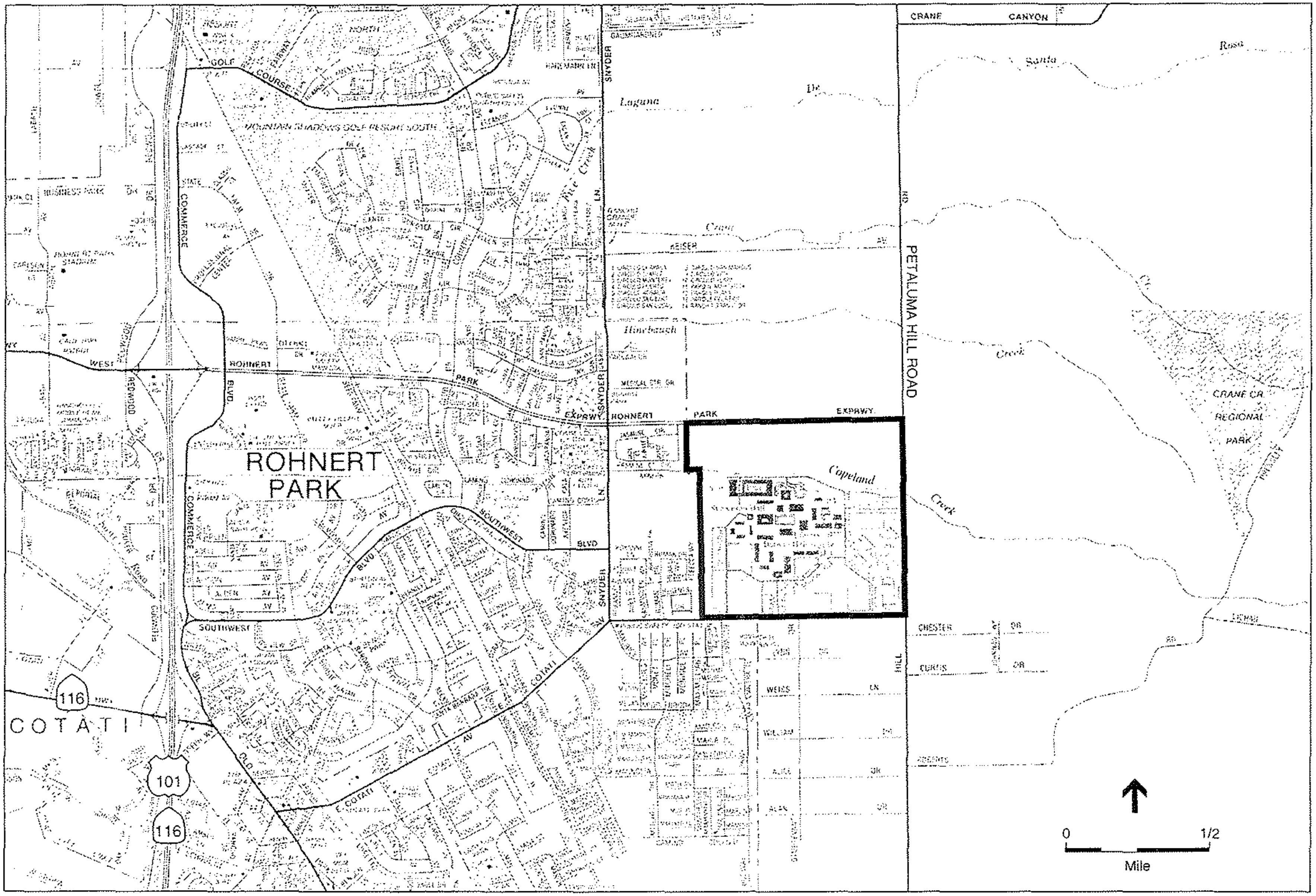
A. PROJECT OVERVIEW

The proposed project consists of a revision to the existing Sonoma State University Master Plan. Like the existing approved Master Plan, the proposed Master Plan revision would maintain a maximum student population of 10,000 full-time equivalents (FTE). The Master Plan revision would not involve an increase in the rate of student enrollment above that anticipated by the existing approved Master Plan. The Master Plan identifies the facilities and actions required to accommodate the University's development from the existing student capacity of approximately 5,400 FTE to the ultimate student capacity of 10,000 FTE. In addition to new facilities proposed on its main campus, this revision proposes new development on 89.3 acres of property north of the main campus across Copeland Creek, including the proposed Center for the Musical Arts (to be located on 54.7 acres of existing campus property) and university housing (to be located on 34.6 acres on property to be acquired by the University). This project level approval is for the total campus Master Plan, including the Schematic Project Plan approval for construction of the Center for the Musical Arts.

In concert with these proposed changes to the physical Master Plan, associated revisions to the pedestrian/bicycle circulation, parking, vehicular circulation, and open space components are incorporated.

B. PROJECT SITE LOCATION AND SITE DESCRIPTION

Sonoma State University is located immediately east and just outside the city limits of the City of Rohnert Park in Sonoma County (see Figure III-1). The approximate 270-acre campus is located approximately seven miles south of the City of Santa Rosa and approximately ten miles north of the City of Petaluma. The project site (consisting of the existing University property and an adjacent future University housing acquisition area) is bounded by the Rohnert Park Expressway to the north, Petaluma Hill Road to the east, East Cotati Avenue to the south, and the City limits of the City of Rohnert Park to the west. Copeland Creek, a seasonal creek, extends east-west through the northern portion of the campus. The project site consists of Assessor's Parcel Nos. (APNs) 047-131-08, -11, -18, -20, -23, -26 and -27. These parcels are all owned by the University, except APNs 047-131-26 and -27 (located in the northwest corner of the project site), which fall outside the existing campus boundary.



SOURCE: Environmental Science Associates, California Automobile Association

Project Site Boundary

Figure III-1
Project Location

The project site is located on relatively level terrain (see Figure III-2). The campus property located south of Copeland Creek is developed with existing University-related facilities, infrastructure and landscaping, including buildings, outdoor athletic fields, campus roadways and parking lots, and two man-made lakes (which serve as holding tanks for the campus fire suppression system). The creek corridor itself is bounded by a dense growth of trees and brush. The existing campus properties located north of the creek are mostly undeveloped and were historically used for agricultural purposes (primarily for oat hay production and melon growing); the portion of the project site in the northwest corner is currently still used for oat hay production.

Access to the campus south of Copeland Creek is provided by three entrances from East Cotati Avenue (at South Sequoia Way, Cypress Drive and future student housing access road) and one off of Petaluma Hill Road (at Laurel Drive). Redwood Circle, Juniper Lane, Zelkova Lane and a number of bicycle and pedestrian walkways provide additional internal circulation within the campus. An unpaved nature trail follows along Copeland Creek. There is currently no access between the portions of the campus property located on either side of Copeland Creek. There are a number of unpaved, gated access points to the portion of the existing and proposed campus properties located north of Copeland Creek.

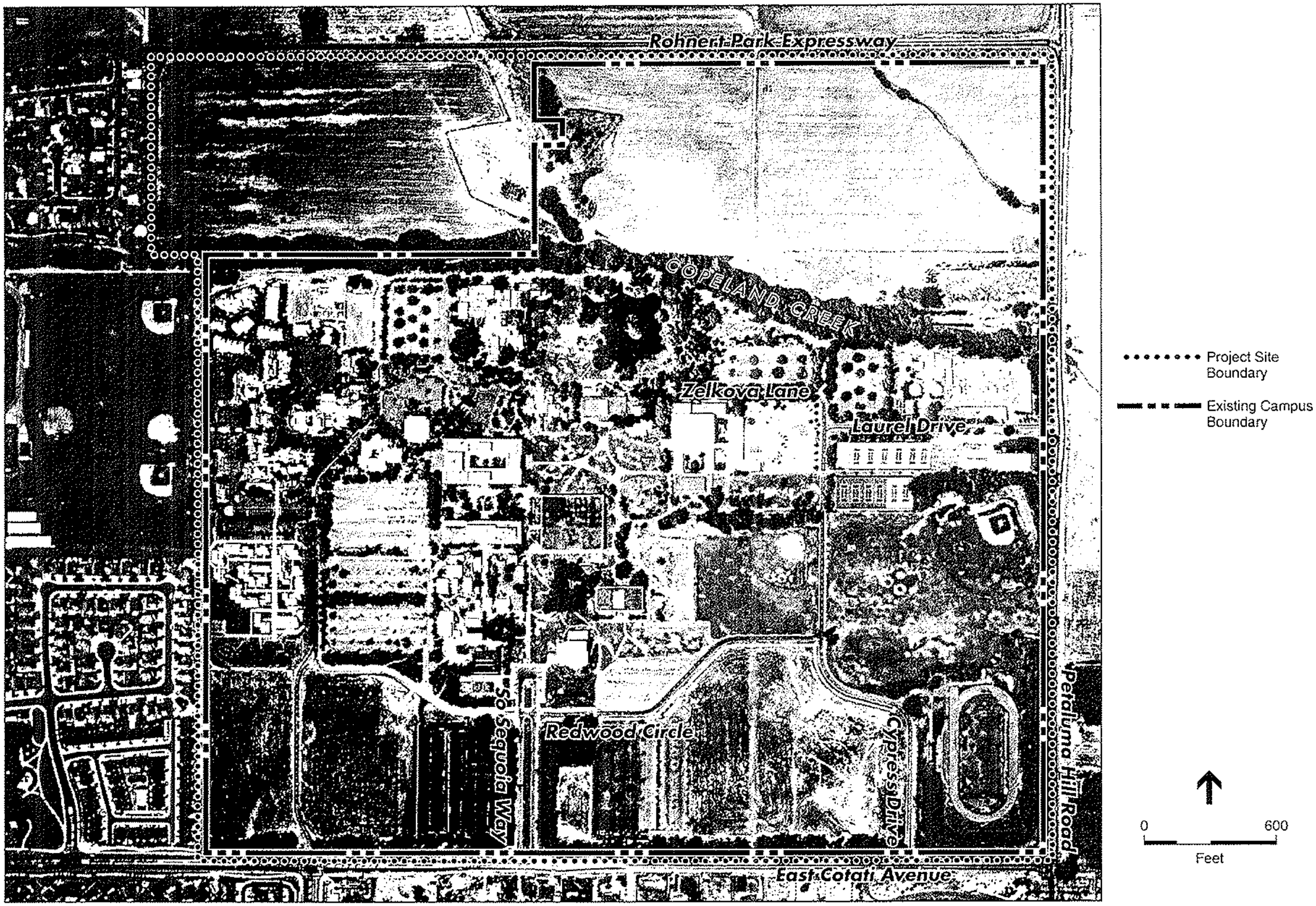
C. HISTORY OF THE UNIVERSITY AND MASTER PLAN

Sonoma State University (originally Sonoma State College) was established by act of the state legislature in 1960, and opened its doors to the first students in September 1961. The original college operated using rented quarters in the City of Rohnert Park, and accommodated a student population of 265 upper-division students. In the fall of 1966, the college moved to its current permanent campus site, with a student population of 1,400 students.

The first physical master plan for the college was approved in 1962, and provided for an ultimate student enrollment of 12,000 full-time equivalent (FTE) students. The plan was relatively formal and institutional in character. This is best reflected in the first two original buildings built on the campus, the large, three-story Stevenson and Darwin Halls. The 1962 Master Plan proposed both north and south entries and a loop road surrounding the central academic core. The plan also envisioned a number of parking areas scattered throughout the campus, and three satellite housing areas (including mid-rise residential towers). Buildings which were subsequently constructed under the 1962 Master Plan included the gymnasium, music building, the dining commons, and the first phase of the library. Other improvements included construction of a number of parking lots, a utility tunnel, a boiler plant, and a man-made lake on the north side of the campus.

The first major revision to the Master Plan occurred in 1969. An academic master plan revision which included an interdisciplinary program known as the Cluster School concept was a primary reason for the revision.[1] Subsequent to 1969, the campus student growth rate slowed. In 1976, a

[1] The Cluster School concept proposed to establish a series of cluster schools (on-campus, but separate from the central school), which would accommodate 3,000-4,000 students each, have an educational program unified around a central focus or objective, and would be interdisciplinary.



SOURCE: Pacific Aerial Surveys, Environmental Science Associates

Sonoma State University Master Plan Revision EIR / 990097

Figure III-2
Project Site

reduction in the master planned student enrollment ceiling was approved, from 12,000 FTE to 10,000 FTE. The revision also resulted in less formal building profiles. Under this revised plan, the first cluster school, Rachel Carson Hall was built, in addition to the health services building, the student housing, the art building and the student union.

In 1978, the college was granted university status and the name of the school was changed to Sonoma State University. The University made minor revisions to the Master Plan in 1980, providing for an athletic field facility with bleachers, and in 1990, accommodating an expansion of the library and student union building.

The University's existing Master Plan was adopted in 1992. The current plan eliminated the Cluster School concept, relocated academic buildings, and added additional student housing. The Master Plan outlined the footprints of eight future campus buildings, including the Information Center (currently under construction; see description under D, Existing University Facilities and Characteristics, below), and modified the campus entrances (including relocation of the northern entrance so as to not disrupt the lakes and graduation lawns). Parking became focused on the south central campus and multi-level garages were proposed to meet parking demands at plan buildout. The campus loop road was eliminated and the north entrance to the campus was moved to the east of the Physical Education complex.

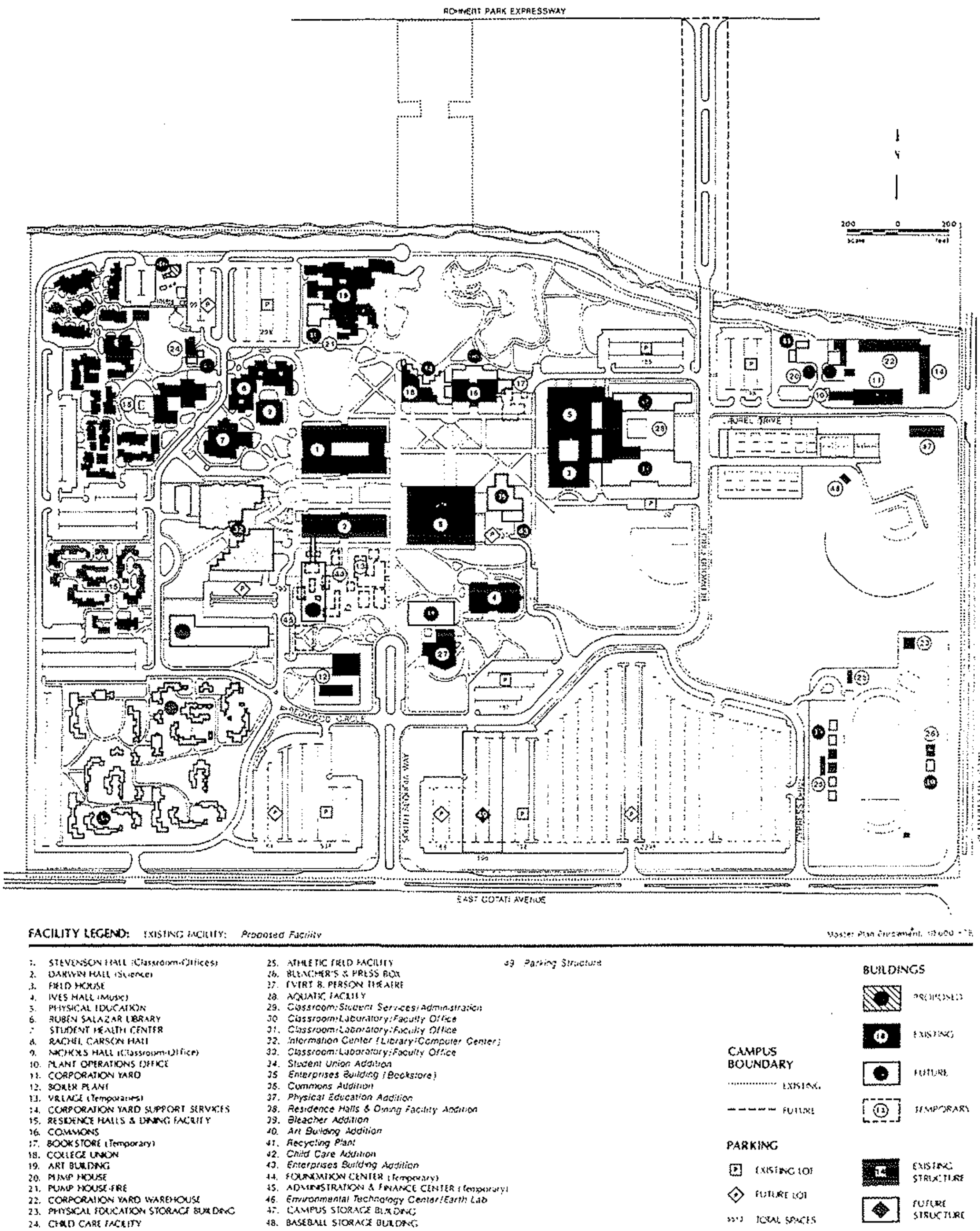
A subsequent minor revision to the Master Plan occurred in 1993. This revision accommodated a change in the location of the bookstore, and relocation of the library to temporary parking lots C and D. In 1997, another minor revision to the Master Plan allowed for expansion of the student housing (known as Sauvignon Village, under construction in 1999; see description under D, below), and development of the Environmental Technology Center (to begin construction in 1999; see description under D, below).

The existing 1992 adopted Master Plan is illustrated in Figure III-3.

D. EXISTING UNIVERSITY FACILITIES AND CHARACTERISTICS

The University currently has a building capacity for approximately 5,400 FTE. The university currently offers 37 bachelor's degrees, 13 master's degrees and 10 teaching, specialist and service credentials. Table III-1 presents existing SSU employment and student enrollment for the Fall 1998 semester. Table III-2 presents existing facilities, and facilities currently or soon under construction in 1999. Currently, approximately 900 students live on-site in the University's student housing; another approximate 900 students will be housed on-site when Sauvignon Village, under construction, is completed (see description of Sauvignon Village student housing, below). There are approximately 3,500 student, faculty, housing, visitor and special parking spaces located on the campus.

The three primary projects identified under the existing Master Plan that are under construction, or expected to begin construction in 1999, are the Residence Halls addition (Sauvignon Village), the Jean and Charles Schulz Information Center, and the Environmental Technology Center. Sauvignon Village, under construction in 1999, consists of a new 251,000 gross sq. ft. campus



SOURCE: Sonoma State University

Sonoma State University Master Plan Revision EIR / 990097

Figure III-3

Existing University Master Plan

TABLE III-1
EXISTING STUDENTS, FACULTY AND STAFF[a]

School Component		Number[b]
Students		
Undergraduate		5,865
Graduate		1,146
	Total Students	**7,011**
Employees		
Faculty		505
Staff		617
	Total Employees	**1,122**

a 1999/2000 school year.
b Note: Total enrollment and employment estimates (i.e., not adjusted for full-time equivalent estimates).

SOURCE: Sonoma State University, 1999

housing community. The development is located on what was previously an empty field in the southwest corner of campus, along East Cotati Avenue. When completed, Sauvignon Village will include a total of 147 four-bedroom apartments of approximately 1,550 sq. ft. each, and 16 studio apartments of approximately 550 square feet each, for a total of 163 units. The development will feature seven housing villages, each containing a landscaped courtyard. The complex is designed to resemble a small Mediterranean village, and look similar in appearance to the existing residence hall buildings. Construction of Sauvignon Village began in October 1998; Phase I of the project (the first set of apartments that will house approximately 234 students) is expected to be complete for Fall 1999 students. Upon completion of Phase II in 2002, Sauvignon Village will house approximately 900 students.

The Jean and Charles Schulz Information Center, under construction, consists of a three-story, 215,000 sq. ft. library and technology hub, and will serve as the technological center of campus when completed. The book-shelving capacity of the proposed facility will allow the facility to house over one million volumes (double the capacity of existing library facilities) in traditional open stacks and in the Automated Retrieval System (ARS)[2]. In addition to both traditional and electronic archives, the Information Center will contain exhibit areas, teleconferencing rooms,

2 The ARS will provide quick access to 450,000 periodicals and other materials, separately housed in a three-story industrial shelving system. Requests for materials housed in the ARS can be made on any computer. These requests are transmitted electronically to the ARS, which directs an automatic crane in one of three aisles to deliver bin(s) containing the requested materials to a pickup station at the end of the ARS aisle. At the pick up station, a staff member will place the book in an electric track vehicle (ETV) that carries it to either the 1st or 2nd floor Circulation desk for delivery to the patron.

TABLE III-2
EXISTING FACILITIES AND STUDENT CAPACITIES (1999/2000 YEAR) UNDER EXISTING MASTER PLAN

Map Reference Number[a]	Existing Campus Facilities	Gross Square Footage (sq. ft.)	Student Capacity of Academic Facilities (FTE)
	Existing Facilities on Site		
1.	Stevenson Hall	130,160	2,359
2.	Darwin Hall	111,821	1,277
3.	Field House	15,826	--
4.	Ives Hall	48,510	663
5.	Physical Education	65,985	65
6.	Ruben Salazar Building (Library)	115,427	--
7.	Student Health Center	19,427	--
8.	Rachel Carson Hall	20,000	458
9.	Nichols Hall	30,700	418
10.	Plant Operations Office	20,592	--
12	Boiler Plant	11,500	--
13.	The Village (temporary)	14,268	--
14.	Corporation Yard Support Services	8,000	--
15.	Residence Halls and Dining Facility	211,891	--
16.	Commons	18,500	--
17.	Bookstore (temporary)	10,486	--
18.	Student Union	17,600	--
19.	Art Building	46,604	128
24.	Child Care Facility	2,924	--
27.	Evert P. Person Theatre	20,655	--
29.	Anthropological Study Center	5,440	
	Miscellaneous (e.g., pumps houses)	6,110	--
	Total Existing Facilities	952,456	5,368
	New Facilities Currently or Soon Under Construction in 1999 Identified Under Existing Master Plan (Projected Completion Date)		
32.	Information Center (Fall 2000)	215,500	--
15.	Residence Halls Addition (Sauvignon Village) (Phase I, Fall 1999; Phase II, 2002)	251,000	--
46.	Technology Center (Spring 2000)	2,200	--
	New Facilities Currently or Soon Under Construction	468,700	--
	Total Existing Plus Under Construction	**1,421,156**	**5,368**

[a] See Figure III-4, for location of existing facilities within proposed Master Plan.

SOURCE: Sonoma State University, 1999

special collections, reading rooms (including 24-hour rooms), a multimedia complex with listening/viewing and computer design facilities, a Cultural Center, and cafe. Construction began in August, 1998 and is scheduled to be completed by Fall, 2000.

The Environmental Technology Center (ETC) will serve as a teaching laboratory for students, faculty and community environmental personnel. The ETC will house the Energy Management and Design academic program of the Department of Environmental Studies and Planning. The ETC will consist of a 2,200 sq. ft. building, and will be located on the northwest side of campus. Construction is scheduled to begin in Fall 1999 and is to be completed by Spring, 2000.

E. PROJECT CHARACTERISTICS

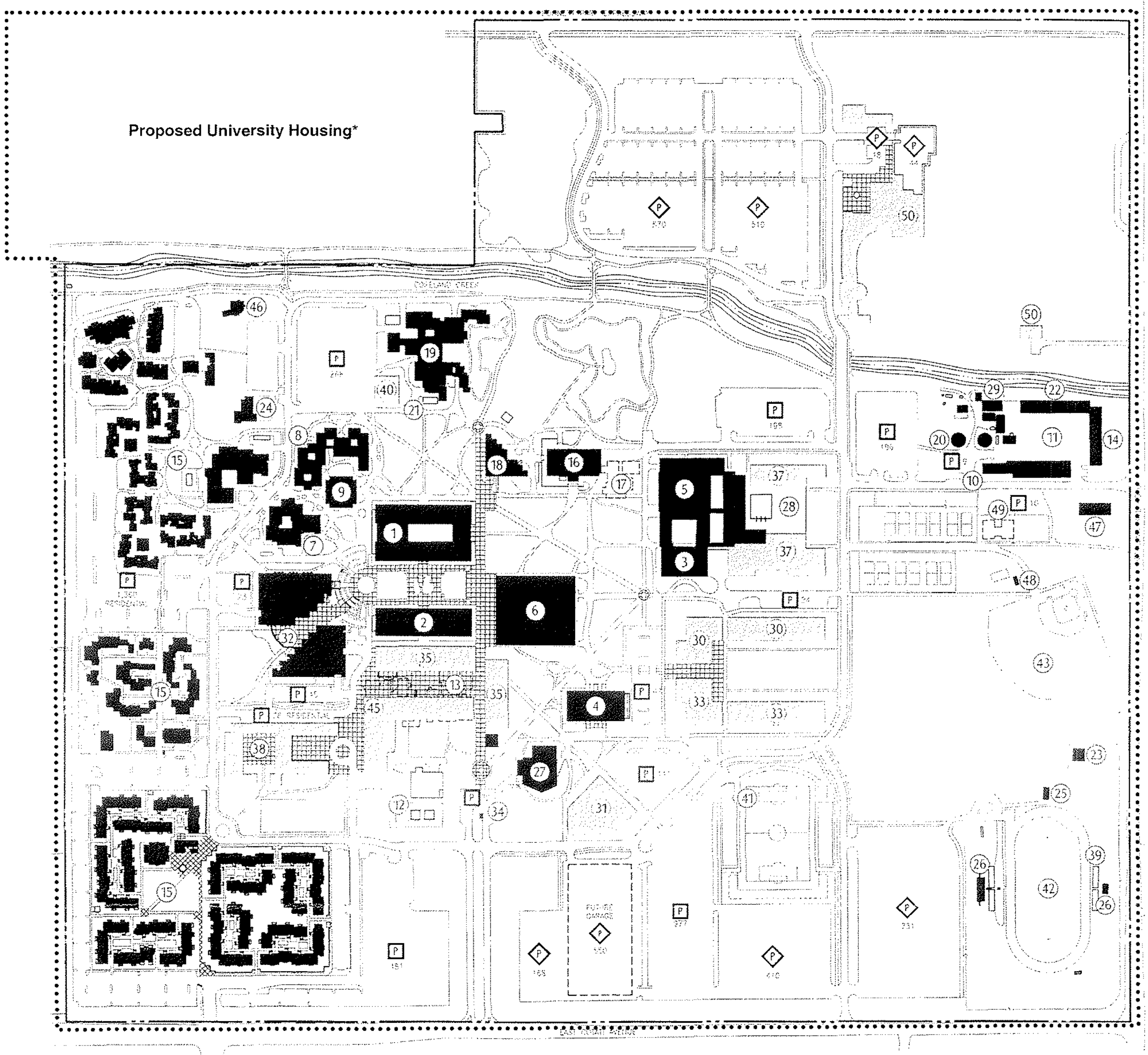
The proposed project consists of a revision to the existing Sonoma State University Master Plan. Like the existing approved Master Plan, the proposed Master Plan revision would maintain a maximum student population of 10,000 full-time equivalents (FTE). The Master Plan revision would not involve an increase in the rate of student enrollment above that anticipated by the existing approved Master Plan. The Master Plan identifies the facilities and actions required to accommodate the University's development from the existing student capacity of approximately 5,400 FTE to the ultimate student capacity of 10,000 FTE. In addition to new facilities proposed on its main campus, this revision proposes new development on 89.3 acres of property north of the main campus across Copeland Creek, including the proposed Center for the Musical Arts (to be located on 54.7 acres of existing campus property) and university housing (to be located on 34.6 acres on property to be acquired by the University). This project level approval is for the total campus Master Plan, including the Schematic Project Plan approval for construction of the Center for the Musical Arts. The proposed Master Plan is illustrated in Figure III-4.

In concert with these proposed changes to the physical Master Plan, associated revisions to the pedestrian/bicycle circulation, parking, vehicular circulation, and open space components are incorporated. The proposed pedestrian, bicycle, vehicular circulation and parking networks, and proposed open space plan is illustrated in Figure III-5.

As under the existing Master Plan, the proposed Master Plan revision would maintain a maximum student population of 10,000 FTE. Student enrollment projections through the 2007/2008 school year are presented in Table III-3.

BUILDING PROGRAM

The proposed building program under the Master Plan revision is presented in Table III-4. The Master Plan revision identifies five primary new developments: Center for the Musical Arts, new instructional expansion, the University Center, additional student housing, and a new soccer stadium. Based on existing university needs and funding, these plan components are in varying stages of development. A description of these new facilities follows.



FACILITY LEGEND: EXISTING FACILITY; Future Facility

Master Plan Enrollment: 10,000 FTE

1 STEVENSON HALL
2 DARWIN HALL
3 FIELD HOUSE
4 IVES HALL
5 PHYSICAL EDUCATION
6 RUBEN SALAZAR BUILDING
7 STUDENT HEALTH CENTER
8 RACHEL CARSON HALL
9 NICHOLS HALL
10 PLANT OPERATIONS OFFICE
11 CORPORATION YARD
12 BOILER PLANT
13 THE VILLAGE (Temporary)
14 CORPORATION YARD SUPPORT SERVICES
15 RESIDENCE HALLS & DINING FACILITY
16 COMMONS
17 BOOKSTORE (Temporary)
18 COLLEGE UNION
19 ART BUILDING
20 PUMP HOUSE
21 PUMP HOUSE - FIRE
22 CORPORATION YARD WAREHOUSE
23 PHYSICAL EDUCATION STORAGE BUILDING
24 CHILD CARE FACILITY
25 ATHLETIC FIELD FACILITY
26 BLEACHERS & PRESS BOX
27 EVERT B. PERSON THEATER
28 AQUATIC FACILITY
29 ANTHROPOLOGICAL STUDIES CENTER
30 Instructional Expansion
31 Instructional Expansion
32 INFORMATION CENTER
33 Instructional Expansion
34 PARKING AND INFORMATION BOOTH
35 University Center
36 not used
37 Physical Education Addition
38 RESIDENCE HALLS ADDITION
39 Bleacher Addition
40 Art Building Addition
41 Soccer Stadium
42 STADIUM
43 BASEBALL FIELD
44 not used
45 ADMINISTRATION & FINANCE CENTER (Temporary)
46 ENVIRONMENTAL TECHNOLOGY CENTER
47 CAMPUS STORAGE BUILDING
48 BASEBALL STORAGE BUILDING
49 CALIFORNIA INSTITUTE FOR HUMAN SERVICES (Temporary)
50 Center for Musical Arts

BUILDINGS

6 EXISTING

50 Future

17 TEMPORARY

PARKING

EXISTING

FUTURE

6,858 TOTAL SPACES

PROJECT SITE BOUNDARY

EXISTING CAMPUS BOUNDARY

* The University does not currently own this portion of the project site. However, the project includes the development of University-related housing on this site; see text for description of housing scenarios assessed in the EIR.

Sonoma State University Master Plan Revision EIR / 990097 ■

SOURCE: Sonoma State University

Figure III-4
Proposed Master Plan

TABLE III-3
PROJECTED STUDENT ENROLLMENT (FTE): 1999/2000 THROUGH 2007/2008[a]

School Year	Student Enrollment (FTE)
1999/2000	5,860
2000/2001	6,065
2001/2002	6,277
2002/2003	6,497
2003/2004	6,692
2004/2005	6,859
2005/2006	7,031
2006/2007	7,207
2007/2008	7,387

[a] As discussed in the text, the proposed Master Plan revision would maintain the student enrollment ceiling of 10,000 FTE. However, projected student enrollment at the University are currently only available through 2007/2008.

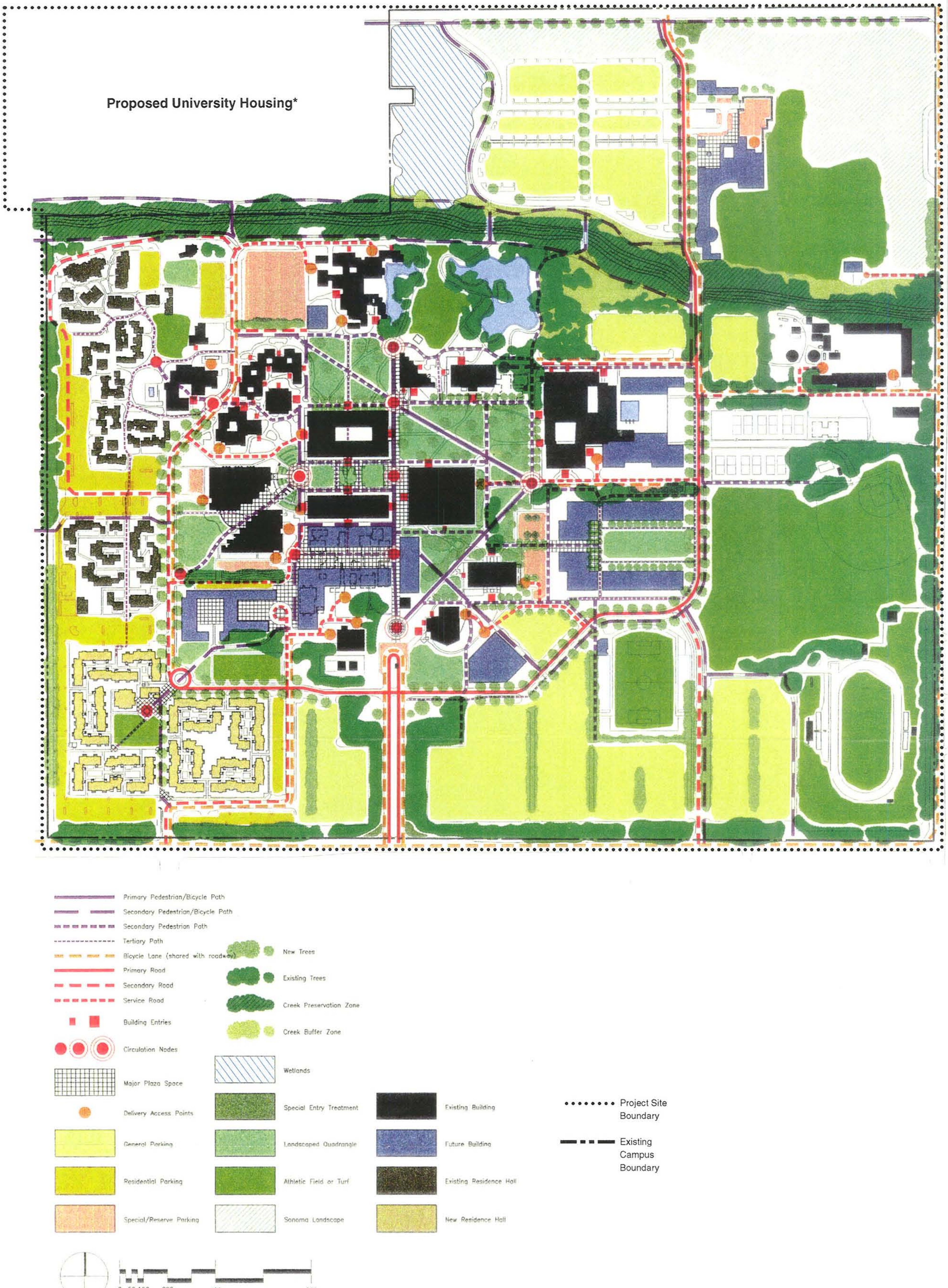
SOURCE: Sonoma State University, 1999

CENTER FOR THE MUSICAL ARTS

Need for Center for Musical Arts and Proposed Operation

The continued development of the University's Performing Arts programs is a vital component of the goals for the University under the Master Plan revision. The Performing Arts programs, which currently include Jazz, Vocal and Choral, World Music and Music Theatre, Chamber Music, Music Education, and Composition & Music Technology, have been expanding in size and scope to serve the academic needs of the student population. The University has also introduced music, dance and drama programs to serve pre-college youth at the campus, as well as provide new instructional opportunities for musicians in the community. These programs have created a shortage of space for rehearsal and teaching studios, and well-designed and equipped performance venues.

The University's full array of choral and instrumental programs would be housed at the proposed Center for the Musical Arts. In addition, other departments and campus organizations could make frequent use of the Center's facilities for lectures and conferences. New university programs being developed in partnership with local school districts and the Burbank Music Education Council would provide teacher training and supplemental K-12 student instruction in music and the arts at the Center. Local schools, ensembles, and music organizations would be provided the opportunity to use the Center's facilities at a reasonable cost; rental opportunities would be available to local and outside presenters whose programs and goals are consistent with the Center's mission.



* The University does not currently own this portion of the project site. However, the project includes the development of University-related housing on this site; see text for description of housing scenarios assessed in the EIR.

SOURCE: Sonoma State University

Figure III-5
Proposed Pedestrian/Bicycle Circulation, Vehicular Circulation and Parking, and Open Space Elements of Master Plan

TABLE III-4
PROPOSED FACILITIES AND STUDENT CAPACITIES UNDER MASTER PLAN REVISION

Map Reference Number[a]	Facilities	Gross Square Footage (sq. ft.)	Student Capacity of Academic Facilities (FTE)
	New Facilities Proposed Under Master Plan Revision		
6	Remodel Ruben Salazar Building	*(Existing)*	1,198
30.	Instructional Expansion	100,000	900
31.	Instructional Expansion	60,000	1,000
33.	Instructional Expansion	105,000	1,080
35.	University Center (2004-2005)	217,000	--
37.	Physical Education Addition	55,000	200
38.	Residence Halls Addition (in location of Parking Lot D) (2001-2002)	108,000	--
39.	Bleacher Addition	--	--
40.	Art Building Addition	10,000	254
41.	Soccer Stadium	--	--
50.	Center for the Musical Arts (2002-2003)	100,000	--
b	University Housing (in Northwest Acquisition Area)	c	--
	New Facilities Proposed Under Master Plan Revision		**4,632**
	Total Existing Plus Under Construction [d]		5,368
	Total Existing Plus Proposed		**10,000**

a See Figure III-4 for location of existing and proposed facilities within proposed Master Plan.
b Since the University does not currently own the site, this proposed development is not illustrated on the University Master Plan.
c Range of University housing scenarios possible; see Table III-6.
d Existing facilities and facilities currently under construction are described in Table III-2.

SOURCE: Sonoma State University, 1999

The proposed Center would also provide the opportunity for a sharing of resources with the Santa Rosa Symphony. The Santa Rosa Symphony's presence at the University would provide the potential for a broadening and enrichment of the musical education program at the University, as well as foster recruitment potential. The Santa Rosa Symphony's five Youth Orchestras and Music Academy would occupy its halls and studios on weekends during the regular season and weekdays during the early summer. Collaborative possibilities between the University and the Santa Rosa Symphony would include joint fundraising campaigns, combined community outreach programs, new teaching partnerships, and innovative concert presentations.

The proposed Summer Music Festivals, consisting of a series of week-long mini-festivals, each having a specialized focus (e.g. choral, chamber, jazz, early music, etc.), would run from mid-

June through mid-August. Enrolled participants would reside on-campus and take part in an intensive series of workshops, master classes, and rehearsals. The festivals would include a number of activities (including picnicking, education programs, hiking etc.) culminating in an afternoon concert. The audiences associated with these festivals would be expected to be spread throughout the day. Special attention would be paid to the audience experience; open rehearsals and special presentations would allow non-enrolled visitors to become engaged in the learning process.

Projected attendance at the concert hall and recital hall performances in its first year of operation are presented in Table III-5. This includes approximately 26 performances by the Santa Rosa Symphony, approximately 28 summer festivals and events, and approximately 100 University Events and hall rentals. Initially the number of large events would be small; estimated at six to eight events above 3,000 people during the summer. By 2010, up to 10 large events a year during the summer months on Saturdays and Sundays could occur.

TABLE III-5
PROJECTED ANNUAL MUSICAL PERFORMANCES AT PROPOSED CENTER FOR THE MUSICAL ARTS

Event	Number of Events	Average Attendance Per Event	Season	Times	Facility Use
University Events [a,b]					
Subtotal	98	300-1,200	September through May	~ 75 percent on Weekends; ~ 25 percent on Weekdays	Concert Hall/ Recital Hall
Santa Rosa Symphony					
Regular Performance	21	1,300	October Through April	Saturday nights, Sunday afternoons, Monday nights; Special Events: weeknights, Saturday or Sunday nights	Concert Hall
Special Events	5	1,100			
	26				
Festivals					
Large Festivals	12	3,000-10,000	Summer	Saturday afternoons and/or nights; Sunday afternoons	Concert Hall/ Lawn/ Recital Hall
Other Festivals [a]	16	400			
Subtotal	28				

[a] Since some of identified festivals and events would occur at the existing Evert P. Person Theater (located on the main campus), attendance estimates at the Center for Musical Arts are conservative.

[b] Includes a range of events, including faculty jazz, faculty chamber music, Bach choir, chorus, chamber singers, lectures, faculty concerts, dance, early music, university special events, and concert hall and recital hall private rentals.

SOURCE: Sonoma State University, 1999

Physical Description of Center for the Musical Arts

The Center for the Musical Arts would consist of a new 100,000 gross square foot music performance and teaching facility, located in the eastern portion of the newly acquired campus property north of Copeland Creek. The center would contain a 1,400-seat concert hall, a 300-seat recital hall, performance related space (e.g., dressing rooms, storage, office space, and practice/rehearsal rooms), and audience support space (e.g., lobby, restrooms). Surrounding the main building would be various outdoor public spaces (e.g., lawn areas, courtyard, an 1,100-space parking lot), dining facilities and landscape features.

The Center for the Musical Arts building would be roughly L-shaped, with the concert hall anchoring the shorter wing, and recital hall located near the end of the longer wing. The building would be primarily two floors, except for the concert hall, which would contain a main floor with two balconies, and the main lobby, which would consist of one floor with a maximum height of 70 feet. The 1,400-seat concert hall would be rectangular in shape, measuring approximately 150-feet long by 115-feet wide. The first balcony would extend along perimeter of the front and sides of the hall; the second balcony would extend along the perimeter of the rear of the hall and two sides. The concert hall stage would measure approximately 64 feet wide by 45 feet deep, large enough to accommodate either a 100-piece orchestra, or a full 200-person chorus. During orchestral performances, choral singers could be accommodated in the balcony above the stage, and on platforms extending to the rear of the stage.

The classic rectangular shape of the concert hall, combined with proposed design refinements (include minute angular shifts in wall and ceiling components, and use of materials with specific sound reflective and absorptive qualities) would be designed provide optimum natural acoustics. The natural acoustics of the concert hall would be supplemented by several integrated audio support systems, including an in-house speech reinforcement system for lectures and speaking events, an in-house popular performance amplification system for vocalist performances, and an outdoor ambiance system fo: lawn audiences, and a number of technical and support audio and communication systems.

The main lobby would be large enough to accommodate the full audience from the concert hall, plus a portion of the lawn audience. The lobby would contain concessions, a gift shop, seating and restrooms. The main lobby gradually tapers in width toward a smaller lobby that serves both the recital hall and university music department.

The recital hall would serve a number of purposes, including recitals, rehearsals, banquet or special functions. The room would have a curved wall of windows looking onto the audience lawn, a high arched ceiling, and fine woodwork. For recitals, the room would seat an audience of 200-300 people, and as a banquet hall, could seat 150 people. As a dance hall, lecture hall, or special function room, the room would accommodate a variety of gathering sizes and arrangements.

The Performance Support spaces would be located in the upper floor of the long wing of the music center that extends towards the campus. The entrance would contain a portico and lobby.

The support facilities would consist of offices practice rooms, instrument storage lockers, restrooms and a lounge with kitchenette. From the lounge, a glass-enclosed bridge would lead to the concert hall offices.

The main audience lawn, which would be sloped at 6-7 percent, would be intended for up to 3,000 patrons. The lawn would be enclosed to the west by the two-story wing of the Musical Center, and to the north by the south facade of the concert hall. Retractable panels in the rear of the concert hall would create a large opening onto the main audience lawn, allowing patrons on this lawn with a direct view into the concert hall. To the east of the main audience lawn, an additional audience lawn would accommodate up to 7,000 additional people served by video monitors and an extended outdoor sound system. The additional audience lawn would be subtly distinguished from the main lawn area through ground contours and an informal placement of trees, such as red oak, sorghum, and London plane trees, which would provide shading for picnics and other gatherings but preserve views of the concert hall and surrounding vistas.

A special function facility, capable of accommodating outdoor dining for 150 people, and restrooms, would be located near the concert hall. Approximately three sound/video towers would be distributed around the perimeter of the eastern lawn area, serving members of the outdoor audience without direct views of the stage.

The landscaping surrounding the Center for the Musical Arts site would include sound attenuating earthen berms located along the north and east edges of the site to shield the site from acoustical and visual distractions of Rohnert Park Expressway and Petaluma Hill Road, and along the west edge of the proposed parking lot. The berms are proposed to gradually rise by a slope of five percent to a height of approximately twelve feet. The berms would be covered with landscape features characteristic of the region.

A new entrance road allee leading south from Rohnert Park Expressway would serve as the principal gateway to the Musical Center and as the new northern entrance to the university campus. A network of pedestrian paths would link the Musical Center and its parking area to the main campus (see Pedestrian/Bicycle Circulation and Vehicular Circulation and Parking, below).

INSTRUCTIONAL EXPANSION

New instructional expansion is proposed, consisting of new classroom, laboratory, faculty office and related support space to accommodate the planned campus enrollment. The proposed instructional expansion would be accommodated in three new two-story buildings, consisting of 100,000 s.f., 105,000 s.f. and 60,000 s.f., for a total of 265,000 s.f. Buildings 30 and 33 would have a separated building profile to encourage easy access to the new complex. The new instructional expansion would be located on what are currently the softball/soccer field and Parking Lot E. Two additions to existing buildings identified under the previously approved Master Plan would remain under the Master Plan revision: the Physical Education Addition (55,000 s.f.) and the Art Building Addition (10,000 s.f.).

The specific design of the these buildings, the disciplines to be housed in the buildings, as well as number and types of classrooms, laboratories and departmental offices are not defined at this time, and would be developed based on specific future instructional needs as defined by the Academic Master Plan.

UNIVERSITY CENTER

The University Center would consist of a student center on the campus that would provide new space for existing campus activities, student clubs and organizations, an expanded Summer Conference Program, and would also include a retail center, a food court and recreation/fitness/wellness center. Encompassing approximately 217,000 gross square feet, the two-story University Center would be located south of Darwin Hall, on what is currently occupied by temporary buildings.

The relocation of student union and food service uses to the proposed University Center would provide additional reusable space in these vacated buildings to accommodate existing space deficiencies for University functions. Specifically, the student union would provide additional area for University meeting rooms and administrative uses, and the commons building would provide additional area for existing special University dining-related events.

ADDITIONAL UNIVERSITY STUDENT HOUSING

Growth projections and the lack of available student housing in the surrounding communities evidence the need to build an additional housing complex on campus in addition to Sauvignon Village (currently under construction; see description under D, Existing University Facilities and Characteristics, above). An additional complex is proposed as a component of the Master Plan revision to house 400 students. The proposed site is located in what is now Parking Lot D (for location, see No. 38 in Figure III-4). It is anticipated that the additional housing complex would be predominately composed of double occupancy studio apartments, similar in architectural style to Sauvignon Village. This additional student housing is proposed to be constructed in 2001/2002.

In addition to student housing expansion for 400 students described above, the University has a goal to build more housing on a 34.6-acre rectangular parcel located adjacent to, and northwest of, the existing campus boundary. This parcel, currently held in private ownership, is bounded by Rohnert Park Expressway to the north, Copeland Creek to the south, single-family residential development and the City of Rohnert Park city limit to the west, and the proposed parking area for the University's Center for the Musical Arts to the east. Currently, the relatively level site is used for agricultural purposes. The site contains riparian vegetation associated with Copeland Creek in the southern portion of the site. Since the University does not currently own the site, the proposed development is not illustrated on the University Master Plan. However, because it is a goal of the University to own and develop more University-related housing on this site, this EIR includes the assessment of the potential impacts of such a development by way of considering a range of housing scenarios ranging from high-density apartment-style courtyard housing to lower density single-family attached and detached dwellings. The site is large enough to accommodate a mixed housing density featuring extensive open space and possibly community buildings.

Under the higher-density housing scenario, housing for students could be accommodated using a common courtyard concept, similar to the Sauvignon Village development. A variation of this type, the mixed-use development scenario, could also accommodate faculty and/or students at a lower person density (see Table III-6 below). The higher-density and mixed-use development scenarios would be defined by large common open areas to be used for intramural sports and neighborhood activities. A structured network of paths would accommodate pedestrian and bike circulation within the development, providing connection to adjacent bike paths and across Copeland Creek to the main campus. Parking would be restricted to common lots adjacent to the unit clusters.

Under the lower density housing scenario, a concept for the neighborhood, housing staff, and faculty would be designed for couples and families. It could be a series of cul-de-sac courtyards defined by a mixed arrangement of duplexes and single-family dwellings. The rear side of these structures could face out onto a shared garden and buffer zones connecting to open space along Copeland Creek.

SOCCER STADIUM

A soccer stadium is proposed to replace the existing soccer field that would be displaced by the proposed instructional expansion. The soccer stadium would be located south of existing soccer field, across Redwood Circle, and would have a north-south orientation. The stadium site would measure approximately 500 feet length by 400 feet in width, and would contain a regulation-size soccer field. The lengths of the field would be flanked by permanent seating, capable of accommodating approximately 5,000 patrons, with the potential for optional bleacher seating along the south side of the field.

PEDESTRIAN/BICYCLE CIRCULATION PLAN

The Master Plan Revision includes development of a Pedestrian Circulation and Bicycle Plan. The goal of this plan is to link connections from off-campus, both from the southwest and southeast and on the north with the City of Rohnert Parks plans for development of that area, and to develop an internal campus plan that encourages access to major campus nodes. The proposed circulation plan under the Master Plan revision creates a system of primary and secondary and pedestrian and/or bicycle paths designed wide enough to avoid conflicts, as well as smaller tertiary paths for pedestrians (see Figure III-5). All pathways would meet the accessibility requirements of the Americans with Disability Act. Bicycle storage would be provided at major campus nodes.

Four pedestrian crossings of Copeland Creek are proposed to provide convenient access between for pedestrians across the creek. The pedestrian crossings would be provided via three pedestrian bridges and one combination vehicle/pedestrian bridge. One of the pedestrian bridges

TABLE III-6
FUTURE HOUSING SCENARIOS: UNIVERSITY HOUSING ACQUISITION AREA
(Northwest Parcel)

		Higher-Density Scenario	Mixed-Use Scenario	Lower-Density Scenario
Area dedicated to:	Higher-Density Housing (acres)	19	13.5	0
	Lower-Density Housing (acres)	0	7.5	21
	Community Facilities (acres)	4.7	2.7	2.7
	Open Space and Creek Corridor (acres)	10.9	10.9	10.9
	Total	34.6 ac.	34.6 ac.	34.6 ac.
Number of Apartment Units:	(4-6 person)	150	75	0
	(2-4 person)	110	40	0
	(1-2 person)	40	15	0
	Subtotal	300	130	0
Number of Duplex Units		0	100	120
Number of Single-Family Dwellings		0	80	60
	Subtotal	0	180	180
	Total Units	**300**	**310**	**180**
Overall Unit Density for Areas Dedicated to Housing (du/ac)		15.8	14.8	8.6
Overall Unit Density for Entire Parcel (du/ac)		**8.7**	**9.0**	**5.2**
Number of Apartment Dwellers	(maximum @ 6 pers./unit)	900	450	0
	(maximum @ 4 pers./unit)	440	160	0
	(maximum @ 2 pers./unit))	80	30	0
	Subtotal	1,420	640	0
Number of Duplex Unit Dwellers (@ 2.5 pers./unit)		0	250	300
Number of Single-Family Dwellers (@ 3.5 pers./unit)		0	280	210
	Subtotal	1,420	530	510
	Total Dwellers	**1,420**	**1,170**	**510**
Overall Person Density for Areas Dedicated to Housing (pers./ac.)		74.7	55.7	24.3
Overall Person Density for Entire Parcel (pers./ac.)		**41.0**	**33.8**	**14.7**

SOURCE: TLCD Architecture, 1999

would be connect the proposed University housing in the northwest acquisition area to the main campus. The other bridges would connect the parking area for the Center for the Musical Arts, and the north entrance road, to the main campus. The pedestrian bridges (capable of supporting pedestrians and light maintenance vehicle) would be steel-framed, wood deck structures measuring approximately 10 feet in width, and supported by shallow spread footings.

VEHICULAR CIRCULATION AND PARKING PLAN

The proposed Master Plan Revision includes changes to the Master Plan's vehicular circulation component. This element of the Master Plan is important to the experiences of both the campus community and visitors. It requires considering both efficiency and convenience for vehicular traffic and promoting a pedestrian orientation for the campus. The proposed Master Plan also has substantial consequences for the provision of parking on the SSU campus (see Figure III-5).

The Master Plan revision proposes two major vehicular entrances to the University, consisting of a proposed north entrance off Rohnert Park Expressway and the existing south entrance off East Cotati Avenue (at South Sequoia Way). The proposed north entrance would provide access to the proposed Center for the Musical Arts, and the campus roadway would continue south across Copeland Creek via a combination vehicular/pedestrian bridge, connecting to Redwood Circle between parking lots G and H. It is the University's desire to coordinate with the Sonoma County Transit Agency to provide for a public transit stop along the north entrance, adjacent to the proposed Center for the Musical Arts.

Two secondary vehicular entrances to the University would be provided off East Cotati Avenue, for the athletic facilities (at Cypress Drive), and for the residential community, in addition to a secondary entrance off Petaluma Hill Road to the school operations complex (at Laurel Drive). Cypress Drive would be realigned approximately 400 feet west of its existing location along East Cotati Avenue, in order to increase the distance from this intersection from Petaluma Hill Road, and to provide a more logical connection between on-site parking facilities and Redwood Circle, the primary existing on-campus road. Redwood Circle would circle the academic core feeding into major parking lots. The west segment of the Redwood Circle would consist of a secondary road leading to only the reserved Parking Lot A, the Environmental Technology and the residential community, in order to minimize the amount of vehicular traffic near the student crossing between the residential community and the central campus.

In total, approximately 6,858 parking spaces would be provided under the Master Plan revision. (This does not include approximately 358 existing University parking spaces (Lots D and E) that would be displaced as result of future housing, recreation facilities and academic buildings.) Under the Master Plan revision, parking is proposed primarily outside the campus academic core (split between the north and south campus areas) to create a pedestrian-dominated campus, with the exception of six minor lots located within the academic core that would be dedicated to reserved and special-need purposes. The Master Plan revision includes more handicapped parking than is required by code to reflect actual projected campus handicapped parking needs.

Approximately 1,100 of the new parking spaces would be built adjacent to the Center for Musical Arts in the north property acquisition area. During regular campus operation hours, these lots would be used as general parking for the central campus community. During the time of performances at the Center for Musical Arts, these spaces would be used for audience parking. For the majority of events, 1,100 spaces would serve the needs of the Center for the Musical Arts. However, for the few events when the higher audience levels occur, parking lots across Copeland Creek in the central campus are proposed to be used. Two of those lots (G & H, with 400 spaces) are within easy walking distance of the Center. Should the lots on the south of campus be needed, a shuttle service is proposed to be provided, along with traffic control.

OPEN SPACE PLAN

Developing and maintaining open space, both natural and built, on the campus is a component of the Master Plan revision. The Master Plan revision contains a hierarchy of open space ranging from small intimate gathering spaces to the larger more formal quadrangles between building districts, including athletic fields, and playing fields and the natural biotic habitats along Copeland Creek (see Figure III-5). In recognition of the value of using the open space for academic enhancement, areas would be set aside for the use as informal outdoor classroom space, amphitheaters, native plant gardens, classroom gardens, quiet reading outdoor space and biological laboratory space. To define vehicular patterns and building patterns from open space areas, the plan would utilize tree-lined alleys and vegetation concentrations. The plan would incorporate attractive entry treatments to create a first impression of the campus.

The Master Plan revision would create large rural open spaces adjacent to the Center for Musical Arts to enhance the performance experience and tie the center to an expression of the unique cultural experience amidst the groves, vineyards and rolling foothills of the Sonoma region.

Because the University plans a high percentage of on-campus housing, the plan includes higher than CSU standard amount of athletic and playing fields. The CSU standard is 29 acres for a population of 10,000 FTE. The plan includes 33 acres, including a new two-acre site in the residential community, and use of 4.5 acres on future building sites as interim fields until such time as the building is constructed.

In recognition of the importance of Copeland Creek to the campus environment and the academic program, a Copeland Creek Ecological Resource Protection Plan is being prepared as part of the Master Plan revision. The design concept for the protection of Copeland Creek's ecological resources is based in part on measures that have been developed for other riparian areas in the area (including the Laguna de Santa Rosa and Santa Rosa Creek). The two primary features of the plan are the designation of creek Preservation and Buffer Zones (see Figure III-5). The creek Preservation Zone would correspond to the "dripline" of the trees in the riparian woodland along the creek. Within the Preservation Zone, uses would be restricted to scientific study, ecological enhancement and restoration. It would however, provide for the construction of vehicle and pedestrian bridges proposed under the Master Plan revision, provided potential adverse environmental effects of their construction would be minimized and any potential losses within the creek Preservation Area or Buffer Zone were adequately addressed.

The Creek Buffer Zone, would encompasses a zone originating at the top of creek bank and would extend laterally along the creek, for a 100-foot-width average. Within the Buffer Zone, no development would be allowed that would not meet the goal of avoiding or minimizing potential adverse ecological effects to the creek preservation area. The Buffer Zone would serve as a potential receptor site for mitigation (e.g., potential wetland creation and restoration) for biological impacts generated by development activities. Uses within the buffer zone would be restricted to, and consistent with, those uses identified within the creek Preservation Zone.

F. COMMUNITY OUTREACH PROGRAM

An extensive Community Outreach Program was developed for the Master Plan revision, consisting of public workshops, a web-site containing information on the Master Plan revision, an Ad Hoc Committee meeting, and direct solicitation input from groups and individuals. Three public workshops were held on March 23rd and 30th, and April 14th, 1999. The workshops provided the University with an opportunity to present the project to the campus community and other interested parties and facilitate discussion of the Master Plan revision. The workshops allowed potential issues related to the project to be raised, as well as potential ways to address those issues.

The University developed a web-site (www.sonoma.edu/facilities) to provide another means for presenting information on, and receiving input to, the Master Plan revision. The web-site includes a textual and graphical description of proposed facilities, provided information related to the outreach program itself, and provided an e-mail address to allow the public to submit comments on the Master Plan revision. Comments received from the web-site and the public workshop comments were posted on the web-site.

A Master Plan Ad Hoc Committee meeting, consisting of students, staff and faculty members was assembled to track the effectiveness of the outreach program. The University also consulted directly with various public agencies (including the City of Rohnert Park Planning and Public Works Departments, the City of Cotati's Planning Department, and the Sonoma County Transit Agency) and on-campus groups (including the Disability Resource Center, Friends of Copeland Creek, and Sonoma Earth Action) to encourage their involvement in the outreach program. In addition, the University provided discussion of the project at a meeting of the Professional Advisory Council of the University's Department of Environmental Studies and Planning.

G. PROJECT SPONSOR'S OBJECTIVES

The University's objectives for the Master Plan revision include the following:

- Reinforce campus identity and image, reflecting its place and culture;
- Provide facilities to effectively support the University's academic programs;

- Provide more on-campus housing opportunities, to reduce local traffic and housing demand off-campus;
- Use existing campus resources to the fullest extent, by appropriate use of currently underutilized developed space. Develop additional space only as needed;
- Incorporate concerns about energy efficiency;
- Provide good spaces for human interaction;
- Plan for areas of open space and its appropriate use; and
- Promote a sense of vitality on campus.

With respect to vehicular, pedestrian and bicycle circulation issues, the University's objectives for the Master Plan revision include:

- Plan for optimal utilization of existing and new infrastructure, roads, and parking;
- Promote a comprehensible campus development pattern for both pedestrians, bicycles and vehicles which emphasizes accessibility;
- Encourage alternative transportation options;
- Strengthen the pedestrian orientation of the campus.
- Create safe pedestrian crossing at busy vehicular intersections;
- Strengthen the links between precincts of the campus: primarily the links between the residential community and the academic core, between the north property acquisition area and the academic core, between parking and the academic core and between parking and the athletic facilities between the campus and surrounding community;
- De-emphasize vehicular traffic in the central core;
- Improve circulation for major quadrangles and open space; and
- Create links to off-campus pedestrian and bicycle circulation.

With respect to biological issues, the University's objectives for the Master Plan revision include:

- Identify and protect important biotic resources on campus;
- Protect and enhance existing sensitive riparian habitat; and
- Avoid or minimize potential adverse ecological effects to the Copeland Creek preservation area.

REFERENCES – Project Description

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CHAPTER IV

ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION MEASURES

A. LAND USE AND PLANNING

This section discusses land use planning issues related to the implementation of the proposed project, including its consistency with applicable plans, policies, and regulations; the compatibility of the proposed project to existing adjacent and nearby land uses; the significance of converting acreage from agricultural to institutional use; the project's potential to induce off-campus population growth; and the project's land use impacts and mitigation measures. The topics are addressed under the headings "Project Setting," "Planning Jurisdictions and Relevant Plans" and "Land Use Planning Issues and Impacts."

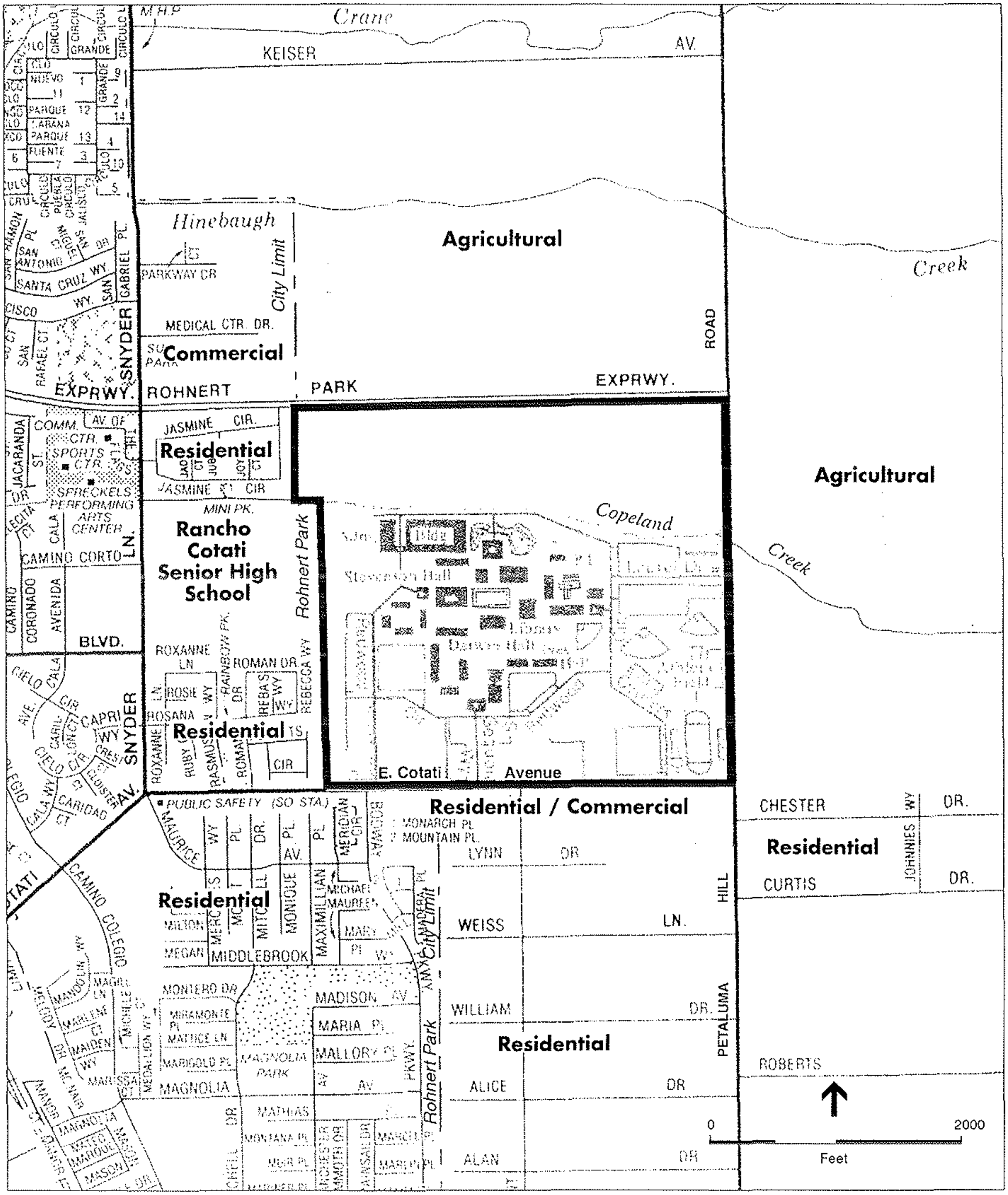
SETTING

SITE VICINITY LAND USES

Figure IV.A-1 identifies general land uses surrounding the project site. Rohnert Park Expressway forms the north border of the project site. To the north across Rohnert Park Expressway is agricultural land. Petaluma Hill Road forms the east border of the site. Across Petaluma Hill Road to the east is also agricultural land, containing some single-family ranchettes and produce stands. East Cotati Avenue forms the south border of the project site. To the south across East Cotati Avenue is a mix of uses, including single-family residences, a Taco Bell, the Intercollegiate Catholic Ministries office, the Acre of Sunshine Day Care Center, the All Phase Bobcat Concrete Removal Dump Truck facility, and the California Greens Family Golf Center. Uses within the City of Rohnert Park form the west border of the project site, including single-family residences and the Rancho Cotati Senior High School. A medical center is located northwest of the project site. Copeland Creek bisects the site and extends east and west from the project site.

PROJECT SITE LAND USE

The project site consists of the existing University property and an adjacent future University housing acquisition area. The campus property located south of Copeland Creek comprises the existing campus and is mostly developed with existing University-related facilities, dense urban infrastructure and landscaping. The primary academic facilities are centrally located within the main campus. (See Figure III-4 and Table III-2 in Chapter III, Project Description, for location and size of existing campus facilities.) The academic buildings on the site include Stevenson



Sonoma State University Master Plan Revision EIR / 990097

SOURCE: California Automobile Association; Environmental Science Associates

Project Site Boundary

Figure IV.A-1
Land Uses Surrounding Project Site

Hall, Darwin Hall, Ruben Salazar Building (existing library), Physical Education Building, Rachel Carson Hall, Nichols Hall, Ives Hall, the Art Building and the Evert P. Person Theater.

Many of student services buildings are located in the north area of the main campus include the Commons (cafeteria), Student Union and Student Health Center. Most of the University's administrative uses are currently housed within a complex of temporary one-story structures, located south of Darwin Hall. These temporary structures include the University Police office, the Recycling Center, Customer Services, the Greenhouse, the Center for Distributed Learning, the Administration and Finance Center, and Purchasing. The student housing complex comprises the west portion of the main campus, consisting of a series of clusters of apartment buildings. Sauvignon Village, under construction, is in the southwest corner of the main campus, is the latest addition of student housing on the campus.

Open spaces are present throughout the main campus, with the largest open spaces provided by the playing fields located on the east side of the campus, the open space near two man-made lakes in the north-central area of the main campus, and the Copeland Creek corridor. In addition, landscaping is abundant throughout the main campus. Copeland Creek, a seasonal creek, extends east-west through the northern portion of the campus. The creek corridor, bounded by a dense growth of trees and brush, provides a natural separation between the developed main campus to the south of the creek and the mostly undeveloped area north of the creek.

Most of the project site north of Copeland Creek consists of cropland and former cropland (primarily oat hay production and melon growing). The parcels west of the tributary to Copeland Creek are still currently managed for oat hay production. This area also contains a freshwater marsh and a tributary/artesian seep. A variety of natural vegetation, including trees and shrubs, are located along these drainages. In an area of the located north of the creek and west of Petaluma Road, a single-family residence and several dilapidated buildings were recently demolished.

PLANNING JURISDICTIONS AND RELEVANT PLANS

State Planning Jurisdiction

In adopting the Donahoe Higher Education Act of 1960, the State Legislature established the Board of Trustees of the California State University (formerly California State College) to "succeed to the powers, duties and functions with respect to the management, administration and control of the state colleges." (Prior to this, the State Board of Education had jurisdiction over the separate colleges.)

Section 89030 of the California Education Code provides that "the Trustees shall adopt rules and regulations not inconsistent with the laws of this State for: a) the governance of the Trustees, b) the governance of their appointees and employees, c) the governance of the California State University." Section 66607 stipulates that "The California State University shall be entirely independent of all political and sectarian influence and kept free therefrom in the appointment of its Trustees and in the administration of its affairs."

A University Campus Planning Committee assists the University in the coordination of long-range planning, including the University Master Plan. The Committee is comprised of a number of University representatives, including the President of the University, the University building program officer, the University Consulting Architect, the Campus Planner, and the Director of Public Safety, various faculty, staff and students, and a representative from the community. The Committee serves in an advisory capacity on the following matters:

- Development and maintenance of the Master Plan;
- Selection of sites for new buildings and other facilities on the campus;
- Review of work by the architects during the preliminary drawing phase;
- Review and advise on the five-year and other long-range building programs;
- Serve as liaison and advisory board for dealing with city and county planning authorities on matters related to campus development, zoning and land use in areas surrounding the University, streets and highways to and from the campus, and other matters;
- Review and advise on matters pertaining to the aesthetic environment of the campus; and
- Other matters for review and advice as delegated by the President of the University.

University Master Plan

The Board of Trustees requires that every campus have a master plan, showing existing and anticipated facilities necessary to accommodate a specified enrollment, in accordance with approved educational policies and objectives. Each campus master plan reflects the ultimate physical facility requirements of academic programs and auxiliary activities.

The Board of Trustees defines revisions to the master plan as either minor or major revisions. A major master plan revision (which the proposed project consists of) is defined as a project that is architecturally significant, as determined by the senior director in Capital Planning Design and Construction; a revision that changes more than three sites or land uses on the approved master plan; or other criteria and parameters as the Board of Trustees may adopt through its standing orders or by resolution.

The master planning for the University is a continuing process that does not end with approval of the original master plan or with approval of any subsequent revision to the plan. A review for potential modifications to the plan is required every three years to meet new conditions. Any approved master plan revision is subsequently incorporated as the adopted campus master plan.

Local Planning Jurisdiction

The California Constitution, Article 9, Section 6, prohibits the University, as a component of the State's public school system, from being placed under the jurisdiction of a local government. Therefore, the University is exempt from requirement to comply with local land use controls, including local general plans and zoning ordinances. However, the University attempts to ensure its Master Plan is compatible with the goals and policies of local jurisdictions, including Sonoma County, and the City of Rohnert Park.

Sonoma County General Plan

The *Sonoma County General Plan* expresses policies which guide the County's decisions on future growth, development, and conservation of resources within the County. A number of policies within the Land Use Element of the *Sonoma County General Plan* are relevant to the development of the project site, as described below.

Use of Environmental Suitability Criteria in Locating and Guiding Rural and Urban Growth

- Restrict development in areas which are constrained by the natural limitations of the land, including but not limited to, flood, fire, geologic hazards, groundwater availability, and septic suitability. *(Objective LU-7.1)*
- Limit development in wetlands designated [in the Open Space Element of the General Plan]. *(Policy LU-7b)*
- Prohibit new permanent structures within the floodway. Require that any development that may be permitted within the floodplain to be raised above the 100-year flood elevation. *(Policy LU-7c)*

Protection of Agricultural Lands

- Avoid conversion of lands currently used for agricultural production to non-agricultural use. *(Objective LU-8.1)*
- Agricultural lands not currently used for farming but which have soils or other characteristics which make them suitable for farming shall not be developed in a way that would preclude future agricultural use. *(Objective LU-8.3)*
- Discourage uses in agricultural areas that are not compatible with long term agricultural production. *(Objective LU-8.4)*

Preservation of Scenic or Biotic Resources Areas

- The uses and intensities of any land development shall be consistent with preservation of important biotic resource areas and scenic features. *(Goal LU-9)*
- Accomplish development on lands with important biotic resources and scenic features in a manner which preserves or enhances these features. *(Objective LU-9.1)*

The following policy within the Agricultural Resources Element of the *General Plan* is relevant to the development of the project site:

- Limit intrusion of urban development into agricultural areas. *(Objective AR-2.1)*

The project site is located within two land use categories of the *Sonoma County General Plan*. The main campus south of Copeland Creek [Assesor's Parcel No. (APN) 047-131-11]. and two of the parcels north of Copeland Creek (APNs 047-131-08 and –18) are designated Public/Quasi Public Facility. The remainder of the project site (APNs 047-131-20, -23, -26 and –27), as well as adjacent land uses north and east of the site, are designated Diverse Agricultural (20 acres/dwelling unit density). Adjacent land uses south of the project site are designated Rural Residential (20 acres/dwelling unit density).

Permitted development within the Public/Quasi Public category includes government and community facilities, including schools. Permitted uses within the Diverse Agricultural category include those associated with agricultural production processing, production and support services; as well as community facilities, including schools. The Rural Residential land use category primarily permits single-family homes.

Sonoma County Zoning Ordinance

The project site is located within a number of zoning districts established by the *Sonoma County Zoning Ordinance*. The main campus south of Copeland Creek (APN 047-131-11), as well as APN 047-131-08 located north of Copeland Creek, is zoned Public Facilities District (PF). The remaining portion of the project site north of Copeland Creek (APNs 047-131-18, -20, -23, -26 and –27) is designated Diverse Agricultural District (DA). The west portion of the project site north of Copeland Creek (which includes the site of the proposed University housing) is also in a Floodplain Combining District (F2); and the Copeland Creek corridor is also in Biotic Resources Combining District (BR) and Floodplain Combining District (F2).

The zoning code regulations for the PF District and DA District are structured to implement the Public/Quasi Public and Diverse Agricultural land use categories, respectively, of the Sonoma County General Plan. The F2 District is applied to properties within the 100-year flood hazard area. The BR District is applied to, among other areas, designated riparian corridors. For the project site, the Biotic Resources district extends for 50 feet from the top of the creek bank.

The City of Rohnert Park General Plan

The *Rohnert Park General Plan* guides future development within the City of Rohnert Park's planning area. In the project vicinity, the City's existing Sphere of Influence (SOI) does not include the project site, but does include the Canon Manor neighborhood south of the project site, in addition to those areas within its city limits.

The City is currently updating their General Plan which places the project site, as well as adjacent areas to the north and south of the project site, within the City's SOI and Urban Growth boundaries. Approval by the Sonoma County Local Agency Formation Commission (LAFCO) would be required prior to any changes to the City limits or SOI.

Consistency with Local Plans

As discussed above, the University is exempt from the requirement to comply with local land use controls, including local general plans and zoning ordinances. The following discussion is provided. however to acknowledge these plans and to help provided a basis for the University to work with local jurisdictions on planning issues involving the University and the local community.

The Master Plan revision proposes infill development within the University's main campus south of Copeland Creek, and additional development on adjacent agricultural land north of Copeland Creek. Given the existing Sonoma County General Plan land use and zoning designations for the main campus, and the types and sizes of development proposed within the main campus, the proposed infill development would be generally consistent with the County's general plan policies for this area.

Development proposed north of Copeland Creek under the project, including the proposed Center for the Musical Arts and additional University housing, however, could conflict in part with some of Sonoma County's general plan land use policies, including those related to prohibiting development within a floodplain, limiting development in designated wetlands, and conversion of agricultural land. Potential impacts to conversion of agricultural land are described in Impact A.1, below. As discussed in Sections III.C, Hydrology and Water Quality, and III.H, Biological Resources, potential environmental impacts to hydrologic and biological resources would be largely avoided or minimized by implementation of recommended project design features, and avoidance of existing biological resources to the extent feasible, including the provision for the Copeland Creek preservation and buffer zones. Furthermore, mitigation measures identified throughout the EIR will mitigate residual impacts and make the project generally consistent with local land use policies.

As discussed above, the City of Rohnert Park's existing Sphere of Influence (SOI) does not include the project site, however, the City's General Plan Update would place the project site within the City's SOI and Urban Growth boundaries. The Rohnert Park General Plan Update, currently being prepared, anticipates the development proposed under the Master Plan revision (including the proposed Center for the Musical Arts). In the site of the proposed future University housing in the northwest acquisition area (located outside the University's existing property boundary), the City's General Plan Update designates that parcel primarily as a mix of intermediate and high density residential, with a small portion of parks/recreation area. When comparing the University's highest density scenario for that parcel (approximately 300 apartment units) to the maximum housing scenario that would be anticipated under the City's General Plan Update for that area (over 600 units), the University's impact from new housing would be considerably less than that envisioned by the City. Therefore, the Master Plan revision is compatible with the City's overall proposed land use plan for the site, and would in fact reduce density and related impacts on this site.

IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

According to Appendix G of the *CEQA Guidelines*, a project may be deemed to have a significant impact on the environment if it would:

- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect;
- Conflict with existing zoning for agricultural use; or
- Induce substantial population growth in an area, either directly or indirectly.

A project would also be considered to have a significant impact on the environment if it would cause physical changes in the environment that would be substantially incompatible with existing land uses. Such physical changes are addressed in Sections IV.B through IV.M of this EIR.

Impact A.1: The project would result in the conversion of existing agricultural land to non-agricultural use. This would be a less than significant impact.

As discussed in the Setting, the majority of the portion of the project site north of Copeland Creek, accounting for approximately 89 acres, has historically been used for agricultural-related uses. The project would result in the conversion of the majority of these lands on the site to non-agricultural uses, consisting of the Center for the Musical Arts, including new building structures associated with the musical facility, audience lawns, and parking facilities; as well as the proposed University housing area.

The portion of the project site north of Copeland Creek, and a small portion of the project site off East Cotati Avenue that would serve as the site of the proposed soccer stadium and additional parking, are designated Farmland of Local Importance (Department of Conservation, 1999). The soils on these sites consist primarily of Clear Lake clay and clay loam soils, which can be used primarily for growing oat hay, and for irrigated pasture. These soils on the site are designated as having moderate limitations that reduce the choice of plants that can be grown, because it is shallow, droughty, saline or stony; and due to fine or very fine textured surface soil (USDA, 1972). None of the project site parcels are under a Williamson Act contract (Carscadden, 1999).

The conversion of these portions of the project site to non-agricultural use under the project would account for a loss of approximately 0.1 percent of the total Farmland of Local Importance within the County (Department of Conservation, 1999). The CEQA *Guidelines* do not specify that loss of Farmland of Local Importance in itself is considered a significant environmental impact. There is no designated Prime Farmland, Unique Farmland, or Farmland of Statewide Importance on the project site. Furthermore, the project would not obstruct or hinder the potential for continued agricultural production or processing on adjacent agricultural land uses north and east of the project site.

As such, the land use impact of the project converting farmland to a non-agricultural use would be less than significant.

Mitigation: None required.

Impact A.2: The project would increase the residential population on the project site and the local community. This would be a less than significant impact.

The Master Plan revision would accommodate an increase in the number of students living on-site, and may introduce some faculty living on-site (under one of the University housing options; see Chapter III, Project Description). However, as discussed in the Project Description, the Master Plan revision would not involve a change in the University's ultimate planned student capacity of 10,000 full-time equivalents (originally established by the University in 1976), and would not involve an increase in the rate of student enrollment above that anticipated by the existing approved Master Plan. Therefore, although the buildout of the project could increase the number of students, faculty and staff living off-site within the local community (Rohnert Park/Cotati), nearby cities (Petaluma, Santa Rosa and Sebastopol) and elsewhere within and outside the County when compared to existing conditions, such increases would not exceed those that were envisioned by the existing approved Master Plan. In fact, the additional on-site housing proposed under the project would house a portion of the student and/or faculty population, thereby reducing the off-site project-associated housing demand compared to the existing approved Master Plan. The project would not displace any existing housing on the site.

As discussed in the Setting, the City of Rohnert Park General Plan Update designates the northwest acquisition area a primarily as a mix of intermediate and high density residential uses, with some parks/recreation area. When comparing the University's highest density scenario for that parcel (approximately 300 apartment units) to the maximum housing scenario that would be anticipated under the City's General Plan Update for that area (over 600 units), the University's impact from new housing would be considerably less than that envisioned by the City.

The project would also create new temporary construction employment opportunities at the project site, and would create new permanent on-site full-time and part-time employment positions for new University faculty and staff. A number of new on-site student employment opportunities would also be created.

As such, the project-generated increase in population in the local area would not be considered substantial nor would result in significant environmental impacts.

Mitigation: None required.

Impact A.3: The project could be incompatible with existing or approved development in the project vicinity. This would be a less than significant impact.

The uses proposed under the project would be generally compatible with neighboring residential, commercial and academic uses. The project would not divide the surrounding community, nor would it hinder the potential for continued agricultural production or processing on neighboring agricultural land uses north and east of the project site. As discussed in Sections IV.G, Visual

Quality, and IV.F, Noise, the project would not result in significant visual or noise impacts on adjacent land uses.

There is no unbuilt development approved by either Sonoma County or the City of Rohnert Park adjacent to the project site, and only limited approved development in the project vicinity, consisting of new residential and/or mixed-use development.[1] The development proposed under the Master Plan revision would not conflict with these approved uses. The project would also not conflict with adjacent land use designations of Sonoma County or the City of Rohnert Park General Plans.

Mitigation: None required.

REFERENCES – Land Use, and Planning

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Gaiser, Robert, Planner, Sonoma County Permit and Resources Management Department, Environmental and Comprehensive Planning Division, telephone conversation, July 29, 1999.

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Sonoma County, *Sonoma County General Plan*, 1994.

United States Department of Agriculture Soil Conservation Service (USDA-SCS), *Soil Survey, Sonoma County, California*, 1972.

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1 Sonoma County has no planned or approved development in the project vicinity (Gaiser, 1999). The City of Rohnert Park approved development of a mixed residential/commercial development located approximately 0.3 miles west of the project on Maurice Avenue in the City. The development would include approximately 4,100 square feet (s.f.) of retail, and 4,000 s.f. of residential uses (Brashears, 1999). Three approved affordable housing developments, each containing between 20 and 23 apartments, to be located approximately one-half mile west of the University, are currently on hold pending the outcome of litigation (McConnell, 1999).

B. GEOLOGY, SOILS, AND SEISMICITY

This section describes the topographic and geologic settings relevant to the project. The soils, seismicity, geologic and seismic hazards are also described, as are the relevant regulatory background topics and their applicability to the project. Applicable project impacts and mitigation measures are presented and discussed.

TOPOGRAPHICAL SETTING

The University is located in the Cotati Valley, on a gently sloping alluvial fan that radiates westward from the uplands of the Sonoma Mountains. The natural slope of the alluvial fan is approximately one percent. The project site is relatively flat with elevations ranging from approximately 120 foot above sea level (asl) along its west border, gradually increasing to about 175 feet asl along its east border. Surface elevations gradually increase easterly towards the Sonoma Mountain uplands to elevations between 400 and 600 feet msl.

GEOLOGICAL SETTING

The project site is located within the natural region of California known as the Coast Ranges geomorphic province. Much of the Coast Range province is composed of marine sedimentary and volcanic rocks that form the Franciscan Assemblage.[1] These rocks occur in northwest-trending ridges and valleys and extend along the Pacific Coast from Oregon 400 miles south into Southern California (Oakeshott, 1978).

Along the eastern side of the Cotati Valley, the Sonoma Mountains are composed of Pliocene-aged (three to eleven million years ago) Sonoma Volcanics. These rocks were formed during relatively recent volcanic activity in this area. The Pliocene-aged Wilson Grove Formation forms the uplands on the western side of the Cotati Valley and consists of conglomerate and sandstone[2]. The Pliocene-aged Petaluma Formation include claystones, siltstones, and mudstones formed from material eroded off surrounding upland areas at about the same time as the Sonoma Volcanics. Petaluma Formation rocks can be found on the west and east margins of the Cotati Valley. Holocene-aged (0 to 10,000 years ago) alluvial deposits typical throughout the Cotati Valley underlie SSU.[3] These younger alluvial sediments consist of gravel, sand, silt and clay and originated from erosion of the upland areas.

Geologic studies previously completed at the University reveal a relatively consistent distribution of inter-bedded alluvial materials including clay, silt, sand and gravel underlain by the Petaluma Formation. These deposits are approximately 450 feet thick. The clay and silt are generally described as stiff and can be moderately to highly expansive. The sand and gravel deposits can be very dense. Although most coarser-grained sands and gravels contained silt and clay, subsurface exploration encountered some layers of clean sand and sandy gravel (HLA, 1993).

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1 The Franciscan Assemblage is a name applied to the rocks that form the bulk of the Coast Range mountains.
2 Conglomerates are rocks composed of rounded pebbles, cobbles and boulders.
3 An alluvial deposit is one that has been deposited by a stream or running water.

SOILS

Soil of the Clear lake Series, as defined by the United States Department of Agriculture (USDA) Soil Conservation Service, generally characterize surface soil underlying SSU. Clear Lake Series soils typically occur on nearly level alluvial fans and flood plains and are formed in recent alluvium. Soils adjacent to Copeland Creek are classified as Riverwash. Surficial soils exhibit various characteristics dependent on location, slope, parent rock, climate and drainage. Clear lake soils consist of clays that are formed under conditions exhibiting poor drainage. These soils are mainly used for growing oat-vetch and oat hay for dairy and horse feed. Clear Lake soils can be highly expansive and highly corrosive. Riverwash soils consist of recently deposited gravel, sand and silt alluvium along major streams and tributaries.

SEISMICITY

The San Francisco Bay Area region contains both active and potentially active faults and is considered a region of high seismic activity.[4] The 1997 Uniform Building Code (UBC) locates the entire Bay Area within Seismic Risk Zone 4. Areas within Zone 4 are expected to experience maximum magnitudes and damage in the event of an earthquake (Lindeburg, 1998).

Earthquakes pose risks to the project site because of site's proximity to active faults with relatively recent activity. The National Earthquake Prediction Evaluation Council, formed after the 1989 Loma Prieta earthquake, evaluated the probability of one or more earthquakes of Richter magnitude 7 or higher occurring in the San Francisco Bay Area within the next 30 years. The result of the evaluation indicated a 67 percent likelihood that such an earthquake event will occur in the Bay Area between 1990 and 2020 (Schwartz, 1994). The Working Group on California Earthquake Probabilities estimates a 30-year probability of 22 percent for a Richter Magnitude 7 event along the Rodgers Creek Fault Zone.

REGIONAL FAULTS

The project site is located 2.5 miles west of the Rodgers Creek Fault Zone, approximately 16 miles south of the Maacama Fault Zone, approximately 17 miles northeast of the San Andreas Fault Zone, and approximately 28 miles north of the Hayward fault.[5] The Rodgers Creek fault, the San Andreas fault, the Maacama fault and the Hayward fault are the four principally active, strike-slip–type faults in the region that have experienced movement within the last 150 years.[6]

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4 An *active* fault is defined by the State of California as a fault that has had surface displacement within Holocene time (approximately the last 10,000 years). A *potentially active* fault is defined as a fault that has shown evidence of surface displacement during the Quaternary (last 1.6 million years), unless direct geologic evidence demonstrates inactivity for all of the Holocene or longer. This definition does not, of course, mean that faults lacking evidence of surface displacement are necessarily inactive. *Sufficiently active* is also used to describe a fault if there is some evidence that Holocene displacement occurred on one or more of its segments or branches (Hart, 1997).

5 The Rodgers Creek Fault Zone has been referred to in the past as the Healdsburg-Rodgers Creek Fault Zone. According to the California Division of Mines and Geology and the U.S. Geological Survey, the Rodgers Creek Fault Zone extends approximately 39 miles (63 kilometers) north from the San Pablo Bay to the town of Healdsburg. At that point it connects with the potentially active Healdsburg Fault Zone. Previous studies have mapped the junction of the Rodgers Creek fault and the Healdsburg fault within the City of Santa Rosa.

6 "Strike-slip" faults primarily exhibit displacement in a horizontal direction, but may have a vertical component.

A major seismic event on any of these active faults could cause groundshaking at the project site, as was experienced during earthquakes in recent history, namely the 1868 Hayward earthquake, the 1906 San Francisco earthquake, and the 1989 Loma Prieta earthquake.

Other principal faults capable of producing groundshaking at the project include the San Gregorio–Hosgri Fault Zone, the Calaveras fault, and the Concord–Green Valley fault (see Figure IV.B-1). The potentially active faults in the vicinity of project site include the Healdsburg Fault Zone, the Tolay fault, the Americano Creek fault, the Bloomfield fault and the Burdell Mountain fault. Failure along these and other minor potentially active faults could possibly be triggered by activity within the San Andreas Fault Zone or along the Rodgers Creek Fault Zone. Table IV.B-1 lists the activity status, historical seismicity, and magnitudes for principal regional faults.

SHAKING INTENSITY

Earthquakes on the various active and potentially active San Francisco Bay Area fault systems are expected to produce a wide range of groundshaking intensities at the project site. The estimated maximum (moment) magnitudes (Table IV.B-1) represent characteristic earthquakes on particular faults.[7]

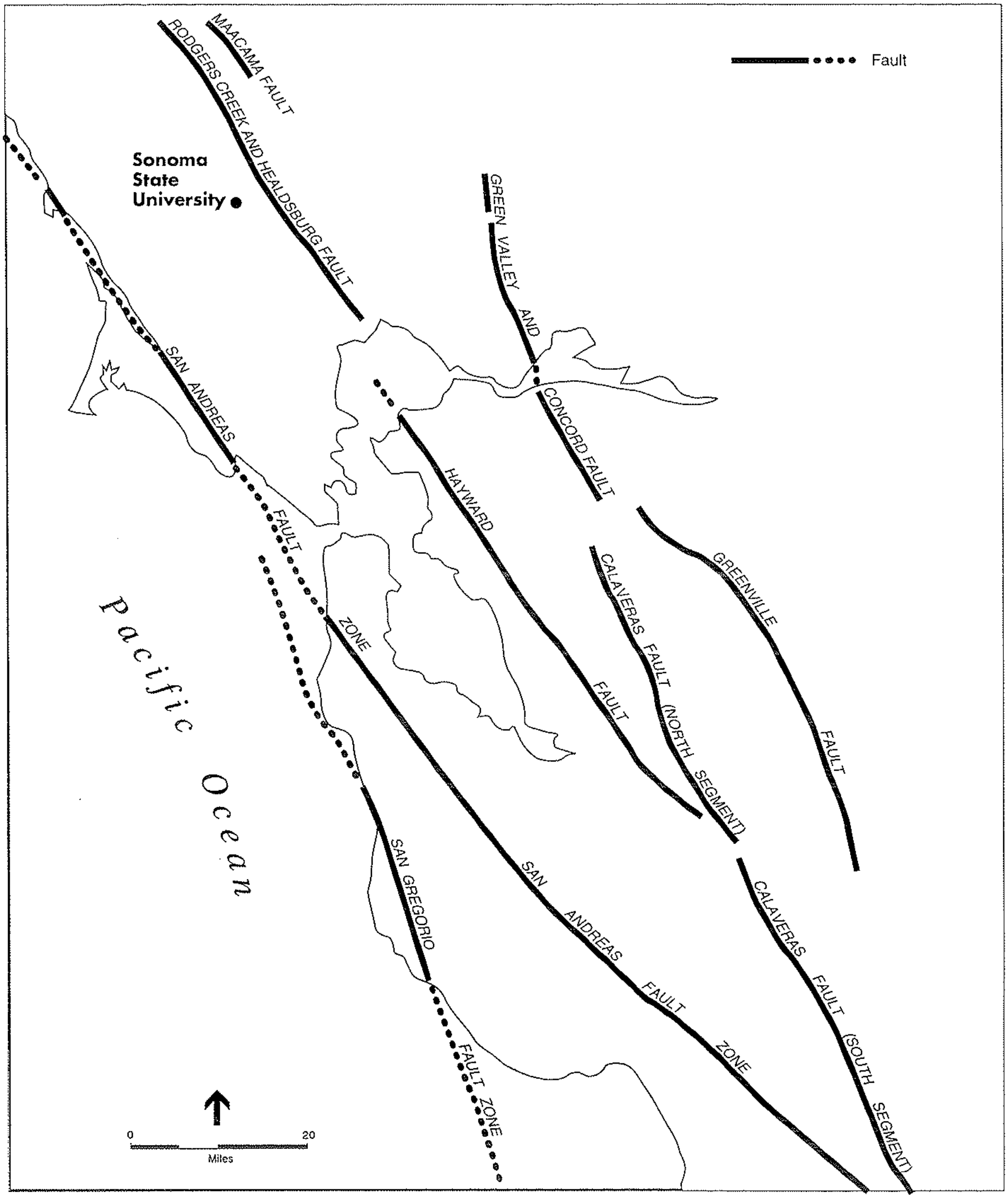
While the magnitude is a measure of the energy released in an earthquake, intensity is a measure of the groundshaking effects at a particular location. Shaking intensity can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geologic material. Intensities generally are highest at the fault and decrease with distance from the fault (Toppozada, et al., 1994).

The Modified Mercalli (MM) intensity scale (Table IV.B-2) is commonly used to measure earthquake effects due to groundshaking. The MM values for intensity range from I (earthquake not felt) to XII (damage nearly total). MM intensities ranging from IV to X could cause moderate to significant structural damage. The shaking severity level (light to very violent) represents the estimated overall level of damage that will occur for various MM intensity levels. The damage, however, will not be uniform. Some buildings will experience substantially more damage than this overall level, and others will experience substantially less damage. Not all buildings perform identically in an earthquake. The age, material, type, method of construction, size, and shape of a building all affect its performance (ABAG, 1998a).

Rodgers Creek Fault Zone

In the vicinity of the project site, a characteristic earthquake in the Rodgers Creek Fault Zone with estimated moment magnitude of 7.1 could produce MM intensities ranging from strong (MM-VII) to very violent shaking (MM-X) (ABAG, 1998b). The range of effects typically

7 Moment magnitude is related to the physical size of a fault rupture and movement across a fault. Richter magnitude scale reflects the maximum amplitude of a particular type of seismic wave. Moment magnitude provides a physically meaningful measure of the size of a faulting event (CDMG, 1997b).



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SOURCE: Environmental Science Associates

Figure IV.B-1
Principal Active Faults in
San Francisco BayArea

TABLE IV.B-1
FAULTS IN THE VICINITY OF THE UNIVERSITY

Fault Zone	Location Relative to the University	Recency of Faulting[a]	Historical Seismicity[b]	Slip Rate[c] (mm/year)	Maximum Moment Magnitude[d]
Rodgers Creek (includes potentially active Healdsburg Fault Zone)	2.5 miles east	Historic	M6.7: 1898 M5.6, 5.7: 1969	9.0	7.0
Maacama	12 miles north	Holocene	N/A	9.0	7.1
San Andreas (Peninsula and Golden Gate segments)	17 miles west	Historic	M 7.1: 1989 M 8.25: 1906 M 7.0: 1838 Many <M 6	17.0	7.3
Concord-Green Valley	26 miles east	Historic	Active Creep[e]	6.0	6.9
Hayward	28 miles southeast	Historic	M 6.8: 1868 M 7.0: 1838 Many <M 4.5	9.0	6.9
San Gregorio–Hosgri Fault Zone	30 miles south	Holocene	Many M 3-6.4	5.0	7.3
Mount Konocti Bay/Big valley	42 miles north	Historic	1906	N/A	6.5[b]
Calaveras	60 miles south	Historic	M 6.1: 1984 M 5.9: 1979 Many <M 6.5	15.0 (Maximum)	6.8
Tolay, Americano Creek, Burdell Mountain, Bloomfield	<10 miles west	Quaternary	NA	NA	NA

a Recency of faulting from Jennings, 1994. Historic: displacement during historic time (within last 200 years), including areas of known fault creep; Holocene: evidence of displacement during the last 10,000 years; Quaternary: evidence of displacement during the last 1.6 million years; Pre-Quaternary: no recognized displacement during the last 1.6 million years (but not necessarily inactive).
b Richter magnitude (M) and year for recent and/or large events.
c Slip Rate = Long-term average total of fault movement including earthquake movement, slip, expressed in millimeters.
d The Maximum Moment Magnitude is an estimate of the size of a *characteristic* earthquake capable of occurring on a particular fault. Moment magnitude is related to the physical size of a fault rupture and movement across a fault. Richter magnitude scale reflects the maximum amplitude of a particular type of seismic wave. Moment magnitude provides a physically meaningful measure of the size of a faulting event (CDMG, 1997b). Richter magnitude estimations can be generally higher than moment magnitude estimations.
e Slow fault movement that occurs over time without producing an earthquake.

NA = Not applicable and/or not available.

SOURCES: Jennings, C. W., 1994, Fault Activity Map of California (with Appendix), California Division of Mines and Geology, Geologic Data Map No. 6; Peterson, M. D., Bryant, W. A., Cramer, C. H., 1996, Probabilistic Seismic Hazard Assessment for the State of California by the California Department of Conservation, Division of Mines and Geology, Open File Report 96-08, USGS Open-File Report 96-706.

TABLE IV.B-2
MODIFIED MERCALLI INTENSITY SCALE

Intensity Value	Intensity Description	Average Peak Acceleration
I.	Not felt except by a very few persons under especially favorable circumstances.	< 0.0015 g
II.	Felt only by a few persons at rest, especially on upper floors on buildings. Delicately suspended objects may swing.	< 0.0015 g
III.	Felt quite noticeably indoors, especially on upper floors of buildings, but many persons do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibration similar to a passing of a truck. Duration estimated.	< 0.0015 g
IV.	During the day felt indoors by many, outdoors by few. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.	0.015 g-0.02 g[a]
V.	Felt by nearly everyone, many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.	0.03 g-0.04 g
VI.	Felt by all, many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.	0.06 g-0.07 g
VII.	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.	0.10 g-0.15 g
VIII.	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motor cars disturbed.	0.25 g-0.30 g
IX.	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.	0.50 g-0.55 g
X.	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from river banks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.	> 0.60 g

TABLE IV.B-2 (Continued)
MODIFIED MERCALLI INTENSITY SCALE

Intensity Value	Intensity Description	Average Peak Acceleration
XI.	Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.	> 0.60 g
XII.	Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air.	> 0.60 g

[a] g is gravity = 980 centimeters per second squared. Acceleration is scaled against acceleration due to gravity or the acceleration with which a ball falls if released at rest in a vacuum (1.0g). Acceleration of 1.0g is equivalent to a car traveling 100 meters (328 feet) from rest in 4.5 seconds.

SOURCE: Bolt, Bruce A., *Earthquakes*, W. H. Freeman and Company, New York, 1988.

associated with these intensities could include some structural damage, such as cracks in walls and chimneys to partial collapse of buildings (Table IV.B-2).

San Andreas Fault Zone

The San Andreas Fault Zone is a major structural feature in the region and forms a boundary between the North American and Pacific tectonic plates. Shaking severity ranging from strong (MM-VII) to very strong (MM-VIII) would be expected in the vicinity of the project site from a characteristic earthquake (moment magnitude 7.3) within the San Andreas Fault Zone. Earthquakes within this range of intensities are generally felt by everyone and can cause furniture to overturn, structural damage, and partial collapse in some buildings (ABAG, 1995). As a comparison, the 1906 San Francisco San Andreas fault earthquake, with a moment magnitude of 7.8 located 18 miles east, produced shaking severity levels ranging from strong (MM-VII) to very strong (MM-VIII) in the vicinity of the project site. The 1989 Loma Prieta earthquake, with a moment magnitude of 6.9 located 100 miles south on the San Andreas fault, produced light (MM-V) shaking severity (ABAG, 1998c).[8]

Hayward fault

Shaking severity ranging from strong (MM-VII) to very strong (MM-VIII) would be expected from a characteristic earthquake (moment magnitude 7.3) on the Hayward fault, located 28 miles southeast of the project site. Damage could be similar to that predicted for a characteristic earthquake on the San Andreas Fault Zone.

[8] Intensities for the San Francisco and Loma Prieta earthquakes are based on a model of the San Francisco earthquake and do not represent actual measurements (ABAG, 1998c).

Other Regional Active Faults

Characteristic earthquakes on the Maacama, Calaveras, Concord–Green Valley, San Gregorio, and Mount Konocti faults would be expected to produce moderate (MM-VI) severity. An earthquake with these MM intensities would likely be felt by most persons but would result in little or no structural damage. The Maacama fault may produce shaking severity ranging from moderate (MM-VI) to strong (MM-VII). An earthquake with these MM intensities would likely be felt by everyone but would result in little or no structural damage (ABAG, 1998b).

GEOLOGIC HAZARDS

Potential geologic hazards include expansive soils, settlement, and subsidence. Relevant geologic hazards applicable to the Cotati Valley, including the project site, are discussed below.

EXPANSIVE SOILS

The formation of soils with expansive characteristics may have formed over the alluvial soils underlying the Cotati Valley. Expansive soils possess a "shrink-swell" behavior. Shrink-swell is the cyclic change in volume (expansion and contraction) that occurs in fine-grained clay sediments from the process of wetting and drying. Structural damage may result over a long period of time, usually the result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils. Typically, soils that exhibit expansive characteristics comprise the upper five feet of the surface. The effects of expansive soils could damage foundations of above-ground structures, paved roads and streets, and concrete slabs. Expansion and contraction of soils, depending on the season and the amount of surface water infiltration, could exert enough pressure on structures to result in cracking, settlement, and uplift.

SETTLEMENT

Loose, soft soil material comprised of sand, silt and clay, if not properly engineered, have the potential to settle after a building, is placed on the surface. The soils that overlie the alluvium in the Cotati Valley is susceptible to settlement. Settlement of the loose soils generally occurs slowly but over time can amount to more than than most structures can tolerate. Building settlement could lead to structural damage such as cracked foundations, misaligned or cracked walls and windows.

LAND SUBSIDENCE

Land subsidence is caused by a variety of agricultural practices that contribute to the oxidation and subsequent compaction and settlement of organic clay soils or by hydro-compaction. Subsidence can occur due to groundwater extraction and subsequent lowering of the groundwater surface, typically beneath a confining clay stratum. The impact of subsidence could include lowering of the land surfaces, increased potential for flooding, potential disturbance or damage to buried pipeline and associated structures, and damage to structures designed with minimal tolerance for settlement. The University extracts groundwater to serve on-campus demands from a series of wells located along the north and west sides of the campus (TLCD, 1998). There is no information indicating that the extraction of groundwater within Cotati Valley has resulted in land subsidence. Groundwater extraction from the University supply wells is unlikely to cause significant subsidence resulting lowering of the ground surface.

SEISMIC HAZARDS

Earthquakes will likely be caused by movement on the Rodgers Creek fault or other San Francisco Bay Area active faults within the life of the project. The four major hazards generally associated with earthquakes are groundshaking, fault surface rupture (ground displacement), liquefaction ground failures, and settlement.

GROUNDSHAKING

The project site could be affected by strong groundshaking caused by a major earthquake during the next 30 years. Groundshaking may affect areas hundreds of miles distant from the earthquake's epicenter. Historic earthquakes have caused strong groundshaking and damage in the San Francisco Bay Area, the most recent being the 6.9 (moment magnitude) Loma Prieta earthquake in October 1989. The epicenter for this event was approximately 100 miles southeast of the Project Area; the earthquake caused strong groundshaking for about 20 seconds and resulted in varying degrees of structural damage throughout the Bay Area.

The composition of underlying soils in areas located relatively distant from faults can intensify groundshaking. Portions of the Bay Area that experienced the worst structural damage due to the Loma Prieta earthquake were not those closest to the fault, but rather those with soils that magnified the effects of groundshaking. Areas that are underlain by bedrock tend to experience less groundshaking than those underlain by unconsolidated sediments such as artificial fill. Alluvial-type soils underlying the project site have a moderate to high potential of amplifying groundshaking during an earthquake (ABAG, 1998b). Groundshaking can also be described in terms of peak ground acceleration[9]. Table IV.B-2 lists the average peak acceleration expected with each Modified Mercalli Intensity level.

SURFACE FAULT RUPTURE

Surface expression of fault rupture is typically expected and observed within close proximity to the causative fault.[10] Magnitude, sense, and nature of the rupture can vary for different faults or even along different segments of the same fault (CDMG, 1997a). The Rodgers Creek fault is closest to Sonoma State with the highest potential for significant fault rupture. The project site is

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9 Acceleration is scaled against a value that everyone is familiar with, that is, acceleration due to gravity or the acceleration with which a ball falls if released at rest in a vacuum (1.0g). Acceleration of 1.0g is equivalent to a car traveling 100 meters (328 feet) from rest in 4.5 seconds. Acceleration is expressed by a "g" which is gravity = 980 centimeters per second squared.

10 Fault rupture is displacement at the earth's surface resulting from fault movement associated with an earthquake (Toppozada, 1994).

not located within a designated Alquist-Priolo Fault Rupture Hazard Zone (see Regulatory Background, below) and the potential for fault rupture at the project site is considered very low.

LIQUEFACTION AND GROUND FAILURE

Liquefaction is the process by which water-saturated soil materials lose strength and become susceptible to failure during strong groundshaking in an earthquake. The shaking causes the pore-water pressure in the soil to increase, thus transforming the soil from a solid to a liquid. Liquefaction has been responsible for ground failures during almost all of California's great earthquakes. Liquefaction can occur in areas characterized by water-saturated, cohesionless, granular materials at depths less than 40 feet (ABAG, 1996). The depth to groundwater also controls the potential for liquefaction in this area; the shallower the groundwater, the higher potential for liquefaction.

Four kinds of ground failure commonly result from liquefaction: lateral spread, flow failure, ground oscillation, and loss of bearing strength (ABAG, 1996). A *lateral spread* is a horizontal displacement of surficial blocks of sediments resulting from liquefaction in a subsurface layer. Lateral spread occurs on slopes ranging between 0.3 and 3 percent and commonly displaces the surface by several meters to tens of meters. *Flow failures* occur on slopes greater than 3 degrees and are primarily liquefied soil or blocks of intact material riding on a liquefied subsurface zone. *Ground oscillation* occurs on gentle slopes when liquefaction occurs at depth and no lateral displacement takes place. Soil units that are not liquefied may pull apart from each other and oscillate on the liquefied zone. Ground fissures can accompany ground oscillation and sand boils and damage underground structures and utilities. The *loss of bearing pressure* can occur beneath a structure when the underlying soil loses strength and liquefies. When this occurs, the structure can settle, tip, or even become buoyant and "float" upwards.

Liquefaction potential is highest in the areas underlain by a high water table, layers of loose sand and earthquake intensities greater than MM VI (Toppozada, et al. 1994). Lowland areas of the Cotati Valley underlain by alluvial materials, especially young alluvial deposits, have a moderate to high susceptibility to liquefaction.

EARTHQUAKE-INDUCED SETTLEMENT

Settlement of the ground surface can be accelerated and accentuated by earthquakes. During an earthquake, settlement can occur as a result of the relatively rapid compaction and settling of subsurface materials (particularly loose, non-compacted, and variable sandy sediments) due to the rearrangement of soil particles during prolonged groundshaking. Settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different rates). Within the Cotati Valley, areas susceptible to this type of settlement are underlain by artificial fills, unconsolidated alluvial sediments, slope wash, and areas with improperly engineered construction fills.

REGULATORY BACKGROUND

The *California Building Code* is another name for the body of regulations known as the California Code of Regulations (CCR), Title 24, Part 2, which is a portion of the California Building Standards Code (CBSC, 1995). Title 24 is assigned to the California Building Standards Commission which, by law, is responsible for coordinating all building standards. Under state law, all building standards must be centralized in Title 24 or they are not enforceable (Bolt, 1988).

The *Alquist-Priolo Earthquake Fault Zoning Act* (formerly the Alquist-Priolo Special Studies Zone Act) requires the delineation of zones along active faults in California. The project site is not located within a designated Alquist-Priolo Fault Rupture Hazard Zone, and the potential for fault rupture at the project site is considered very low. The *Seismic Hazards Mapping Act* requires the State Geologist to delineate various seismic hazard zones and requires cities, counties, and other local permitting agencies to regulate certain development projects within these zones. Preparation of a Preliminary Seismic Hazards Map for the vicinity of the project site has not been completed by the California Division of Mines and Geology (Hart, 1998).

In 1992, the California State University (CSU) began a seismic retrofit program to identify and address seismic issues associated with CSU campus buildings. As part of the program, CSU formed a Seismic Review Board (SRB), comprised of a number of state-certified structural engineers with seismic expertise, to implement this retrofit program for all campus facilities. In addition, the SRB reviews plans for all campus facilities for seismic adequacy.

IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

CEQA defines a significant effect on the environment as a substantial, or potentially substantial, adverse change in the physical conditions within the area affected by the project. According to CEQA *Guidelines,* a project would normally be considered to have significant geology-related impacts if it would:

- Expose persons or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault[11], strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides;
- Result in substantial soil erosion or the loss of topsoil;
- Be located on strata or soil that is unstable, or that would become unstable as a result of the project, and potentially result in lateral spreading, subsidence, liquefaction, or collapse; or
- Be located on expansive soil[12] creating substantial risks to life or property.

[11] Per CEQA *Guidelines,* a known earthquake fault is one that has been delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42.

[12] Per CEQA *Guidelines,* expansive soil is defined in Table 18-1-B of the Uniform Building Code.

Impact B.1: In the event of a major earthquake in the region, seismic groundshaking could potentially injure persons at the project site due to resulting structural damage, structural collapse or falling of the existing facility structures. Groundshaking could potentially expose persons and property to seismic-related hazards, including localized liquefaction, related ground failure and seismically-induced settlement. This would be a significant impact.

Public schools have been give special legislative attention with respect to earthquake safety since the Long Beach earthquake in 1933. The seismic design provisions of the building codes, including those for school buildings, have been considerably improved over the past 60 years. While public buildings will continue to perform well in earthquakes, it is unrealistic to expect that no damage or injury will occur (Toppozada, 1994).

The University would likely experience at least one major earthquake (greater than moment magnitude 7) within the next 30 years. The intensity of such an event would depend on the causative fault and the distance to the epicenter, the moment magnitude, and the duration of shaking. The maximum amount of groundshaking is expected to occur from a characteristic earthquake on the Rodgers Creek fault. Modified Mercalli Intensity levels expected for such event would range between MM-VII and MM-IX with equivalent ground peak accelerations of 0.1g to 0.56g.

Damage from groundshaking could include cracking in walls and pavement, damage to exterior building elements and possible damage to utilities. Groundshaking at the project site could cause some structural damage to the facility structures or at least cause unsecured objects to fall. Groundshaking could expose school employees and students to injury from building structure damage, toppling furniture and equipment or hazards associated with falls. Damage of the structural elements of the school buildings or injury of employees and students caused by a seismic event could result in temporary cessation of school operations. The amount of damage could be higher with older existing structures. Considering current seismic design criteria, damage would be lowest in the buildings proposed under the project. Damage is typically high in buildings constructed on improperly engineered fills or artificial fills.

Currently, the developed University campus, and adjacent lands to be developed under the Master Plan revision, may be underlain by soil that is potentially liquefiable. These soils are about ten feet thick and is approximately ten feet below the surface (HLA, 1993). Liquefaction potential could increase in areas underlain by riverwash, adjacent to Copeland Creek. Failures due to liquefaction could include lateral spreads, ground oscillation, and loss of bearing pressure resulting in settlement. Liquefaction-related failures could damage foundations, disrupt utility service, and cause damage to roadways. Ground settlement due to liquefaction may also occur and cause structural damage to foundations.

Mitigation Measure B.1: The proposed construction under the project shall comply with site-specific recommendations and standards for seismic design as provided by the project geotechnical engineer; the seismic design requirements of the California Code of Regulations, Title 24; and as recommended by the CSU Seismic Review Board.

These recommendations are intended to ensure that all facilities are designed to withstand the highest expected peak acceleration as determined by seismic evaluation under the Uniform Building Code for each specific building location. Geotechnical studies determine the interrelationships between the site-specific conditions of the soil and rock as they relate to the foundation support of a structure. Through a geotechnical study, characteristics of the subsurface soils and rock can be determined through direct testing. Soil conditions susceptible to ground failure caused by liquefaction are identified by geotechnical studies and corrective measures are recommended. If liquefiable soils are identified through geotechnical study, evaluation of soils should be conducted in accordance with California Division of Mines and Geology, Special Publication 117. Design recommendations for areas susceptible to liquefaction may include, if applicable to the specific location, rigid mat or grid foundation, pile foundation or drilled pier foundation.

This level of protection would be adequate to meet the currently accepted standard of an acceptable level of risk, and would reduce hazards resulting from seismic ground shaking to less-than-significant levels.

Significance After Mitigation: Less than Significant.

Impact B.2: Proposed construction under the project could be subjected to the geologic hazards related to expansive soils, differential settlement and corrosivity. This would be a significant impact.

The Clearlake Clay series soils identified to underlie the Cotati Valley, including the project site, have the potential to be expansive and exhibit shrink-swell behavior (HLA, 1993). The effects of expansive soils could damage foundations of aboveground structures, paved service roads, and concrete slabs. Surface structures with foundations constructed in expansive soils would experience expansion and contraction depending on the season and the amount of surface water infiltration. The expansion and contraction could exert enough pressure on the structures to result in cracking, settlement, and uplift.

Silts and clay materials underlying the project site have been classified as moderately compressible and could settle if structures are supported on shallow spread footings foundations (HLA, 1993). Settlements would occur from static loads and possibly half of the settlement would take place during construction or shortly thereafter. Differential settlement could occur between column or floor slabs due to variability of underlying soil conditions.

The Clear Lake clay soils series can have high ion concentrations, high soil pH and reduction-oxidation potential. These conditions result in a soil that is highly corrosive to buried concrete, steel pipes and electrical conduits. Over time, pipe corrosion could lead to pipeline failure, resulting in localized surface flooding of water or localized settlement of surface soils in the location of the failure. Failed subsurface electrical conduits could result in electrical short-circuiting.

Mitigation Measure B.2: The proposed construction under the project shall comply with site-specific recommendations and standards for soils and foundation engineering as provided by the project geotechnical engineer; the California Code of Regulations, Title 24; and as recommended by the CSU Seismic Review Board.

These recommendations are intended to ensure that facility foundations and utilities proposed for construction in areas with expansive soils, settlement potential and corrosive soils are designed to reduce the risk of damage at each specific building location. Geotechnical studies determine the interrelationships between the site-specific conditions of the soil and rock as they relate to the foundation support of a structure. Through a geotechnical study, characteristics of the subsurface soils and rock can be determined through direct testing. Soil conditions susceptible to shrink-swell behavior, compressibility and corrosivity are identified by geotechnical studies and corrective measures are recommended.

This level of protection would be adequate to meet the currently accepted standard of an acceptable level of risk, and would reduce hazards resulting from seismic ground shaking to less-than-significant levels.

Significance After Mitigation: Less than Significant.

With implementation of the mitigation measure identified above, hazards resulting from expansive, compressible and corrosive soil conditions would be reduced to a less-than-significant level.

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C. HYDROLOGY AND WATER QUALITY

SETTING

WATERSHED AND DRAINAGE

The local area is located in the eastern portion of the Laguna de Santa Rosa watershed, which drains from south to north, feeds into the Santa Rosa Plains and eventually flows into the Russian River. The Laguna de Santa Rosa receives a portion of its water from several drainages and creeks on Sonoma Mountain, including Copeland Creek, which extends east-west through the project site, and Hinebaugh Creek, which extends east-west approximately one-third mile north of the project site (Copeland and Hinebaugh Creeks are illustrated in Figure III-1 in Project Description). Copeland Creek consists of a natural channel within the project site; downstream (west of) of the project site, Copeland Creek is a constructed (deepened and/or widened) natural channel.

The mostly undeveloped portion of the project site north of Copeland Creek (the northern acquisition area) slopes and naturally drains overland towards the northwest, away from Copeland Creek and towards roadside ditches along Rohnert Park Expressway. These ditches collect this runoff and convey it into two culverts under Rohnert Park Expressway which, via drainage ditches, ultimately discharge into Hinebaugh Creek.

The developed portion of the project site, consisting of the main campus located south of Copeland Creek, currently directs stormwater flows to Copeland Creek via on-site infrastructure. The main campus is divided into three zones, consisting of the western (Zone 1), central (Zone 2) and eastern (Zone 3) portions of the main campus. Zone 1 drains the University residential areas, and a portion of the site of the Information Center. The zone discharges through a 48-inch outlet to Copeland Creek and a 24-inch outlet to a drainage swale along the west property boundary. Zone 2 drains the main campus core through a 36-inch outlet to Copeland Creek and a subsurface drain that runs parallel to the main campus utility tunnel. Zone 3 drains the parking lots G and H, the campus support services complex, athletic fields and the football stadium. Zone 3 discharges to Copeland Creek through a 27-inch outlet.

A Utility System Master Plan, prepared in 1995, evaluated the University's existing stormwater infrastructure capabilities and future infrastructure needs. The plan indicated that the University's stormdrainage system serving Zones 2 and 3 was not in conformance with the SCWA drainage design criteria with respect to capacity for flows from a 10-year event. However, the plan also indicated the stormdrain system should functionally carry these runoff flows, since large undeveloped areas in Zone 3 are not connected to the drainage system, and because of the supplemental capacity provided by a subdrain in the Zone 2 area (Winzler and Kelly, 1995).

In the interim period since the preparation of the 1995 Utility System Master Plan, no substantial changes to, or improvements of, the University's drainage system has occurred. Sauvignon

Village (under construction, see Chapter III, Project Description for a description of the facilities) was connected for drainage to the Zone 1 system. The Information Center (under construction; see Chapter III, Project Description for a description of the facility), primarily displaces existing paved parking lots in Zone 1. In addition, approximately three previously undeveloped acres within Zone 2 have been converted to parking lot use.

FLOODING

Portions of the project site are within the 100-year flood zone as designated by the Federal Emergency Management Administration's (FEMA) National Flood Insurance Program. This includes the Copeland Creek channel within the project site, and the west portion of the northern acquisition area, where flows would achieve enough height to overtop the northern bank of Copeland Creek and break out off-site towards the intersection of Rohnert Park Expressway and Snyder Lane. These portions of the site are designated Zone A0, which is an area of shallow flooding (with an depth inundation of one foot or less). The rest of the project site is an area of minimal flooding (FEMA, 1981, 1991).

NONPOINT SOURCE POLLUTION

During periods of wet weather, rain carries pollutants and sediments from all parts of a watershed into surface water bodies such as storm drains, streams, rivers, reservoirs, or marshes. In an urban setting, natural drainage patterns have been altered and stormwater runoff, as well as non-storm discharge (irrigation water, accidental spills, washdown water, etc.), picks up sediments and contaminants from land surfaces, and transports these pollutants into surface and ground water. These diffuse sources of pollutants range from parking lots, bare earth at construction sites, agricultural sites and a host of many other sources. The total amount of pollutants entering aquatic systems from these diffuse, nonpoint sources is now generally considered to be greater than that from any other source, such as pipe discharges (point source).

Urban runoff can contribute nonpoint source pollutants to the waters of the Cotati Valley. Pollutants of concern typically found in urban runoff include sediments, nutrients, pathogens, oxygen demanding substances (plan debris, animal wastes, etc.), petroleum hydrocarbons, heavy metals, toxic pollutants, floatables (litter, yard wastes, etc.), and synthetic organics (pesticides, herbicides, PCBs, etc.). Urban runoff includes sediment and other pollutants discharging from construction sites due to improper erosion control measures.

The University currently maintains a Pesticide Management Plan that manages the handling and application of pesticides on the campus. This plan includes, among other provisions, training for employees in the proper use of pesticides, the use of employee change areas and washing facilities, and the designation of pesticide management zones to ensure potential impacts to the environment, including water resources, are minimized.

REGULATORY FRAMEWORK

The major federal legislation governing the water quality aspects of the project is the Clean Water Act (CWA), as amended by the Water Quality Act of 1987. The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The State of California's Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) provides the basis for water quality regulation within California. The State Water Resources Control Board (SWRCB) administers water rights, water pollution control, and water quality functions throughout the state, while the Regional Water Quality Control Boards conduct planning, permitting, and enforcement activities. The project area lies within the jurisdiction of the North Coast Regional Water Quality Control Board, Region 1.

Regional Water Quality Control Board

The RWQCB is responsible for the protection of beneficial uses of water resources within the North Coast Region. The RWQCB uses planning, permitting, and enforcement authorities to meet this responsibility, and has adopted a *Water Quality Control Plan* to implement plans, policies, and provision for water quality management. Beneficial uses of surface waters are described in the plan and are designated for major surface waters and their tributaries. In addition to identification of beneficial uses, the plan also contains water quality objectives that are intended to protect the beneficial uses of the area.

Construction Activity Permitting

The RWQCB administers the National Pollutant Discharge Elimination System (NPDES) stormwater permitting program in the North Coast Region. Construction activities of five acres or more are subject to the permitting requirements of the NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (General Construction Permit). The project applicant must submit a Notice of Intent (NOI) to the RWQCB to be covered by the General Permit prior to the beginning of construction. The General Construction Permit requires the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which must be prepared before construction begins. The plan would include specifications for Best Management Practices (BMPs) that would be implemented during project construction to control contamination of surface flows through measures to prevent the potential discharge of pollutants from the construction area. Additionally, the plan would describe measures to prevent or control pollutants in runoff after construction is complete and identify a plan to inspect and maintain these facilities or project elements. Implementation of the plan starts with the commencement of construction and continues though the completion of the project. Upon completion of the project, the applicant must submit a Notice of Termination to the RWQCB to indicate that construction is completed.

Sonoma County Water Agency

The California Constitution, Article 9, Section 6, prohibits the University, as a component of the State's public school system, from being placed under the jurisdiction of a local government or other non-educational agency. However, the University attempts to ensure its Master Plan is compatible with the goals of local and countywide jurisdictions. The Sonoma County Water Agency (SCWA) is a countywide special district that manages control and disposition of flood, storm and other waters within the County, including the distribution of stormwater runoff to the various creeks and drainage features of the project vicinity. The SCWA maintains a hydraulic maintenance agreement along Copeland Creek through the project site, whereby the SCWA improves and maintains the channel by removing vegetation and other impediments to the channel flow (SCWA, 1999).

The SCWA designates the project site (including the northern acquisition area, which currently drains away from Copeland Creek) within the Copeland Creek Hydraulic Model in its hydrologic studies of major Sonoma County drainage features (most recently updated in 1987).

IMPACTS AND MITIGATIONS MEASURES

SIGNIFICANCE CRITERIA

According to Appendix G of the *CEQA Guidelines*, a project may be deemed to have a significant impact on the environment if it will:

- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems; or
- Substantially alter the existing drainage pattern of the site or area in a manner which would result in substantial erosion of siltation on- or off-site;
- Substantially alter the existing drainage pattern of the site or area, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map, or place structures within a 100-year flood hazard area that would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury or death involving flooding.
- Violate any water quality standards or waste discharge requirements; or otherwise substantially degrade water quality.

Impact C.1: The proposed project would increase stormflows to Copeland Creek, increasing the potential for flooding of the natural channel portion of Copeland Creek during a 100-year event. This would be a significant impact.

As discussed in the Setting, the Sonoma County Water Agency (SCWA) designates the project site (including the northern acquisition area, which currently drains away from Copeland Creek towards Hinebaugh Creek) as within the Copeland Creek Hydraulic Model. Proposed development within the northern acquisition area that would increase surface runoff to Hinebaugh Creek and its downstream constructed channels would impact the theoretical capacity of those facilities, whereas Copeland Creek's constructed channels downstream of the project site would have sufficient theoretical capacity. As part of this EIR, to be consistent with the SCWA's designated distribution of stormwater runoff to the various creeks and drainage features of the project vicinity, it is assumed runoff from the northern acquisition area of the project site would be rerouted southward into Copeland Creek.

A sufficiently large area of watershed exists upstream of the campus (greater than one square mile) such that the design event in Copeland Creek adjacent to the University is the 100-year storm. In the SCWA's 1987 hydrologic study, the 100-year flow in Copeland Creek adjacent to the University was computed as being 2047.3 cubic feet per second (cfs) downstream of the western limits of the campus, where Copeland Creek enters a culvert under Snyder Lane. The hydrologic study assumed a percentage of the actual rainfall (a "C" factor) that is theoretically released into Copeland Creek by the University campus land use (rather than either being absorbed by the ground or evaporating) of 52% (C = 0.52) (Sonoma County Water Agency, 1987).

Under the project, the increase in discharge of on-site stormwater to Copeland Creek associated with the routing of the stormrunoff from the northern acquisition area (currently directed to Hinebaugh Creek), and the increase in on-site impervious surfaces throughout the northern acquisition area and main campus, would increase the flows to Copeland Creek for a 100-year event as estimated in the 1987 SCWA hydraulic model. The proposed development on the main campus south of Copeland Creek would increase the "C" factor of the main campus from 52 percent to 60 percent (C = 0.60). Assuming flows from the northern acquisition area would be routed to Copeland Creek, the northern acquisition area (assuming inclusion of the runoff from south half of Rohnert Park Expressway) would experience an increase in the "C" factor from 52 percent to 65 percent (C = 0.65). Utilizing these "C" factors results in a 100-year flow in Copeland Creek at Snyder Lane of 2115.5 cubic feet per second (cfs), an increase of 68.2 cfs, or about 3.3%, over conditions estimated by the 1987 SCWA hydraulic model.

This projected increase in runoff, and resultant increases in channel water elevation (and accordingly, decreases in available freeboard) would be relatively small. During the 100-year storm, the project would result in an increase in the water surface elevation of 0.15 feet or less over conditions estimated by the 1987 SCWA hydraulic model. However, as described in the Setting, the portion of the natural channel and the west portion of the northern acquisition area are currently located within the 100-year flood zone. If unmitigated, in the event of a 100-year flood, the project would increase flows to Copeland Creek, increasing the potential for flows to overtop the bank of the natural channel within the project site and into the flood zone both on- and off-site.

The constructed natural channel of Copeland Creek downstream of the University campus, from the city limits of Rohnert Park (at the west border of the project site) to its confluence with Laguna de Santa Rosa, is designed to contain the theoretical ultimate developed 100–year flow from its watershed, as delineated in the SCWA's hydrology mapping. The project would reduce the available freeboard in the Copeland Creek downstream of the University (between the University west property boundary and a point 500 feet east of Snyder Lane) to less than the 1.5-foot minimum required by the SCWA drainage design criteria, but not to a point where flooding over the top of the channel bank would occur. The project would have an immeasurable effect on the available freeboard of this constructed natural channel. The project would not result in an increase in stormwater runoff to Copeland Creek upstream of (i.e., east of) the project site.

It should be noted that the routing of flows from the northern acquisition area away from Hinebaugh Creek would avoid project contribution of potential flooding of that drainage, which would not have the built-in capacity to accommodate the project flows from the northern acquisition area. In this respect, the routing of project stormwater flows away from the Hinebaugh Creek drainage would be considered beneficial.

Mitigation Measure C.1a: The project shall include a suitable drainage infrastructure system in the northern acquisition area, in conformance with the Sonoma County Water Agency drainage design criteria, that will discharge stormwater runoff from this area by gravity to Copeland Creek.

The routing of project flows from the northern acquisition area to Copeland Creek (and away from Hinebaugh Creek) would be consistent with the SCWA's designated distribution of stormwater runoff in the project vicinity. The provision for a public drainage easement within the northern acquisition area may also need to be provided to drain the south half of Rohnert Park Expressway adjacent to the project site.

The Water Agency's Drainage Design Criteria, with respect to drainage features such as Copeland Creek and the maintenance of existing freeboard beyond project limits, directs new development of a given area to construct drainage improvements such that no decrease in the available freeboard (which can be usually interpreted as "no increase in the water surface elevation" as defined in the hydraulic model) will occur at the upstream limits of the improved lands where they adjoin the Creek.

Also, the Drainage Design Criteria indicates that site drainage design needs to account for an increase over the theoretical runoff from the improved area into Copeland Creek as quantified in the SCWA model as it effects available freeboard downstream of the project. Improvements other than bridge crossings, utility crossings and drainage outfalls along Copeland Creek would generally need to be limited to beyond a standard creek setback line. Proposed bridges over the Creek shall be designed so as not to encroach on the floodway as defined by the Army Corps of

Engineers, and to also provide a minimum of 1 foot of freeboard between the design 100-year water surface and the minimum low-chord elevation of the bridge structures.

Mitigation Measure C.1b: The project drainage system shall include an on-site detention system, in conformance with the Sonoma County Water Agency drainage design criteria, that will limit the 100-year peak flow into Copeland Creek.

The most common means of mitigating post-development runoff increases is to introduce some means of detaining the run-off prior to it entering the off-site drainage system, thereby limiting design peak flow to its pre-development value. Detention can be accomplished in a variety of ways. Since the project site features large areas of mostly level terrain, including the areas of existing and proposed parking areas, the individual tributary sub-areas created by site grading may be themselves utilized as detention basins by carefully employing sized drainage inlets, pipes, or a combination of both, to cause water to pond rather than drain very rapidly. Alternatively, a dedicated detention basin may be deliberately created to initially receive site run-off before subsequently releasing it in such a way as to not exceed pre-development flows. The detention basin would be designed to drain by either gravity or by mechanical means (pumping).

The detention system shall be sized to detain the increase in flow for the period of time during which runoff would be predicted to exceed what was the 100-year maximum run-off attributable to the University property as computed in the 1987 SCWA hydrologic study using a runoff coefficient ("C") of 0.52.

Significance After Mitigation: Less than Significant

Impact C2: The project would introduce new development, including proposed University housing, within a designated 100-year flood zone. This would be a significant impact.

The University has a goal to build more in the west portion of the northern acquisition area, and is considering a range of housing scenarios ranging from high-density apartment-style courtyard housing to lower density single-family attached and detached dwellings. This University housing would accommodate between approximately 180 and 310 units, and house between approximately 510 and 1,420 people on this parcel.

As discussed in the Setting, portions of the project site are located within a 100-year flood zone, including the Copeland Creek channel, and the west portion of the northern acquisition area (depth inundation of one foot or less). If unmitigated, the development of on-site housing in this flood zone would pose a flooding threat to people and property within this portion of the site in the event of a 100-year flood.

Mitigation Measure C.2: The northern acquisition area, in particular the western portion proposed for University housing, shall be designed with grades and landforms sufficient to prevent stormwater breakout from a 100-year flood flow.

Significance After Mitigation: Less than Significant

Impact C.3: The project would increase the load on the existing drainage systems on the main campus. This would be a significant impact.

Each drainage system on the main campus drains a watershed (Zones 1, 2 and 3) of less than 0.32 square miles in area, each therefore require drainage capacity able to convey the 10-year storm. The existing systems were evaluated in the 1995 Utility Master Plan were expected to experience increases of 16.4 cfs, 28 cfs and 24.7 cfs on the main campus, respectively, as a result of the development of the approved master plan as of 1993. Although the project proposes some rearrangement of the main campus facilities layout over what was anticipated in the existing approved Master Plan, from a drainage standpoint, the proposed distribution of developed and undeveloped land within each zone on the main campus remains approximately the same. Therefore, these projected increases for the main campus estimated by the 1995 Utility Master Plan are still considered valid for the proposed project.

The University's 1995 *Utility System Master Plan* provided a detailed study of the existing storm drain systems for Zones 1, 2 & 3 on the main campus south of Copeland Creek. The plan included a number of recommendations for upgrading the system to be in conformance with Sonoma County Water Agency design guidelines. Other than providing for drainage for the most recent projects on campus proposed under the existing University Master Plan, including the Information Center, Sauvignon Village and a parking lot expansion, none of the major storm drain mains have been replaced or upgraded since the 1995 Utility Master Plan was prepared (DuVall, 1999).

Mitigation Measure C.3: On-site storm drain infrastructure for the main campus shall be upgraded per the recommendations specified in the University's 1995 *Utility System Master Plan*.

Significance After Mitigation: Less than Significant

Impact C.4: Operation of the project could result in increased nonpoint source pollution entering the stormwater runoff to Copeland Creek and the regional stormwater drainage system, creating the potential for degradation of water quality. This would be a significant impact.

Use of landscaping materials, cleaning solvents, and accumulation of petroleum products and metals in parking lots are all sources of polluted runoff. The project would have the potential for all three sources of pollution. These sources of pollution would be a contributor to lower water quality in Copeland Creek and other downstream drainage facilities during storm events when these contaminants are carried into the creek by stormwater runoff.

Mitigation Measure C.4a: New drainage structures, curb inlets and drop inlets shall be equipped with filters that have the ability to separate out oil and grease from storm water runoff prior to its entering the drainage system. Periodic maintenance of these filters would be incorporated into the maintenance routine normally associated with the University facilities.

Mitigation Measure C.4b: The University would expand its pesticide and fertilizer management plans and practices to include the proposed landscaped areas.

Mitigation Measure C.4c: To help minimize the amount of runoff containing nonpoint source pollutants, project roadways and parking areas should be frequently cleaned using street sweeping equipment and the collected material properly disposed.

Collection and removal of nonpoint source pollutants is a valuable and effective measure against degradation of water resources. It is much easier to reduce the source then treat the effects of the degradation caused by the pollutants.

Significance After Mitigation: Less than Significant

Impact C.5: Construction of the proposed project buildings and parking areas could result in increased erosion and sedimentation, with subsequent impacts to water quality during construction. Additionally, release of fuels or other hazardous materials associated with construction equipment could reduce water quality. This would be a significant impact.

The proposed project development would expose a large area of bare soil during construction that could be exposed to precipitation and subsequent erosion. Bare soils are much more likely to erode than vegetated areas due to the lack of dispersion, infiltration, and retention created by covering vegetation. Construction activities involving soil disturbance, excavation, cutting/filling, stockpiling, and grading activities could result in increased erosion and sedimentation to surface waters. If precautions are not taken to contain contaminants, construction could produce contaminated stormwater runoff, a major contributor to the degradation of water quality. In addition, hazardous materials associated with construction equipment and materials could adversely affect water quality.

Project construction activities adjacent to waterways could result in soil erosion and decreased water quality unless erosion control and sedimentation precautions are employed. Not only is Copeland Creek a sensitive area for reception of contaminated surface runoff, but the surrounding road drainages can also carry contaminants into local waterways. Excavation, grading, stockpiling, and other earth-moving operations could potentially result in erosion and sedimentation to waterways, especially during the rainy season. Sedimentation to the waterways would degrade water quality for beneficial uses by increasing channel sedimentation and suspended sediment, and potentially affecting associated aquatic and riparian habitats.

Mitigation Measure C.5: The University would develop and implement a Stormwater Pollution Prevention Plan (SWPPP), as required by the State Water Resources Control Board, for areas to be disturbed by construction activities of five acres or more.

The University would incorporate into contract specifications the requirement that the contractor comply with, and implement the provisions of, the SWPPP and the RWQCB requirements of the NPDES General Permit for Discharges of Storm Water Associated with Construction Activity. The objectives of the SWPPP are to identify pollutant sources that could affect the quality of stormwater discharge, to implement control practices to reduce pollutants in stormwater discharges, and to protect receiving water quality.

Significance After Mitigation: Less than significant.

Cumulative

Impact C.6: The proposed project would contribute to cumulative changes in runoff characteristics and water quality. This would be a significant impact.

The proposed project could contribute to changes in runoff characteristics and water quality in Copeland Creek that were not anticipated in the cumulative development assumed in the 1987 SCWA hydraulic model for Copeland Creek. However, implementation of Mitigation Measures C.1 through C.6 would mitigate the project's impact to hydrology and water quality, and therefore, the project's contribution to cumulative hydrology would not be cumulatively considerable. To lessen local and cumulative impacts from other cumulative development, it would be necessary for those developments to implement practical stormwater management techniques for runoff and water quality while incorporating specific concerns regarding the local hydrology. Widespread implementation of positive increments of individual projects in controlling the effects of urbanization would have an equally positive impact on water quality and runoff characteristics.

Mitigation Measure C.6: Implement Mitigation Measure C.1 through C.5.

Significance After Mitigation: Less than significant.

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D. TRAFFIC, CIRCULATION AND PARKING

SETTING

INTRODUCTION

This section evaluates the projected traffic operations, parking conditions, and circulation impacts associated with the proposed University Master Plan revision. Conditions were evaluated for vehicular traffic operations in and around the campus, and also for pedestrian, bicycle, and transit facilities proposed by the Plan.

EXISTING ROADWAY SYSTEM

Figure IV.D-1 illustrates the regional and local roadway network in the project vicinity.

Regional Roadway Network

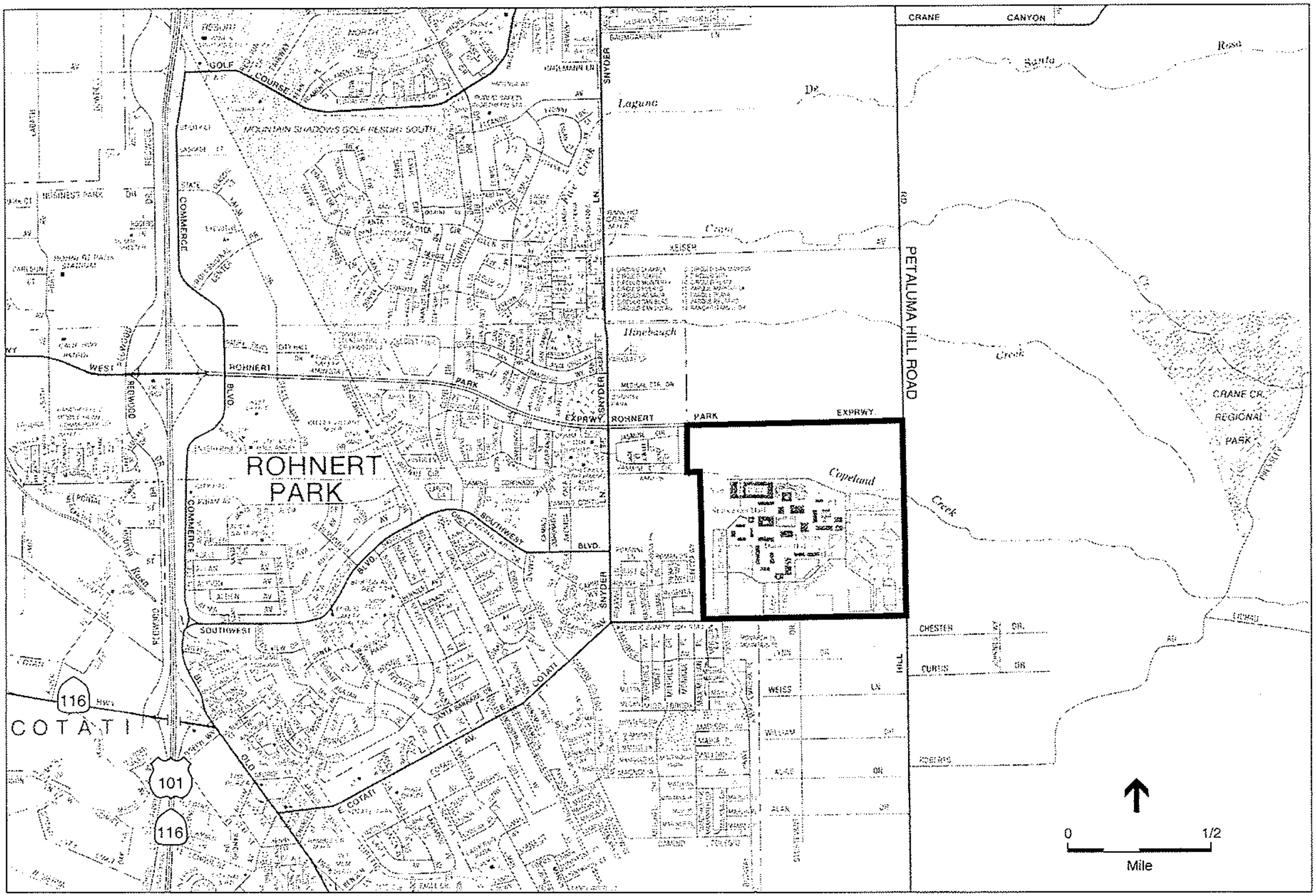
U.S. 101 provides primary regional access to the University. The north-south freeway is approximately two miles west of the campus, and connects communities within Sonoma and Marin Counties. East Cotati Avenue and Rohnert Park Expressway, described below, serve as the two major arterial streets connecting the University to U.S. 101.

Local Roadway Network

Petaluma Hill Road is a two-lane primary arterial in Sonoma County that provides secondary regional access to the campus. This road connects the communities of Petaluma and Santa Rosa, providing a fairly direct route to the campus for students and staff living in portions of these communities, and is also used by drivers to bypass congested conditions on U.S. 101 during peak periods.

Rohnert Park Expressway is a major arterial that extends from Petaluma Hill Road to points west of U.S. 101. Between Commerce Boulevard and Snyder Lane, Rohnert Park Expressway is comprised of two through traffic lanes in each direction separated by a wide landscaped center median. Mature landscaping and multi-use paths exist on each side of the Expressway between the roadway and edge of the right-of-way. The center median and multi-use paths terminate to the east of Snyder Lane at the Rohnert Park city limits, and the Expressway narrows to one through lane in each direction between Snyder Lane and Petaluma Hill Road.

East Cotati Avenue is a major arterial that extends between the Cotati "Hub" and Petaluma Hill Road. The street primarily includes two through lanes in each direction plus a center two-way left-turn lane between the Hub and eastern Rohnert Park City Limits, which are just east of Snyder Lane. Similar to Rohnert Park Expressway, East Cotati Avenue narrows to one through lane in each direction between the Rohnert Park city limits and the street's eastern terminus at Petaluma Hill Road.



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SOURCE: Environmental Science Associates, California Automobile Association

Project Site Boundary

Figure IV.D-1

Roadway Network

Snyder Lane is a major north-south arterial within Rohnert Park that runs parallel to Petaluma Hill Road, connects with Rohnert Park Expressway and East Cotati Avenue. The street is predominantly comprised of a single lane in each direction with a center two-way left turn lane provided on some segments. The portion of Snyder Lane between East Cotati Avenue and Rohnert Park Expressway currently carries a large portion of traffic related to the University and Rancho Cotati Senior High School.

University Roadway Network

Access to the campus south of Copeland Creek is provided by three entrances from East Cotati Avenue [at South Sequoia Way, Cypress Drive and Sonoma State Drive (also known as Construction Road; this road is currently closed to regular University traffic while construction of Sauvignon Village is occurring)] and one off of Petaluma Hill Road (at Laurel Drive). Redwood Circle, Juniper Lane and Zelkova Lane provide internal vehicle circulation within the campus. Redwood Circle is the primary circulation route within the campus. There are a number of unpaved, gated access points to the portion of the existing and proposed campus properties located north of Copeland Creek.

TRAFFIC VOLUMES

Study Intersections

Average weekday conditions during the a.m. and p.m. peak hours were assessed at nine study intersections in the project vicinity. The study intersections are as follows.

<u>Signalized Intersections:</u>

- Rohnert Park Expressway/Snyder Lane
- Rohnert Park Expressway/Petaluma Hill Road
- East Cotati Avenue/Petaluma Hill Road
- East Cotati Avenue/Bodway Parkway-Sonoma State Drive
- East Cotati Avenue/Snyder Lane-Maurice Avenue

<u>Unsignalized Intersections:</u>

- Laurel Drive/Petaluma Hill Road
- East Cotati Avenue/Cypress Drive
- East Cotati Avenue/Sequoia Way
- Rohnert Park Expressway/Proposed North University Entrance

A.m. and p.m. peak-hour intersection turning movement counts were conducted during the third week of September 1999 (Fall semester) to represent peak traffic activity associated with the University. It should be noted that the Sonoma State Drive entrance to the University was temporarily closed to regular University traffic while construction of Sauvignon Village is occurring. In order to present circulation patterns at the University that are representative of typical conditions, adjustments were made to the traffic volumes assuming the Sonoma State Drive entrance was reopened to regular University traffic.

The locations of the study intersections, and existing peak-hour traffic volumes, are shown in Figure IV.D-2. A description of the intersection geometries for each of the existing intersections is presented in Appendix E.1.

EXISTING TRAFFIC OPERATIONS

Level of Service Methodologies

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation. A complete description of the methodologies and the Level of Service criteria are provided in Appendix E.3.

Each of the intersections was analyzed using methodologies from the *Highway Capacity Manual*, Special Report 209, Transportation Research Board, 1994. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle. The ranges of delay associated with the various Levels of Service are indicated in Table IV.D-1.

Signalized Intersections

The signalized study intersections were analyzed using the "Operations" method contained in the *Highway Capacity Manual*. This methodology is based on factors including traffic volumes, green time for each movement, phasing, whether or not the signals are coordinated, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology.

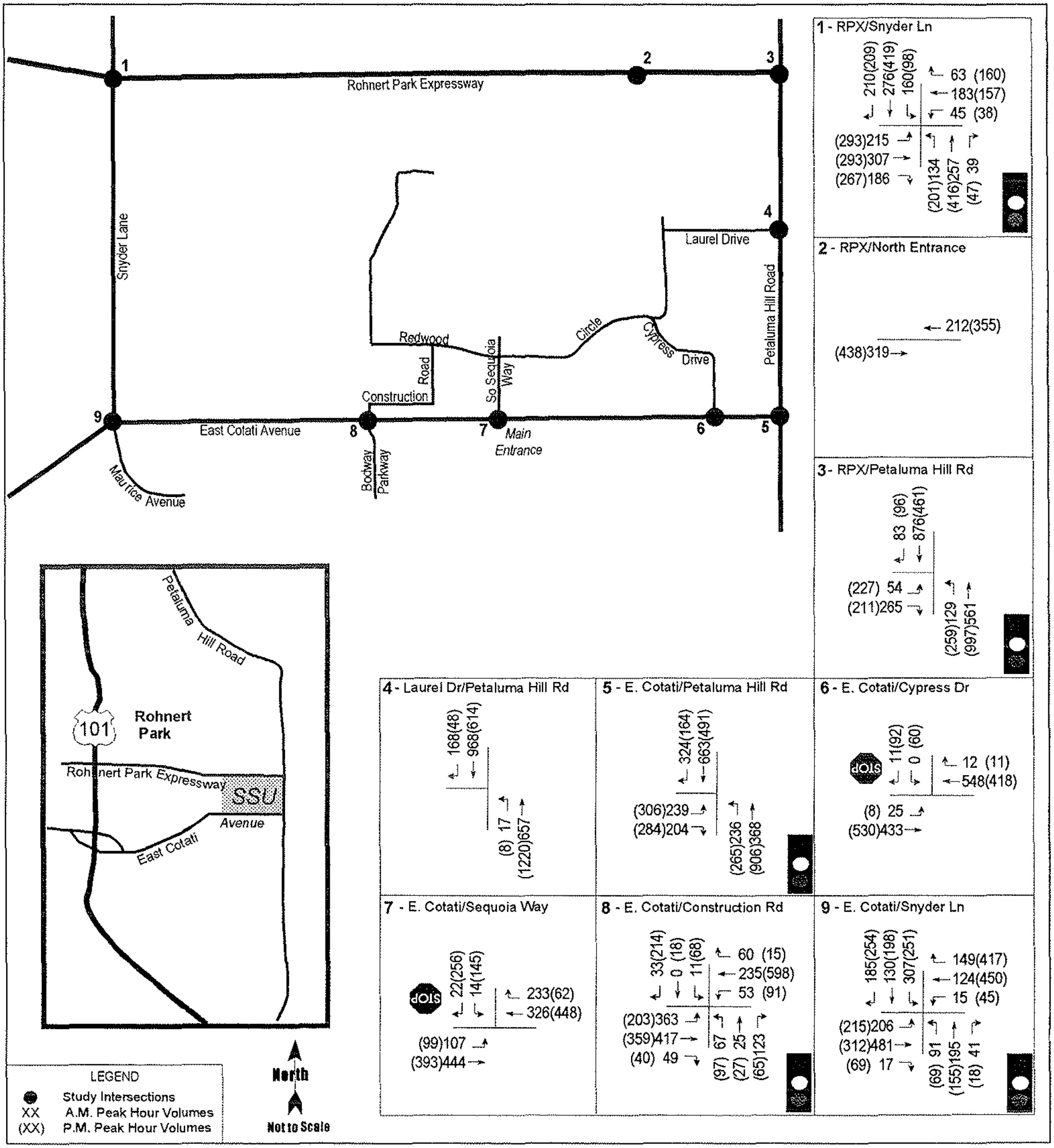
Unsignalized Intersections

The study intersections controlled with stop signs on the side street were analyzed using the "Unsignalized" methodology from the *Highway Capacity Manual*. This method determines a Level of Service for each minor turning movement by estimating the level of average delay in seconds per vehicle. The through movements on the main street are assumed to operate at free flow and a Level of Service A. The methodology also determines the average delay and Level of Service for the intersection as a whole.

Existing Levels of Service

The existing levels of service (LOS) at the existing eight study intersections are summarized in Table IV.D-2, and calculations are provided in Appendix E.4.[1]

[1] Since the proposed University North Entrance does not currently exist, traffic volumes and level of service results for the Rohnert Park Expressway/North University Entrance intersection are not presented for Existing conditions.



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SOURCE: Whitlock & Weinberger Transportation Inc.

Figure IV.D-2

Existing Traffic Volumes

TABLE IV.D-1
INTERSECTION LEVEL OF SERVICE CRITERIA

Level of Service	Signalized Intersections	Unsignalized Intersections
A	Delay of 0 to 5 seconds. Most vehicles arrive during the green phase, so do not stop at all.	Delay of 0 to 5 seconds. Gaps in traffic are readily available for drivers exiting the minor street.
B	Delay of 5 to 15 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.	Delay of 5 to 10 seconds. Gaps in traffic are somewhat less readily available than with LOS A, but no queuing occurs on the minor street.
C	Delay of 15 to 25 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.	Delay of 10 to 20 seconds. Acceptable gaps in traffic are less frequent, and drivers may approach while another vehicle is already waiting to exit the side street.
D	Delay of 25 to 40 seconds. The influence of congestion is noticeable, and most vehicles have to stop.	Delay of 20 to 30 seconds. There are fewer acceptable gaps in traffic, and drivers may enter a queue of one or two vehicles on the side street.
E	Delay of 40 to 60 seconds. Most, if not all, vehicles must stop and drivers consider the delay excessive.	Delay of 30 to 45 seconds. Few acceptable gaps in traffic are available, and longer queues may form on the side street.
F	Delay of more than 60 seconds. Vehicles may wait through more than one cycle to clear the intersection.	Delay of more than 45 seconds. Drivers may wait for long periods before there is an acceptable gap in traffic for exiting the side streets, creating long queues.

SOURCE: *Highway Capacity Manual, Special Report No. 209,* Transportation Research Board, 1994.

Five of the existing study intersections are located within Sonoma County (Rohnert Park Expressway/ Petaluma Hill Road, East Cotati Avenue/Petaluma Hill Road, Laurel Drive/Petaluma Hill Road, East Cotati Avenue/Cypress Drive, and East Cotati Avenue/Sequoia Way). Sonoma County's adopted LOS standard calls for operation to be maintained at level of LOS C or better on the countywide highway system (Sonoma County, 1994). Three of the existing study intersections are located within the City of Rohnert Park (Rohnert Park Expressway/Snyder Lane, East Cotati Avenue/Bodway Parkway-Sonoma State Drive, and East Cotati Avenue/Snyder Lane-Maurice Avenue). The City of Rohnert Park has established standards that require an overall LOS D or better operation at signalized and unsignalized intersections.

TABLE IV.D-2
EXISTING LEVELS OF SERVICE (LOS) AT STUDY INTERSECTIONS

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	Delay[a]	LOS	Delay [a]	LOS
Rohnert Park Expressway / Snyder Lane	20.6	C	23.0	C
Rohnert Park Expressway / Petaluma Hill Road	23.8	C	22.2	C
Laurel Drive / Petaluma Hill Road	0.1	A	0.0	A
Northbound left turn	9.2	B	5.0	A
E. Cotati Avenue / Petaluma Hill Road	20.5	C	27.2	D
E. Cotati Avenue / Cypress Drive	0.2	A	1.6	A
Southbound approach	5.4	B	10.8	C
E. Cotati Avenue / Sequoia Way	1.1	A	11.5	C
Southbound left turn	25.8	D	81.0	F
Southbound right turn	4.7	A	7.7	B
Eastbound left turn	6.3	B	4.4	A
E. Cotati Avenue / Construction Road-Bodway	12.8	B	16.0	C
E. Cotati Avenue /Snyder Lane	18.2	C	18.3	C

[a] Delay is expressed in seconds per vehicle

SOURCE: Whitlock and Weinberger Transportation Inc., 1999

Using the level of service standards of the jurisdictions for which the study intersections are located within, all study intersections except one currently operate acceptable levels of service during both the a.m. and p.m. peak hours. The intersection of East Cotati Avenue/Petaluma Hill Road currently operates at LOS D (below the County's minimum LOS C standard). The minor southbound left turn approach at East Cotati Avenue/Sequoia Way experiences lengthy peak-hour delays during the p.m. peak hour, however, the intersection operates at LOS C or better overall.

It should be noted that since the existing traffic conditions presented in this EIR assumes the Sonoma State Drive entrance to the University is operational, the existing traffic delay at the other entrances at the University is actually incrementally worse. However, these conditions are temporary until Sauvignon Village construction is complete, and the Sonoma State Drive entrance reopens. Manual traffic control is currently being conducted at the intersection during the afternoon to increase safety and decrease delays on a demand-responsive basis.

Existing Internal Roadway Operating Conditions

Typically, internal roadways within the University operate smoothly with minimal delay. However, during peak University hours when large number of vehicles are entering and/or exiting the University, these traffic volumes can result in brief durations of traffic congestion and excessive delays on the internal roadways. In particular, the intersection of Redwood Circle with Sequoia Way is a point of congestion, due in part to the non-standard use of right-of-way control at the intersection. The southbound, eastbound and westbound movements are all controlled by stop signs while the northbound movement entering the campus is uncontrolled. Since there is a large median separating Sequoia Way, it operates as two separate intersections, resulting in excessive delays during periods when there is a high volume of traffic exiting the campus.

EXISTING PEDESTRIAN, BICYCLE, AND TRANSIT FACILITIES

Based on a series of informal surveys conducted on the campus, the majority of bicyclists appear to live in neighborhoods within Rohnert Park and Cotati, with some on-campus housing residents using their bikes as transportation to and from classes. A small number of bicyclists currently commute from as far away as Petaluma.

Regional Pedestrian and Bicycle Facilities

Pedestrian connections between the University and surrounding neighborhoods currently exist on the west side of the campus. Multi-use paths exist on the south side of Copeland Creek and between Snyder Lane and the campus along the south edge of Rancho Cotati Senior High School. Sidewalks exist on both sides of East Cotati Avenue and Maurice Avenue to the campus boundary. Sidewalks are discontinuous for short segments along East Cotati Avenue between the west campus boundary and Sequoia Way.

Designated east-west bicycle routes serving the University exist along East Cotati Avenue, Copeland Creek, and Rohnert Park Expressway. Class II striped bicycle lanes exist along both sides of East Cotati Avenue between the Hub and the western edge of campus. The lane on the south side of the street continues to Petaluma Hill Road, while the lane on the northern side is not present between the western edge of campus and the east side of Sonoma State Drive. Also, a deteriorated multi-use path exists between Sonoma State Drive and Petaluma Hill Road.

Class I multi-use paths exist on both sides of Rohnert Park Expressway between Commerce Boulevard and Snyder Lane. The path ends at Snyder Lane on the north side of the street, but continues to the Rohnert Park city limits at the west border of the campus, on the south side. The Expressway does not currently include bicycle paths between the City limits and Petaluma Hill Road. Multi-use paths exist on both sides of Copeland Creek through the City of Rohnert Park. The path on the north side of the creek terminates at the city limit, while the path on the south side continues to Redwood Circle at the northwest corner of the University campus. A bike route also runs the entire length of Southwest Boulevard, and becomes a Class I multi-use trail between Snyder Lane and the University housing areas in the west-central portion of the campus.

The primary north-south bicycle facility near the campus are Class II bicycle lanes on both sides of Snyder Lane. The recently extended lanes exist between East Cotati Avenue and the street's northern terminus at Petaluma Hill Road. Between Rohnert Park Expressway and Golf Course Drive an asphalt curb was installed on the east side of the street to separate the path from the vehicle travel lanes. Bicycle riders also frequently utilize Petaluma Hill Road as a north-south route, though it is not currently a designated bicycle facility. Both sides of Petaluma Hill Road include two-to-three foot shoulders separated from the vehicle travel lanes by white edgeline striping.

On-Campus Pedestrian and Bicycle Circulation

The majority of pedestrian activity generated by the University occurs within the campus. Pedestrian activity is particularly heavy between classes as students and faculty members travel between academic buildings and walk to and from the parking lots. A substantial amount of pedestrian traffic also occurs between the existing on-campus housing and the central campus, and additional activity is beginning to occur to the south as Sauvignon Village becomes occupied.

The University currently includes an adequate network of paths and sidewalks connecting campus facilities to one another and to parking and residential areas. However, the University Police have indicated that vehicle-pedestrian conflicts have occurred along the "S-Curve" of Redwood Circle between the "F" Parking lots and the campus core (the primary vehicle route to on-campus parking areas) as pedestrians cross Redwood Circle (Johnson, 1999). These conflicts have been particularly evident between scheduled classes as pedestrians walk to and from their automobiles and as vehicles enter and exit the campus. Pedestrians typically cross Redwood Circle at various locations in this vicinity, as only one marked crosswalk currently exists between the parking lots and the campus core area. Other potential conflicts exist on the west portion of Redwood Circle between the residence halls and campus core, although most pedestrians utilize the existing crosswalk at this location, which includes speed humps and crosswalk signs.

Another location where pedestrians and vehicular traffic interact in a potentially unsafe manner is at the north end of Redwood Circle, in the vicinity of terminus of the paved multi-use path along Copeland Creek. There is currently no direct route between the end of the paved path and the nearest buildings in the campus core, thus requiring pedestrians and bicyclists in this area to utilize Redwood Circle and Parking Lot "A."

On-Campus Bicycle Parking Facilities

Bicycle parking facilities are currently provided at numerous locations throughout the campus. There are varying types of bicycle racks used on the campus, with the majority allowing only the front wheel to be locked to the rack (these racks provide minimal security to locked bicycles, and have been referred to as "wheel-benders"). Numerous other bicycle racks on campus are in disrepair, and can accommodate only a portion of their design capacity.

The campus has enough bicycle racks to accommodate approximately 300 bicycles, excluding residence hall areas. Parked bicycles were counted during the mid-afternoon on September 8, 1999. A total of 127 bicycles were present during this period, resulting in an overall bicycle parking occupancy of approximately 42 percent. The highest concentration of bicycle parking spaces is in the campus core. The area bounded by Stevenson Hall, Darwin Hall, and the Salazar Library can accommodate approximately 180 parked bicycles. A total of 76 bikes were observed parked in this area, yielding a bicycle parking occupancy rate of approximately 42 percent.

A shortage of bicycle parking facilities was apparent at the College Union, where all of the racks were full and bicycles were locked to trees, poles, etc. There was also a strong preference for utilization of the racks at the east entrance to Stevenson Hall, with the majority of these racks being full during the count period. This area is, however, very close to the racks between Stevenson and Darwin Halls, which had numerous spaces available. The remainder of bicycle racks on campus also had space available during the time of the bicycle count.

Transit Operations

Sonoma County Transit (SCT) provides primary transit access to the University. The school's transit stop is located at the terminus of Sequoia Way, and buses are able to turn around in the circular visitor parking area. The communities of Santa Rosa, Sebastopol, Rohnert Park, Cotati, and Petaluma are all directly served by Sonoma County Transit. Connecting service to communities along the U.S. 101 corridor between San Francisco and Santa Rosa is provided by Golden Gate Transit, via a transfer from Sonoma County Transit at the Cotati Hub.

SCT scheduled Routes 10, 11, 26, 44 and 46 serve the campus. Routes 10 and 11 stop at the University between one and two times per hour between 6:44 a.m. and 5:40 p.m., providing weekday service to the Cotati and Rohnert Park areas, including the Cotati Hub Golden Gate Transit stop. Weekend service on these two routes is provided four times per day. Total annual ridership during the 1998 fiscal year was 15,244 on Route 10 and 48,925 on Route 11.

SCT Route 26 serves the University and the communities of Rohnert Park and Sebastopol via Southwest Boulevard, Rohnert Park Expressway, and Redwood Drive in Rohnert Park, State Route 116, and Main Street in Sebastopol. Scheduled service occurs five times per weekday, departing the University at 7:34, 10:10, 2:35, 4:00, and 5:15. The route does not operate on weekends. The route served 12,907 riders in 1998.

SCT Route 44 is a major line that provides service between Coddingtown Mall in Santa Rosa and the Depot in Petaluma, with stops at the Santa Rosa Junior College, the downtown Santa Rosa transit mall, Santa Rosa Avenue, Commerce Boulevard in Rohnert Park, Sonoma State University, Penngrove, the Petaluma Valley Hospital, and downtown Petaluma. Northbound weekday service is provided 13 times per day between 6:01 a.m. and 10:13 p.m., while southbound service is provided 12 times per day between 7:47 a.m. and 10:18 p.m. Weekend service occurs four times per day in each direction. Ridership in 1998 totaled 249,675.

SCT Route 46 is an express bus that runs between the University and the downtown Santa Rosa transit mall. The route has limited stops, running along Petaluma Hill Road and Snyder Lane to the University. Buses depart the University for downtown Santa Rosa eight times per day between 7:41 a.m. and 10:00 p.m. Total 1998 ridership was 27,360.

Sonoma County Transit provided free rides to Sonoma State University students, faculty, and staff during fiscal year 1998. The program was funded by a Bay Area Air Quality Management District (BAAQMD) grant. The transit system will continue to offer free rides to the University community during fiscal year 1999, as funded by an additional BAAQMD grant, Sonoma County Transit, and Sonoma State University (Kashack, 1999). Total annual transit ridership on the five Sonoma County Transit lines serving the University increased by approximately two percent per year in 1996 and 1997. Upon establishment of the free rides program in 1998, ridership on the five lines increased by approximately seven percent.

No Golden Gate Transit routes serve the University directly. However, Route 76 also provides 12 southbound morning buses and 12 northbound afternoon buses to San Francisco, with the nearest stop to Sonoma State University being at East Cotati Avenue and Lancaster Drive.

EXISTING PARKING CONDITIONS

On-site parking spaces at the University are designated as "General," "Reserved," "Residential" or "Other." General and Reserved parking spaces are utilized by both faculty and students; however, the Reserved parking lots are somewhat closer to the campus core and have higher parking permit costs. Residential parking lots are designated for exclusive use by on-campus housing residents. "Other" parking spaces consist of parking for disabled and short-term visitor parking. There are currently a total of 3,482 off-street parking spaces on the University, consisting of 2,134 General, 458 Reserved, 696 Residential, and 194"Other" parking spaces.

Existing Parking Supply and Demand

Parking occupancy surveys were conducted at the campus September 8 and 9, 1999, during the early part of the Fall semester, and therefore, represents peak parking demand at the University. Parking occupancy was evaluated between 11:15 a.m. and 3:45 p.m., when parking demand typically peaks at the University. A summary of the on-campus parking occupancy analysis is shown in Table IV.D-3. As a conservative approach, illegally parked vehicles on-campus, and vehicles parked in unrestricted locations adjacent to the University (along the north shoulder of East Cotati Avenue and west shoulder of Petaluma Hill Road) assumed to be associated with the University, were included in the General/Reserved/Other parking category occupancy estimates. As shown in Table IV.D-3, the General/Reserved/Other parking category experiences a peak parking occupancy of approximately 94 percent and the Residential parking category peaks at 92 percent, for a combined overall peak parking occupancy of 89 percent.

TABLE IV.D-3
EXISTING PARKING SUPPLY AND OCCUPANCY

Parking Category	Capacity	11:15 a.m. to 12:45 p.m.		12:45 p.m. to 2:30 p.m.		2:30 p.m. to 3:45 p.m.	
		Parked Vehicles	Percent Occupied	Parked Vehicles	Percent Occupied	Parked Vehicles	Percent Occupied
General + Reserved[a,b,c]	2,592	2,404	93%	2,449	94%	2,382	92%
Residential	696	641	92%	640	92%	621	89%
Overall[d]	3,482 [d]	3,045	87%	3,089	89%	3,003	86%

a Since General and Reserved parking spaces are utilized by both faculty and students, parking supply and occupancy for these categories were combined.
b As a conservative approach, up to 100 vehicles parked illegally on campus (at the ends of parking aisles and along Redwood Circle near Lot F), and over 100 vehicles parked off-campus adjacent to the University (in unrestricted locations along the north shoulder of East Cotati Avenue and west shoulder of Petaluma Hill Road) assumed to be associated with the University, were added to the General + Reserved/Other parking category occupancy estimates.
c As a conservative approach, vehicles parked in "Other" spaces are included in the General + Reserved parking occupancy for the General + Reserved.
d "Overall" capacity includes General, Reserved, Residential and Other spaces.

SOURCE: Whitlock and Weinberger Transportation Inc., 1999

Approximately 6,000 full-time equivalent (FTE) were present at the University at the time the parking occupancy survey was conducted, slightly higher than projected 5,860 FTE estimated for the 1999/2000 school year (DuVall, 1999).[2] Based on this estimate, and the parking supply and peak parking occupancies presented in Table IV.D-3, the General/Reserved/Other parking category has a parking supply of 0.46 General/Reserved/Other parking spaces per FTE, and a peak General/Reserved/Other parking demand rate of approximately 0.41 parked vehicles per FTE.

There were an estimated 1,342 occupied residence hall beds at the time the parking occupancy survey was conducted. Based on this estimate, and the residential parking supply and peak residential parking occupancy presented in Table IV.D-3, the Residential parking category has a parking supply of 0.52 spaces per bed, and a parking demand rate of 0.48 parked vehicles per bed on campus. Historically, approximately 60 percent of the University's on-site student residents utilize an automobile at the campus. Therefore, the peak parking occupancy may reach

2 The number of FTE students on campus has historically been higher during the first several weeks of each school year than during the remainder of the year.

0.60 spaces per student, most likely during the evening hours (outside of the parking occupancy survey period conducted in this EIR).

IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

According to *CEQA Guidelines*, a project would have a significant effect on the environment if it would "cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system." Sonoma County's standard for minimum acceptable level of service is LOS C on arterials and collectors in the countywide highway system (Sonoma County, 1994). The City of Rohnert Park's minimum acceptable level of service at signalized and unsignalized intersections is LOS D (this standard applies to intersections as a whole, and does not specifically apply to individual movements at unsignalized intersections). Therefore, project traffic that would cause the level of service to degrade below LOS C at intersections within Sonoma County's jurisdiction, or below LOS D within the City of Rohnert Park's jurisdiction, would create a significant impact.

In addition, for the purposes of this EIR, a significant impact would occur if the project increased the average vehicle delay at an intersections by 15 seconds or greater.[3] Also, the project would cause a significant impact if circulation patterns associated with the project would lead to unsafe traffic operation; cause potential traffic safety hazards to pedestrian and bicyclists; or generate a demand for parking that would not be accommodated by the proposed on-site supply of parking spaces

VEHICLE TRIP GENERATION

Existing and future vehicle trip generation rates at the University were developed based on a review of published trip generation rates for universities contained in *Trip Generation*, *6th Edition*, Institute of Transportation Engineers (ITE), actual vehicle counts conducted at the University, and trip-generating characteristics of new facilities proposed under the Master Plan revision.

The component of the proposed Master Plan revision expected to have the greatest effect on weekday peak-hour vehicle trip generation at the University compared to the existing Master Plan is the proposed supply of on-campus housing, including the proposed residence hall addition on the main campus, and additional University housing in the northwest acquisition area, ranging between low- to high-density scenarios (see a description of this proposed housing in Section III, Project Description). The proposed on-campus housing would result in a net decrease in off-site vehicle trips associated those new students living on-site. The effect of this decrease would be most prevalent during the a.m. and p.m. peak hours, during which the majority of students would not be making the "home to school" and "school to home" trips that

[3] This threshold criteria was developed by Whitlock and Weinberger Transportation Inc.

would otherwise occur without this proposed on-campus housing. As a conservative approach in this EIR, the low-density housing scenario for the northwest acquisition area was assumed, thereby presenting the highest number of off-site project-generated vehicle trips. The vehicle trip generation developed for the proposed on-campus housing were adjusted to account for vehicle ownership characteristics of the on-site residential population at the University.

A summary of the peak-hour vehicle trip generation is presented in Table IV.D-4. Buildout of the proposed Master Plan revision would generate approximately 642 a.m. peak-hour and 839 p.m. peak-hour vehicle trips over existing conditions. This accounts to over 100 fewer a.m. peak-hour and p.m. peak-hour vehicle trips when compared to the buildout of the existing approved Master Plan. When adding the proposed Master Plan revision vehicle trips to existing University vehicle trips, as well as those associated with new facilities currently or soon under construction identified under existing approved Master Plan[4], the buildout of the University would generate a total of approximately 1,595 a.m. peak-hour, and 2,073 p.m. peak-hour vehicle trips.

TABLE IV.D-4
VEHICLE TRIP GENERATION

	A.M. Peak Hour				PM Peak Hour			
	Trip	Vehicle Trips			Trip	Vehicle Trips		
Condition	**Rate**	**Total**	**In**	**Out**	**Rate**	**Total**	**In**	**Out**
Existing University (1999)	0.180	1,055	970	86	0.230	1,348	485	863
Additional New Proposed Under Master Plan Revision[a]	0.155	642	591	51	0.203	839	302	537
Total Buildout of University[b]	0.159	1,594	1,466	152	0.207	2,073	746	1,327

[a] Vehicle trips associated with development proposed under the Master Plan Revision.
[b] Total Buildout of University includes the sum of: trips associated with Existing 1999, new facilities currently or soon under construction identified under existing approved Master Plan, and additional new facilities proposed under the Master Plan Revision.

SOURCE: Whitlock and Weinberger Transportation Inc., 1999.

[4] The primary project currently under construction at the University that would affect the number of vehicle trips generated at the University is the proposed Sauvignon Village residential housing, which as with the proposed housing under the Master Plan revision, would further reduce off-site vehicle trips.

TRIP DISTRIBUTION AND ASSIGNMENT

The project trip distribution and assignment were developed in consideration of a number of factors, including the existing location of the off-campus student residences and existing travel patterns, the proposed changes in vehicular access points to the project site and parking areas within the campus; and expected development patterns and roadway improvements in the region (including the potential for increased use of alternate routes to U.S. 101, such as Petaluma Hill Road).

Table E-1 in Appendix E.2 presents a summary of the existing distribution of the enrolled students by geographical area, determined from an evaluation of the zip codes of the student population. The majority of students who don't live on campus were found to live in Rohnert Park and Santa Rosa, with a smaller percentage living in Petaluma, Cotati, Sebastopol, in other areas within Sonoma, Napa or Marin counties. Based on this, the preponderance of University-related traffic utilizes Rohnert Park Expressway and Snyder Lane to reach the main entrance off East Cotati Avenue, with a smaller proportion using Petaluma Hill Road and East Cotati Avenue directly to reach the main entrance.

Two northern vehicular access points are proposed under the project, consisting of the main north entrance (which would extend south across Copeland Creek to Redwood Circle on the main campus), and a northern parking lot entrance. The City of Rohnert Park anticipates cumulative development of the area to the north of Rohnert Park Expressway within the timeframe of the University Master Plan revision build-out. Under the City's General Plan Update (currently being prepared), access to this future development would be provided through an extension of Eleanor Avenue, which currently terminates at Snyder Lane north of Rohnert Park Expressway. For purposes of this analysis, it is assumed this new roadway would form the north leg of the intersection created on Rohnert Park Expressway at the proposed north University entrance. It is also assumed that the movements into and out of the new northern parking lot driveway would be restricted to right turns in and out only. Furthermore, it is assumed that the Laurel Drive entrance to the University would be converted to two-way operation, with right turns allowed from Laurel Drive to Petaluma Hill Boulevard.

Under the project, three southern entrances would exist, consisting of the main Sequoia Drive entrance, the reopened Sonoma State Drive entrance, and the proposed realigned Cypress Drive entrance. Cypress Drive would be realigned approximately 400 feet west of its existing location along East Cotati Avenue, in order to increase the distance from this intersection from Petaluma Hill Road, and to provide a more logical connection between on-site parking facilities and Redwood Circle. It is assumed that left turns would be allowed out of the realigned Cypress Drive entrance (currently restricted).

With completion of the proposed northern parking lots, approximately 23 percent of the parking would be located on the north side of campus. The majority of the traffic destined to these northern lots would be oriented to the north entrances. In addition, there would be cross campus traffic; however, this traffic pattern may be limited in the future as the campus develops, more pedestrian traffic is present, and average travel speeds become lower on Redwood Circle. It was assumed that approximately 30 to 35 percent of the traffic destined to the University would be oriented to the northern entrances based on the distribution of parking, existing travel patterns, future circulation and congestion, and internal circulation limitations. Table IV.D-5 presents the applied vehicle trip distribution percentages of the regional origin and destination of trips generated by Sonoma State University.

TABLE IV.D-5
PROJECT VEHICLE TRIP DISTRIBUTION

Area	A.M. Peak In	A.M. Peak Out	P.M. Peak In	P.M. Peak Out
Rohnert Park Expressway	33%	24%	34%	25%
East Cotati Avenue	24%	20%	25%	18%
Snyder Lane (north of Expressway)	15%	17%	12%	18%
Petaluma Hill Rd. (south of campus)	10%	16%	10%	12%
Petaluma Hill Rd. (north of campus)	9%	11%	5%	15%
North of Future University Entrance on Expressway	5%	5%	5%	5%
Southwest Boulevard	3%	5%	5%	5%
Bodway Parkway	1%	2%	4%	2%

SOURCE: Whitlock and Weinberger Transportation Inc., 1999.

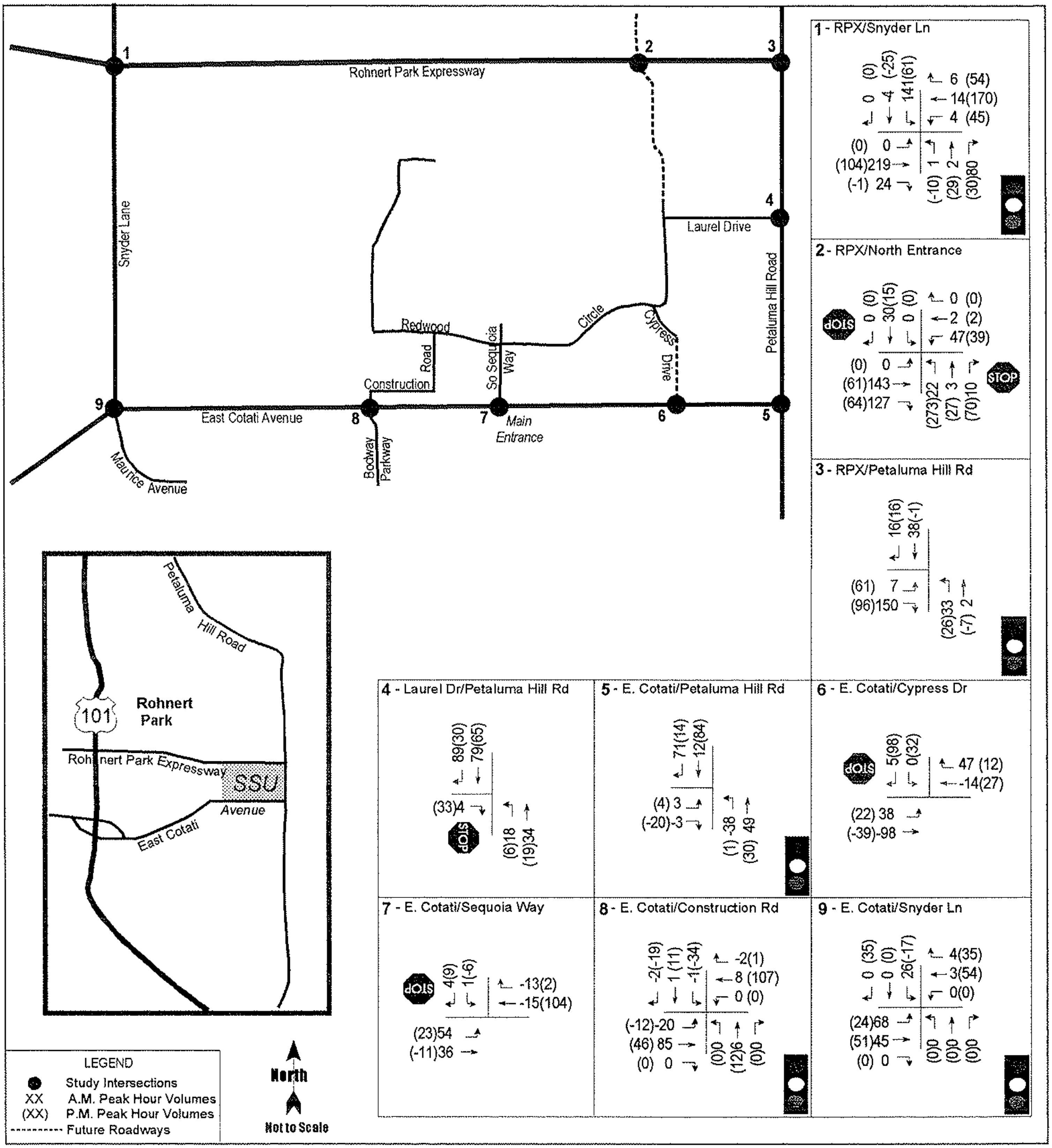
Figure IV.D-3 presents the additional project-only peak-hour vehicle trips. Since there would be a substantial redistribution of existing University traffic volumes with the proposed north University entrance, some turning movements (particularly at intersections on the south side of the campus) are projected to have a net decrease in project turning movements.

CUMULATIVE DEVELOPMENT

Traffic associated with cumulative development and regional growth was developed using traffic projections from the Rohnert Park General Plan Update traffic model (Crane Transportation Group, 1999). The model includes the projected traffic volumes associated with buildout of the land uses identified in the Rohnert Park General Plan Update, as well as growth throughout the region.

Cumulative Base Conditions (Future Without Project)

In order to present an accurate representation of Cumulative Base (i.e., future without project) conditions, the traffic projections for future University growth as assumed by the traffic model were subtracted from the model projections, and the vehicle trip generation for existing



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SOURCE: Whitlock & Weinberger Transportation Inc.

Figure IV.D-3

Project Only Traffic Volumes

University development and development currently under construction (approved under the existing Master Plan) as estimated in this EIR were added. Table IV.D-6 presents study intersection peak-hour level of service at the nine study intersections under Cumulative Base conditions, and calculations are provided in Appendix E.5.

Four of the nine study intersections would experience overall unacceptable level of service conditions under Cumulative Base conditions. The intersection of *Rohnert Park Expressway/Snyder Lane* would deteriorate to unacceptable LOS E conditions during the a.m. peak hour and unacceptable LOS F conditions during the p.m. peak hour. The intersections of *Rohnert Park Expressway/Future North University Entrance* (assumed with stop-controls on the northbound and southbound approaches), *Rohnert Park Expressway/Petaluma Hill Road*, and *East Cotati Avenue/Petaluma Hill Road* would deteriorate to unacceptable LOS F during both the a.m. and p.m. peak hours.

Although the intersection of *East Cotati Avenue/Sequoia Way* would operate acceptably at LOS A overall, queuing on the Sequoia Way approach and delay for the left turn movement onto East Cotati Avenue would create potentially unsafe conditions. All other study intersections would continue to operate at acceptable levels of service under Cumulative Base conditions.

Cumulative Conditions (Future With Project)

The Cumulative (Future With Project) scenario represents the addition of proposed project vehicle trips to Cumulative Base volumes, and the subtraction of vehicle trips associated with non-University uses anticipated by the City of Rohnert Park *General Plan Update* traffic model for the northwest acquisition area.[5] The Cumulative scenario peak-hour traffic volumes are presented in Figure IV.D-4.

Impact D.1: Project-generated vehicle trips would contribute to delays at study intersections during the a.m. and p.m. peak hours under Cumulative (Future With Project) conditions. This would be a significant impact.

Table IV.D-6 presents study intersection peak-hour level of service at the nine study intersections under Cumulative (Future With Project) conditions, and calculations are provided in Appendix E.6. The project would result in a significant drop in level of service, or result in significant increase in delays, at five of the study intersections.

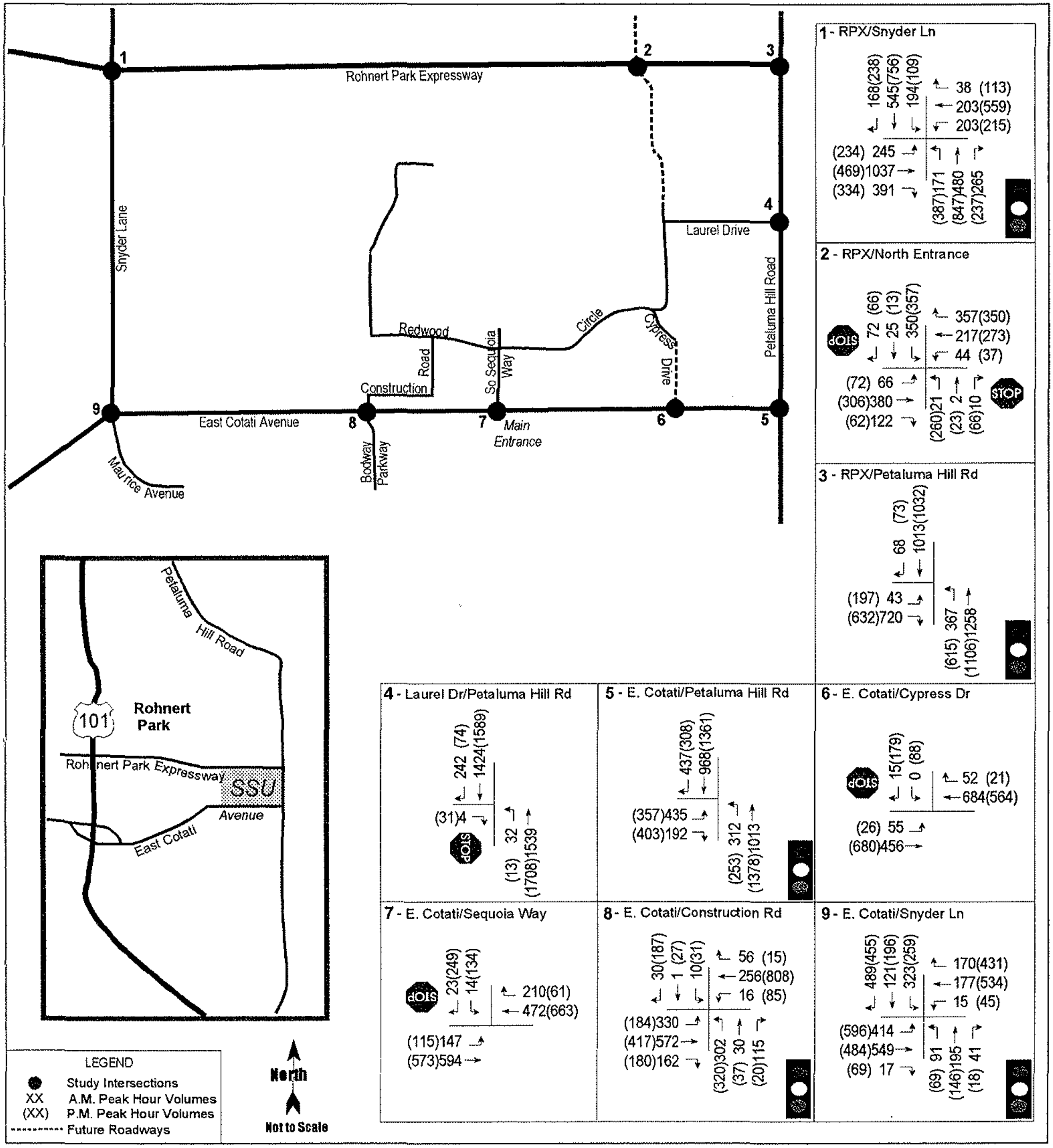
Four of these intersections would operate at LOS F with or without the project; since the project would increase the average vehicle delay at these intersection by more than 15 seconds (see Significance Criteria) during the a.m. and/or or p.m. peak hours, the project's contribution to cumulatively unacceptable conditions at these intersections would therefore be significant.

[5] The vehicle trips associated with the non-University uses anticipated by the *Draft City of Rohnert Park General Plan Update* for the northwest acquisition area, including medium- to high-density housing, and parks/recreational area, were estimated based on vehicle trip rates contained in the Institute of Transportation Engineers' *Trip Generation*, 6^{th} Edition.

TABLE IV.D-6
INTERSECTION LEVELS OF SERVICE (LOS)
CUMULATIVE BASE (FUTURE WITHOUT PROJECT) AND
CUMULATIVE (FUTURE WITH PROJECT) CONDITIONS

Intersection	Cumulative Base (Future Without Project)				Cumulative (Future With Project)			
	A.M. Peak		P.M. Peak		A.M. Peak		P.M. Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Rohnert Park Expwy. / Snyder Ln.	48.1	E	123	F	53.3	E	163	**F**
Mitigated					*21.5*	*C*	*23.2*	*C*
Rohnert Park Expwy. / Proposed North University Entrance	236	F	343	F	310	**F**	514	**F**
Mitigated with Signal					*12.8*	*B*	*14.0*	*B*
Mitigated with Roundabout					*3.0*	*A*	*6.9*	*B*
Rohnert Park Expressway / Petaluma Hill Rd.	260	F	553	F	327	**F**	546	F
Mitigated					*14.7*	*B*	*14.2*	*B*
Laurel Drive / Petaluma Hill Rd.	0.1	A	0.1	A	0.2	A	0.3	A
Northbound left turn	14.9	C	15.7	C	19.0	D	17.0	C
Eastbound right turn	18.0	C	23.0	D	19.7	D	26.9	D
E. Cotati Ave. / Petaluma Hill Rd.	93.5	F	248	F	84.6	F	304	**F**
Mitigated					*16.0*	*C*	*15.7*	*C*
E. Cotati Ave. / Cypress Drive	0.1	A	1.8	A	0.4	A	5.2	B
Southbound approach	5.8	B	13.9	C	6.7	B	27.8	D
E. Cotati Ave. / Sequoia Way	0.4	A	4.7	A	1.1	A	**56.5**	**F**
Southbound left turn	18.7	C	51.7	F	30.6	E	*	F
Southbound right turn	4.7	A	7.1	B	5.0	A	11.6	C
Eastbound left turn	4.7	A	4.8	A	6.2	B	6.2	B
Mitigated with Signal					*4.5*	*A*	*11.1*	*B*
Mitigated with Roundabout					*0.5*	*A*	*2.5*	*A*
E. Cotati Ave. / Construction Road-Bodway Parkway	13.2	B	14.9	B	13.3	B	19.3	C
E. Cotati Ave. / Snyder Lane-Maurice Avenue	20.8	C	28.8	D	0.3	C	6.8	D

Delay is expressed as Average Seconds per Vehicle



SOURCE: Whitlock & Weinberger Transportation Inc.

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Figure IV.D-4

Cumulative (Future With Project) Traffic Volumes

With the addition of project traffic, the intersection of *Rohnert Park Expressway/Snyder Lane* would degrade further within LOS E during the a.m. peak hour, and further within LOS F during the p.m. peak hour. The project would increase the average vehicle delay at this intersection by approximately 40 seconds during the p.m. peak hour. The intersection of *Rohnert Park Expressway/Future University North Entrance* would degrade further within LOS F during the a.m. and p.m. peak hours, with a project-associated increase in the average vehicle delay of approximately 74 seconds, and 171 seconds, respectively.

The intersection of *Rohnert Park Expressway/Petaluma Hill Road* would degrade further within LOS F during the a.m. and p.m. peak hours. The project would increase the average vehicle delay at this intersection by approximately 67 seconds during the a.m. peak hour. The intersection of *East Cotati Avenue/Petaluma Hill Road* would degrade further within LOS F during the a.m. and p.m. peak hours. The project would increase the average vehicle delay at this intersection by approximately 56 seconds during the p.m. peak hour.

The intersection of *East Cotati Avenue/Sequoia Way* would degrade from LOS A to an overall LOS F during the p.m. peak hour. Furthermore, queuing conditions on the southbound approach of Sequoia Way would be further exacerbated, creating potential circulation safety problems on this approach.

All other study intersections would continue to operate at acceptable levels of service during the a.m. and p.m. peak hours under Cumulative conditions.

It should be noted that, since the proposed Master Plan proposes more on-campus housing than the existing approved Master Plan, it would generate less off-site weekday traffic volumes compared to the existing approved plan, particularly during a.m. and p.m. peak hours, during which the majority of additional students housed on-site would not be making the "home to school" and "school to home" trips. Therefore, the significant impacts to weekday peak-hour levels of service at the study intersections (particularly along East Cotati Avenue) would be less than that which would occur under the existing approved Master Plan.

Mitigation Measure D.1a: Prior to project buildout, at the intersection of Rohnert Park Expressway/Snyder Lane, add an additional through lane in the northbound and southbound directions, and change the existing north-south split-phase signal operation to protected left-turn phasing.

This mitigation would lead to acceptable LOS C operation during both peak hours. The addition of northbound and southbound through lanes on Snyder Lane is also identified as a recommended improvement in the *Draft City of Rohnert Park General Plan Update*. Implementation of this measure would be the responsibility of the City of Rohnert Park.

Mitigation Measure D.1b: Prior to project buildout, at the intersection of Rohnert Park Expressway/Future University North Entrance, install either a traffic signal or a single-lane modern roundabout.

With installation of a traffic signal, the intersection would operate acceptably at LOS B during the a.m. and p.m. peak hours. With installation of a single-lane modern roundabout, the intersection would be expected to operate acceptably at LOS A during the a.m. peak hour and at LOS B during the p.m. peak hour.[6] Implementation of this measure would be the responsibility of Sonoma County, unless and until the intersection were annexed to the City of Rohnert Park, at which time it would become the responsibility of Rohnert Park.[7]

Mitigation Measure D.1c: Prior to project buildout, at the intersection of Rohnert Park Expressway/Petaluma Hill Road, add an additional through lane in both the northbound and southbound directions on Petaluma Hill Road, install separate right and left turn lanes on the eastbound approach of Rohnert Park Expressway, and change phasing to include a right turn overlap between the northbound left turn and eastbound right turn.

With mitigation, the intersection would operate acceptably at LOS B during both the a.m. and p.m. peak hours. The widening of Petaluma Hill Road to four lanes is also identified as a recommended improvement in the *Draft City of Rohnert Park General Plan Update*. Implementation of this measure would be the responsibility of Sonoma County, unless and until the intersection were annexed to the City of Rohnert Park, at which time it would become the responsibility of Rohnert Park.[8]

Mitigation D.1d: Prior to project buildout, at the intersection of East Cotati Avenue/Petaluma Hill Road, install an additional through lane in the northbound and southbound directions on Petaluma Hill Road, and install separate right and left turn lanes on the eastbound approach of East Cotati Avenue.

With mitigation, the intersection would operate acceptably at LOS C during both the a.m. and p.m. peak hours. Implementation of this measure would be the responsibility of Sonoma County, unless and until the intersection were annexed to the City of Rohnert Park, at which time it would become the responsibility of Rohnert Park.[9]

Mitigation Measure D.1e: Prior to project buildout, at the intersection of East Cotati Avenue/Sequoia Way, install either a traffic signal or single-lane modern roundabout.

With signalization, the intersection would operate at LOS A during the a.m. peak hour and LOS B during the p.m. peak hour. With a modern roundabout, the intersection would operate at LOS A during both peak hours. Implementation of this measure would be the responsibility of

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6 Level of service for roundabouts calculated using methodologies in the *Highway Capacity Manual, Special Report 209*, Transportation Research Board, 1997.

7 The *Draft City of Rohnert Park General Plan Update*, which is in public review at the time of publication of this Draft EIR, includes the identified intersection in its recommended sphere of influence, and thus identifies the intersection for ultimate annexation to the City.

8 ibid.

9 ibid.

Sonoma County, unless and until the intersection were annexed to the City of Rohnert Park, at which time it would become the responsibility of Rohnert Park.[10]

The *Draft City of Rohnert Park General Plan Update*, which is in public review at the time of publication of this Draft EIR, includes the identified intersection in its recommended sphere of influence, and thus identifies the intersection for ultimate annexation to the City.

Significance After Mitigation: Significant. As discussed in Chapter II, Summary, the University is prohibited by law from committing project funds for off-site transportation (including intersection) improvements. As discussed above, the five significantly impacted intersections are currently located within the jurisdiction of either Rohnert Park or Sonoma County; accordingly, the implementing agency(ies) for Mitigation Measures D.1a-e would be either the City of Rohnert Park or Sonoma County. The four impacted study intersections located within Sonoma County are proposed to be annexed by the City of Rohnert Park under the *Draft City of Rohnert Park General Plan Update*. As specified above, a number of transportation improvements that are proposed under the *Draft City of Rohnert Park General Plan Update*, including the addition of northbound and southbound through lanes on Snyder Lane, and the widening of Petaluma Hill Road to four lanes, are incorporated into the above mitigation measures. (Other transportation improvements identified by the *Draft City of Rohnert Park General Plan Update*, including the widening of East Cotati Avenue and Rohnert Park Expressway to four lanes were not assumed in the above mitigation measures, as they were not required to mitigate the project's cumulative impact). However neither these improvements, nor any other components of the above mitigation measures that are not proposed under the *Draft City of Rohnert Park General Plan Update* are currently approved or funded by the City of Rohnert Park. Moreover, there are currently no known transportation improvements that have been approved or funded by Sonoma County for the significantly impacted intersections located within the County. Given these considerations, there is no assurance that these mitigation measures would be implemented, and this impact is therefore considered to remain significant.

Impacts on Roadways Outside of Study Area

Traffic associated with development under the Master Plan revision would create the greatest impacts at those intersections located in close proximity to the University. Impacts beyond the study area will become less perceptible with increasing distance from the campus. The roadways which would experience the majority of University-related traffic would include Rohnert Park Expressway between the campus and U.S. 101, East Cotati Avenue between the campus and the Cotati "Hub," Petaluma Hill Road between Rohnert Park Expressway and East Cotati Avenue, and Snyder Lane between East Cotati Avenue and Golf Course Drive. University-related traffic would also be expected to utilize Petaluma Hill Road as an alternate north-south route to U.S. 101 to varying degrees throughout the course of the day.

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10 ibid.

PARKING

Parking Demand

Impact D.2: The project would create a demand for additional on-campus parking facilities. This would be a less than significant impact.

The proposed Master Plan revision would provide a total of 6,858 parking spaces on campus under buildout, i.e., a rate of approximately 0.69 spaces per FTE student, which exceeds the recommended supply of 0.57 spaces per FTE.[11] Thus, the total quantity of parking associated with the proposed Master Plan is expected to be adequate, with a projected surplus of approximately 1,150 spaces.

A total of 5,234 General and Reserved parking spaces are proposed for the 10,000 FTE students. This results in a combined parking supply ratio of 0.52 General and Reserved spaces per FTE, compared to the recommended 0.45 spaces per FTE. Based on this estimate, a surplus of approximately 700 General and Reserved spaces would be available during peak demand periods at campus build-out.

A supply of 1,368 Residential parking spaces is proposed for the 2,200 beds expected on campus at build-out (not including potential additional Residential parking spaces and beds associated with proposed University housing in the northwest acquisition area).[12] This yields a ratio of approximately 0.62 spaces per bed, compared to the recommended 0.60 spaces per bed ratio, and would provide approximately 48 Residential spaces at build-out.

Mitigation: No mitigation is required for the less than significant parking impact discussed above. However, the following measures would ensure that parking impacts under the project would be less than significant:

- Should the University choose to develop housing in the northwest acquisition area, parking should be provided at 0.60 spaces per bed.
- Monitor parking occupancy of the University's General and Reserved parking spaces and adjust (if necessary) as enrollment at the University increases so that a potential imbalance between the number of available General spaces and Reserved spaces does not occur.

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[11] Not including potential additional spaces related proposed University housing in northwest acquisition area.
[12] As discussed in the Project Description, since the University does not currently own the proposed University housing site, a range of housing scenarios are considered in the EIR.

Parking Related Safety

Impact D.3: The project could exacerbate existing safety concerns related to off-site parked vehicles on Petaluma Hill Road and East Cotati Avenue adjacent to campus. This would be a potentially significant impact.

A number of vehicles were observed to park on the west shoulder of Petaluma Hill Road along the campus frontage south of Laurel Drive in random patterns, both parallel and perpendicular, and in areas off the shoulder of the roadway depending on the space available. Because of the high speed of traffic on Petaluma Hill Road and its increasing importance as a regional arterial, the presence of parked vehicles along this roadway poses an existing safety concern, especially vehicles that were parked perpendicular to the roadway.

In addition, a number of vehicles that were observed parked along the north shoulder of East Cotati Avenue in random patterns, both parallel and perpendicular, and on the existing bike/pedestrian path. With the existing tree growth along the shoulder and the parking maneuvers overlapping the path, these parked vehicles pose a potential existing safety conflict for pedestrian and bicyclists along this roadway.

As described in Impact D-7, under the project, there would be a sufficient on-site parking supply to accommodate the University's projected total parking demand. However, any potential continued utilization of these off-site parking locations under the project would exacerbate the above identified safety concerns. This would be a potentially significant impact.

Mitigation Measure D.3a: Prohibit parking on Petaluma Hill Road. There is sufficient capacity on campus to accommodate the parking demand.

Mitigation Measure D.3b: Either prohibit parking on East Cotati Avenue or provide frontage improvements that buffer the parking from pedestrian and bicycle activity while still providing appropriate traffic operation along the road.

Significance After Mitigation: Significant. As discussed in Chapter II, Summary, the University is prohibited by law from committing project funds for off-site transportation improvements. The roadway segments requiring mitigation are currently located within Sonoma County. The implementing agency for Mitigation Measures D.3a-b would be Sonoma County, or Rohnert Park (if these roadways are annexed as anticipated under the Draft Rohnert Park General Plan Update). However, the prohibition of parking along these roadway segments and/or provision for buffer improvements are not identified as approved or funded improvements by either agency. Since there is no assurance that these mitigation measures would be implemented, this impact is considered to remain significant.

SPECIAL EVENTS AT THE CENTER FOR THE MUSICAL ARTS

The proposed Center for the Musical Arts would become operational during the 2002-2003 school year. As shown in Table III-5 in the Project Description, a number of annual musical performances would occur at this facility. The majority of annual performances would consist of relatively small University events, ranging from 300 to 1,200 attendees, occurring throughout the week. The Santa Rosa Symphony would also hold performances at the Center, which would have attendance levels ranging between 1,100 to 1,300 people. Most symphony performances would occur on weekends, with occasional performances on weekday evenings. In addition, a number of summer festivals would be held at the Center, with attendance at the smaller festivals averaging approximately 400 attendees, and larger festivals ranging between 3,000 to 10,000 persons. These festivals would occur on weekends only.

In order to determine the potential traffic and parking impacts of special events at proposed Center for Musical Arts, conditions were surveyed for the Santa Rosa Symphony Pops Concert held at the University commencement lawn on June 20, 1999. This event, representative of the types of activities that would occur at the Center for the Musical Arts, had a total attendance of approximately 2,130 people, in addition to approximately 80 musicians and 50 staff persons (Santa Rosa Symphony, 1999). Approximately 770 visitor vehicles and 135 musician/staff vehicles related to the event were parked at the campus, resulting in an overall parking generation rate of 0.42 parked vehicles per attendee for this event.

Special Event Traffic Conditions

Impact D.4: Special events at the proposed Center for the Musical Arts would generate surges of traffic prior to and/or following the events, resulting in traffic delays at one or more campus entrance intersections before and/or following the event. For events of between 400 and 1,300 attendees, an a,erage delay of five to 15 minutes would occur for vehicles exiting the campus at the intersection of Rohnert Park Expressway/proposed University north entrance following the event. For the occasional events of between 1,300 and 3,000 attendees, an average delay of ten to 20 minutes would occur for vehicles exiting the campus at the intersection of Rohnert Park Expressway/proposed University north entrance following the event. For the occasional summer festivals of between 3,000 and 10,000 attendees, instances of delays over 20 minutes could occur for vehicles exiting the campus at the intersections of Rohnert Park Expressway/proposed University north entrance, East Cotati Avenue/Sequoia Way, and East Cotati Avenue/Cypress Drive. This would be a significant impact.

To present potential impacts related to a range of special events at the proposed Center for the Musical Arts, intersection operating conditions were evaluated for a range of special events at the Center, including events generating between 400 to 1,300 attendees, 1,300 to 3,000 attendees, and 3,000 to 10,000 attendees. It was determined that events at the Center generating less than 400 attendees would not result in significant impacts to study intersections. Existing traffic volumes at the study intersections were adjusted to represent off-peak conditions. The projected vehicle trip generation for the performances was developed based upon the projected 0.42

vehicles per attendee present during performances. Traffic conditions were evaluated for both the pre-event and post-event time periods.

For events at the Center generating up to 3,000 attendees, operating conditions were assessed at the intersections along Rohnert Park Expressway at Snyder Lane, Future North University Entrance, and Petaluma Hill Road. For events with between 400-1,300 attendees, minimal pre-event traffic impacts would be expected. However, these events would generate a surge in post-event traffic, resulting in an average of five to 15 minutes of delay for vehicles exiting the campus to Rohnert Park Expressway. This would create significant, albeit temporary, adverse traffic conditions at the Rohnert Park Expressway/proposed University north entrance intersection. Impacts to the intersections of Rohnert Park Expressway with Snyder Lane and Petaluma Hill Road would remain less than significant.

At an event with between 1,300 to 3,000 attendees, pre-event traffic, and particularly post-event traffic impacts would be expected, with average delays of approximately ten to 20 minutes for vehicles exiting the campus, and deteriorated operating conditions at the intersection of Rohnert Park Expressway/proposed University north entrance. However, impacts to the intersections of Rohnert Park Expressway with Snyder Lane and Petaluma Hill Road would remain less than significant.

For event sizes between 3,000 to 10,000 people, operating conditions were assessed for all study intersections, as parking areas on the north and south sides of the campus would be utilized. Since the larger festivals would typically be all-day events, attendees would arrive throughout the day, minimizing the surge of vehicular activity associated with pre-event vehicle trips that would occur with shorter, smaller events. Nevertheless, there could be periods of delays that could exceed 20 minutes for vehicles exiting the campus, and deteriorated operating conditions at the intersections of Rohnert Park Expressway/proposed University north entrance, East Cotati Avenue/Sequoia Way, and East Cotati Avenue/Cypress Drive could occur for periods of time before, during and/or following these events.

Mitigation Measure D.4a: Events proposed on weekdays at the Center for the Musical Arts that are projected to draw more than 400 attendees should start no earlier than 7:00 p.m.

Mitigation Measure D.4b: For events at the Center for the Musical Arts that are projected to draw between 400 to 1,300 attendees, provide adequate traffic control personnel at the north entrance during the conclusion of the event to facilitate demand-responsive traffic control.

Mitigation Measure D.4c: For events at the Center for the Musical Arts that are projected to draw between 1,300 to 3,000 attendees, provide adequate traffic control personnel at the north entrance prior to the start of the event and following conclusion of the event to facilitate demand-responsive traffic control.

Mitigation Measure D.4d: For events at the Center for the Musical Arts that are projected to draw more than 1,300 attendees, if there is a median present on Rohnert Park Expressway at the proposed secondary driveway west of the primary north entrance, it should be constructed with a removable barrier to allow for left turns with traffic control personnel assistance.

Mitigation Measure D.4e: For events at the Center for the Musical Arts that are projected to draw more than 3,000 attendees, provide adequate traffic control personnel along Rohnert Park Expressway and along East Cotati Avenue before, during and after events to facilitate demand-responsive traffic control and the movement of traffic and access to parking.

Significance After Mitigation: Significant. Mitigation Measures E.2a-e would lessen the significant traffic impacts associated with these events, but not to a less than significant level. Although significant traffic impacts associated with these special events impacts would occur at the campus entrance intersections, the special events would be infrequent, and traffic impacts would be of limited duration and occur during off-peak traffic periods.

Special Event Parking Conditions

Impact D.5: Parking demand for special events of greater than 7,400 attendees at the proposed Center for the Musical Arts may exceed the University's interim on-site parking supply (until the planned University parking Lot F expansion is completed), thereby creating an off-site parking demand, and causing potential traffic safety impacts in the surrounding area. This would be a significant impact.

In order to determine the potential parking impacts of special events at proposed Center for Musical Arts, parking conditions were surveyed for the Santa Rosa Symphony Pops Concert held at the University commencement lawn on June 20, 1999. This event, representative of the types of activities that would occur at the Center for the Musical Arts, had a total attendance of approximately 2,130 people, in addition to approximately 80 musicians and 50 staff persons (Santa Rosa Symphony, 1999). Approximately 770 visitor vehicles and 135 musician/staff vehicles related to the event were parked at the campus, resulting in an overall parking generation rate of 0.42 parked vehicles per attendee for this event.

Using this parking demand ratio for special events at the proposed Center for the Musical Arts, the proposed parking lots in the northern acquisition area adjacent to the Music Center (providing 1,102 parking spaces) would accommodate approximately 2,624 special event attendees. University parking Lots "G" and "H" located on the main campus just south of the proposed Music Center across Copeland Creek (389 parking spaces) would accommodate an additional 938 attendees, resulting in a combined parking accommodation for 3,562 attendees. This would be sufficient parking supply for the majority of special events at the Center.

Performances and events that would draw more than 3,500 attendees would require the utilization of the additional on-campus parking lots, specifically, University Lots "F" and "J," on the south side of the campus off East Cotati Avenue. (The potential use of the remaining smaller parking lot throughout the campus to accommodate special event parking is not assumed in this parking assessment due to potential circulation conflicts associated with their locations.). By the first year of operation of the Center, the "F" and "J" lots will have a total of 1,626 parking spaces, accommodating an additional 3,871 attendees, for a total potential attendance accommodation of 7,433 persons.

The maximum number of attendees expected at the summer festivals is 10,000 persons. An additional 1,691 parking spaces are ultimately planned by the University at the "F" lots, which would adequately accommodate about 4,026 attendees (i.e., more than the balance of attendees under a special event with a 10,000 attendance level). However, until these additional parking facilities are built, special events at the Center generating between 7,400 to 10,000 attendees would not be accommodated by on-campus parking facilities. This could create a demand for off-site parking within the surrounding neighborhood, impacting off-campus parking facilities and increasing the potential for safety conflicts.

Mitigation Measure D.5a: For special events at the proposed Center for the Musical Arts of greater than 3,500 attendees, provide on-site shuttle service between parking Lots "F" and "J" and the Center.

Mitigation Measure D.5b: For special events at the proposed Center for the Musical Arts of greater than 7,400 attendees that occur prior to the ultimate "F" lot expansion, provide off-site parking locations and shuttle service between these off-site locations and the Center for the Musical Arts.

Mitigation Measure D.5c: Provide proper advance notification to alert non-event related University traffic of potential alternate on-campus parking lots to use during the times the special events at the Center for the Musical Arts are proposed.

Significance After Mitigation: Less than Significant

PROJECT CONSTRUCTION

Impact D.6: Construction activity associated with the proposed project would temporarily increase traffic volumes on roadways in the project vicinity. This would be a less than significant impact.

Buildout of facilities anticipated under the Master Plan revision would result in temporary transportation impacts resulting from truck movements to and from the project site during activities association with project construction. Construction related traffic would cause a temporary and intermittent lessening of capacities of access streets and haul routes because of slower movements and tuning radii of construction trucks compared to vehicles. Blockage during times of peak traffic flow would have greater potential to create conflicts than during non-peak hours.

Temporary transportation impacts would also result from project construction adjacent to public roadways, including construction of the new north entrance and the realignment of Cypress Drive to the west of its present location. Because the north entrance would be a new road and will not be diverting existing traffic at the University, no adverse traffic conditions are expected to occur. The realignment of Cypress Drive will require the closure of the road for some period of time, and would require traffic using this street to be diverted. Because relatively low traffic volumes would be expected on this street, and because adequate capacity is expected to be available at adjacent intersections, the closure is not expected to create any adverse traffic conditions on or off the campus.

Mitigation: None Required.

INTERNAL VEHICULAR /BICYCLE/PEDESTRIAN CIRCULATION

Impact D.7: The project would accommodate an increase in vehicular traffic, bicyclists and pedestrians within the campus roadways over existing conditions, which would increase the potential for conflicts between these travel modes. This would be a potentially significant impact.

The proposed vehicular, bicycle and pedestrian network proposed under the Master Plan revision would result in an overall improvement in the on-campus vehicular/bicycle/ pedestrian circulation system. The proposed Master Plan revision would maintain a distinct separation of the vehicle circulation areas located within the perimeter of the campus and the pedestrian/ bicycle paths proposed within the central campus. As under existing conditions, however, bicyclists would share a number of campus roadways with vehicular traffic, including Sequoia Way, Sonoma State Drive, Redwood Circle, Laurel Drive, as well as the proposed north University access road.

A proposed on-campus network of primary, secondary and tertiary paths and "nodes" would form the framework for circulation for bicyclists and pedestrians between classrooms, campus housing, parking lots, and the surrounding regional pathways. Bicyclists and pedestrians would share a number of common paths, including the proposed extension of the Copeland Creek Class I multi-use path, the proposed pedestrian/ bicycle bridges across Copeland Creek, and a number of proposed paths on the central campus. In addition, a number of selected secondary paths and tertiary paths would serve pedestrians only. Connections to the regional path network would be improved with the proposed multi-use path extension along Copeland Creek and along

Rohnert Park Expressway. All on-campus facilities would be completed in accordance with ADA guidelines for accessibility.

While some bicyclists are currently commuting from as far away as Petaluma, it is expected that the majority of bicycle activity will continue to occur within three miles from campus. A number of off-site improvements are planned by Sonoma County and the City of Rohnert Park that would increase accessibility for the University to the regional path network. The *Sonoma County Bikeways Plan* includes Class II bicycle lanes along the entire length of Petaluma Hill Road between the Cities of Santa Rosa and Petaluma. It also includes Class II bicycle lanes on Rohnert Park Expressway between Snyder Lane and Petaluma Hill Road. In addition, the City of Rohnert Park's *Bicycle Master Plan* identifies completion of the Class I bikeways on both sides of East Cotati Avenue adjacent to the University as an intermediate-term priority. Extension of the Class I bike paths on both sides of Rohnert Park Expressway are included as a long-term priority. The City's bicycle plan also includes a Class I bicycle path along the Northwestern Pacific Railroad right-of-way as a long-term priority.

Although the proposed vehicular, bicycle and pedestrian network would result in an overall improvement over the existing on-campus circulation system, the development of the Master Plan revision would accommodate an increase overall vehicular traffic, bicyclists and pedestrian activity within the campus over existing conditions. New through vehicular traffic would occur between the parking areas in the northern acquisition area and the southern parking lots. In addition, increases in pedestrian volumes would occur at several locations along Redwood Circle, including adjacent to the proposed student housing, at the northern periphery of the "F" and "J" Lots, and in the vicinity of the Redwood Circle/Sequoia Way intersection. The increase in overall vehicular, bicycle and pedestrian activity on the campus, particularly at these locations, would increase the potential for conflicts between these travel modes.

Mitigation Measure D.7a: Install pedestrian crossing improvements at locations on Redwood Circle where heavy pedestrian volumes would occur (e.g., along Redwood Circle adjacent to the student housing complexes, at the northern side of the "J" parking lot, the Redwood Circle/Sequoia Way intersection, and the northern periphery of the large "F" parking lots) in order to enhance pedestrian safety.

Such improvements could include raised crosswalk speed tables (where crosswalk path is raised slightly in relation to roadway) and/or "neck downs" (where sidewalk bulbs out into road in vicinity of crosswalk), in addition to installation of pedestrian crossing signs on Redwood Circle. Crossing areas should be clearly identifiable and convenient for pedestrians so that crossing activity is concentrated in the designated locations.

Mitigation Measure D.7b: Construct pedestrian paths within the campus with an adequate width to accommodate the high pedestrian volumes present between classes, particularly in areas adjacent to Darwin, Stevenson, and Salazar Halls.

Mitigation Measure D.7c: Monitor pedestrian and bicycle interaction in high volume areas as enrollment increases, and if necessary, prohibit bicyclists from riding in heavy traffic areas within the campus.

Mitigation Measure D.7d: Install a single-lane roundabout at the intersection of Redwood Circle/Sequoia Way to maximize pedestrian and vehicular safety at this location.

Installation of this form of right-of-way control would adequately accommodate projected traffic volumes, as well as maximize pedestrian and vehicular safety at this location.

Significance After Mitigation: Less than significant.

The campus currently has an adequate supply of bicycle racks, though there is a shortage of rack space at the College Union. The following recommendations for improvements to bicycle parking facilities should be considered for the University.

- The existing bicycle racks that secure only the front wheel of the bicycle should be replaced over time with more secure rack styles.
- Bicycle parking should be located at every educational building on campus in sufficient quantities to accommodate demand.
- Larger bicycle parking areas should not be located along sidewalks with heavy pedestrian volumes.

TRANSIT SERVICE

Impact D.8: The project would generate an increase in demand for transit service over existing conditions. This would be a less than significant impact.

The University is currently a transit-accessible campus, with connections available to most communities in the region. Since a notable increase in transit ridership occurred simultaneously with the free transit ride program initiated during the 1998 school year, this program has proven successful in reducing automobile trips to and from the campus. The development of the Master Plan revision would continue to support public transit for its on-campus population, and therefore, would not conflict with adopted transit plans or programs supporting alternative transportation.

Mitigation: No mitigation is required for the less than significant transit impact discussed above. However, the implementation of Mitigation Measure E.2c in Section IV.E, Air Quality, would ensure that transit service impacts under the project are less than significant:

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E. AIR QUALITY

SETTING

CLIMATE AND METEOROLOGY

Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants.

The University is located within Sonoma County, part of the nine-county San Francisco Bay Area Air Basin (Bay Area). The Bay Area generally has warm, dry summers and mild, rainy winters. In summer, the Pacific high-pressure systems typically remain near the coast of California, diverting storms to the north. Subsidence of warm air aloft associated with the Pacific high-pressure systems creates frequent summer atmospheric temperature inversions. These summertime inversions are termed "subsidence" inversions and they may be several hundred to several thousand feet deep, effectively trapping pollutants in a relatively small volume of air near the ground. Air temperature normally cools with increasing altitude, and an inversion occurs whenever warmer air overlies cooler air. In winter, the Pacific high-pressure systems move southward, allowing ocean-formed storms to move through the region. The frequent storms and infrequent periods of sustained sunny weather are not conducive to smog formation. The ground surface cools quickly in winter creating thin inversions that concentrate pollutant emissions, such as carbon monoxide, near the ground.

While there are certain shared meteorological characteristics within the Bay Area, there is also significant variation in other meteorological characteristics from place to place, and as a result, several meteorological subregions have been identified. The University lies within Cotati Valley, which together with Petaluma Valley, forms one of the meteorological subregions of the Bay Area. This subregion is bordered by the Sonoma Mountains to the east, a series of low hills to the immediate west, and the Estero Lowlands further west, which opens to the Pacific Ocean. The Petaluma Gap lies south of Cotati Valley and extends from the Estero Lowlands to San Pablo Bay. The wind patterns in Cotati Valley are strongly influenced by the predominant westerly flow of marine air that travels through the Petaluma Gap and splits northward and southward into the Cotati and Petaluma Valleys, respectively. When the ocean breeze is weak, strong winds from the east can predominate, carrying pollutants from the Central Valley via the Carquinez Strait. During these periods, upvalley flows can carry the polluted air as far north as Santa Rosa. Winds are usually weaker in Cotati Valley than in Petaluma Valley because the latter is directly in line with the Petaluma Gap. Winds typically blow from the south through southeast approximately 36 percent of the time (California Department of Water Resources, 1974). Winds in excess of 25 miles per hour are rare (approximately 0.5 percent) while calm conditions occur approximately 20 percent of the time.

Cotati Valley receives approximately 80 percent of its 30 inches of average annual rainfall from November through March. During late summer afternoons, fog rolls in across the Petaluma Gap and into the Valley. The fog may then persist until late in the morning the next day. The air pollution potential of Cotati Valley is higher than in Petaluma Valley because Cotati Valley lacks a gap to the sea, contains a larger population and has natural barriers at its northern and eastern ends (Bay Area Air Quality Management District, 1996).

AIR QUALITY PLANS, POLICIES AND STANDARDS

Regulation of air pollution is achieved through both national and state ambient air quality standards and emissions limits for individual sources of air pollutants. The federal Clean Air Act requires the U.S. Environmental Protection Agency (U.S. EPA) to identify National Ambient Air Quality Standards (national standards) to protect public health and welfare. National standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter (PM-10 and PM-2.5), and lead. These pollutants are called "criteria" air pollutants because standards have been established for each of them to meet specific public health and welfare criteria. California has adopted more stringent ambient air quality standards for most of the criteria air pollutants (referred to as State Ambient Air Quality Standards or State standards) and has adopted air quality standards for some pollutants for which there is no corresponding national standard.

Under amendments to the federal Clean Air Act, U.S. EPA has classified air basins, or portions thereof, as either "attainment" or "nonattainment" for each criteria air pollutant, based on whether or not the national standards have been achieved. In 1988, the State Legislature passed the California Clean Air Act, which is patterned after the federal Clean Air Act to the extent that areas are required to be designated as "attainment" or "nonattainment" for the state standards, rather than the national standards. Thus, areas in California have two sets of designations: one set with respect to the national standards and one set with respect to the state standards.

The federal Clean Air Act requires nonattainment areas to prepare air quality plans that include strategies for achieving attainment. The California Clean Air Act too requires nonattainment areas, except for PM-10 nonattainment areas, to prepare plans that include strategies for achieving attainment, or alternatively, to implement all feasible control measures. Thus, just as regions in California have two sets of designations, many regions in California also have two sets of air quality plans: one to meet federal requirements and another to meet state requirements.

The Bay Area is currently designated "nonattainment" for state and national ozone standards and the state PM-10 standard (California Environmental Protection Agency, 1998). Urbanized areas within the Bay Area are also designated as a "maintenance" area for the national carbon monoxide standard. The "maintenance" designation denotes that the area, now "attainment," had once been designated as "nonattainment." The Bay Area is "attainment" or "unclassified" with respect to the other ambient air quality standards.

Since the Bay Area has been designated nonattainment for national and state ozone standards and had once been designated as nonattainment for the carbon monoxide standard, plans have been developed to achieve attainment of those standards. To satisfy federal Clean Air Act requirements, an Air Quality Plan for the Bay Area was adopted in 1982 to achieve attainment of the national standards for ozone and carbon monoxide by 1987. Under the federal Clean Air Amendments of 1990, such federally-mandated plans (referred to as State Implementation Plans or SIPs) were required to be revised to meet new requirements for those areas, like the Bay Area, that did not meet the 1987 attainment deadline.

With respect to ozone, a SIP revision for the Bay Area was prepared pursuant to the federal Clean Air Act Amendments of 1990. This ozone SIP, the *Ozone Maintenance Plan* (Association of Bay Area Governments, 1994a), was developed for the Bay Area in anticipation of a change in designation to "attainment." In 1995, U.S. EPA approved the request by regional planning agencies to change the Bay Area's designation to "attainment" for the national standard for ozone based on monitoring data from the early 1990's that indicated that the Bay Area had achieved the national standard. At the same time, U.S. EPA also approved the *Ozone Maintenance Plan*, which then became part of the current ozone SIP for the Bay Area.

In 1998, however, U.S. EPA redesignated the Bay Area back from "maintenance" to "nonattainment" for the national ozone standard based on monitored violations of the standard in 1995 and 1996. Pursuant to this 1998 redesignation, a SIP revision, the *Ozone Attainment Plan*, was completed and has been submitted to U.S. EPA for approval (Association of Bay Area Governments, 1999). Once approved, the *Ozone Attainment Plan* will become the new Bay Area ozone SIP.

With respect to carbon monoxide, U.S. EPA approved a redesignation request for the Bay Area to "attainment" for the national carbon monoxide standard and approved a *Carbon Monoxide Maintenance Plan* (Association of Bay Area Governments, 1994b), which is the new carbon monoxide SIP for the Bay Area.

Pursuant to state air quality planning requirements, the *Bay Area '91 Clean Air Plan* (*'91 Clean Air Plan*) was developed to reduce population exposure to unhealthful levels of ozone through tighter industry controls, cleaner cars and trucks, cleaner fuels, and increased commute alternatives. The *'91 Clean Air Plan* has been updated on a triennial basis. The most recent update is the *Bay Area '97 Clean Air Plan*, which contains additional control strategies that will reduce ozone precursors (Bay Area Air Quality Management District, 1997). Two of the new control measures contained in the *Bay Area '97 Clean Air Plan* relate to development of new buildings, roads and parking lots: 1) promotion of energy efficiency and 2) encouragement of the use of high albedo (reflective) materials for roofing and road surfaces. Buildings that are more energy efficient require less energy to heat and cool, which reduces emissions from combustion of natural gas and electric power plants. Use of high-albedo materials for roofing and road surfaces is intended to reduce the "heat island" effect associated with urbanized areas due to absorption of solar energy by pavement and other materials. Lowering ambient temperatures would reduce energy consumption and reduce photochemical production of ozone.

REGULATORY AGENCIES

The Air Resources Board (ARB) California's State air quality management agency, regulates mobile emissions sources such as construction equipment, trucks, and automobiles, and oversees the activities of regional and county air districts. The regional and county air districts are primarily responsible for regulating stationary emissions sources and facilities. The University lies within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). BAAQMD is the regional agency empowered to regulate air pollutant emissions from stationary sources in the Bay Area. BAAQMD regulates air quality through its permit authority over most types of stationary emissions sources and through its planning and review activities. The types of emissions sources at the University that require BAAQMD permits include boilers and fuel storage tanks. Laboratories used exclusively for classroom experimentation or demonstration are exempt from BAAQMD permit requirements.

EXISTING AIR QUALITY CONDITIONS

BAAQMD operates a network of monitoring stations to document air pollutant concentrations in the Bay Area. The closest BAAQMD monitoring station is in the City of Santa Rosa. Table IV.E-1 is a five-year summary of ambient concentration data for the "nonattainment" or "maintenance" pollutants collected at that station. This monitoring station is located on 5th Street in Santa Rosa, approximately seven miles northwest of the University. Monitored ambient air pollutant concentrations reflect the number and strength of emissions sources and the influence of topographical and meteorological factors.

Ozone

Ozone is a reactive pollutant, which is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and nitrogen oxides (NO_x). ROG and NO_x are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours. Ozone is a regional air pollutant because it is not emitted directly by sources, but is formed downwind of sources of ROG and NO_x under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer, and fall, when the long sunny days combine with regional subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds, like ozone.

Short-term exposure to ozone can irritate the eyes and cause constriction of the airways (Bay Area Air Quality Management District, 1996). Besides causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis and emphysema. High ozone concentrations are also a potential problem to sensitive crops, such as wine grapes.

In the Bay Area, the data from the regional monitoring network generally shows a downward trend in maximum ozone concentrations from 1980 to the early 1990's and a leveling off since that time. The annual number of days during which violations of the state ozone standard were recorded at one or more of the monitoring stations in the Bay Area averaged 22 over the past five years. During that same period, the annual number of days during which violations of the less stringent national ozone standard were recorded averaged six over that same period. Based on the data from Santa Rosa and shown in Table IV.E-1, violations of ozone standards in the project

TABLE IV.E-1
SANTA ROSA AIR POLLUTANT SUMMARY, 1994-1998

Pollutant	Standard[c]	Monitoring Data by Year[a] 1994	1995	1996	1997	1998
Ozone:						
Highest 1-hour average, ppm[b]	0.09	0.08	**0.10**	0.08	0.09	0.07
Number of exceedances[d]		0	1	0	0	0
Highest 8-hour average, ppm[b]	0.08	0.07	0.08	0.06	0.08	0.05
Number of exceedances[d]		0	0	0	0	0
Carbon Monoxide:						
Highest 1-hour average, ppm	20	5	5	6	5	ND
Number of exceedances		0	0	0	0	
Highest 8-hour average, ppm	9.0	3.5	2.8	3.0	3.3	3.2
Number of exceedances		0	0	0	0	0
Particulate Matter (PM-10):						
Highest 24-hour average, $\mu g/m^3$ [b]	50	**61**	46	38	**85**	**53**
Exceedances/Samples[e]		1/31	0/61	0/61	2/61	1/57
Annual Geometric Mean, $\mu g/m^3$	30	18.2	13.9	15.3	16.5	16.6

a Data for all pollutants are from the air quality monitoring station on 5th Street in Santa Rosa.
b ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.
c State standard, not to be exceeded, except for the 8-hour ozone standard, which is a national standard.
d Except for ozone, "number of exceedances" refers to the number of measured violations in a given year of the applicable standard. For ozone, "number of exceedances" refers to the number of days in a given year during which at least one hour exceeded the standard.
e PM-10 is usually measured every sixth day (rather than continuously like the other pollutants). For PM-10, "exceedances/samples" indicates the number of exceedances of the state standard that occurred in a given year and the total number of samples that were taken that year.

NOTE: ND = No data available. Values shown in **bold** type exceed the applicable standard.

SOURCE: California Environmental Protection Agency, Air Resources Board, *Air Quality Data Summary*, 1994 through 1997; www.arb.ca.gov/adam.

vicinity are much less frequent than in other parts of the Bay Area. Only one violation has been recorded over the past five years.

Transportation-related emissions sources (including on-road motor vehicles, trains, aircraft, etc.) emit approximately 42 percent and 49 percent of the regional inventory of ROG and NO_X, respectively (Bay Area Air Quality Management District, 1996). Region-wide, ROG and NO_X emissions are expected to decrease by approximately 22 percent from 1999 to 2010 under the *Bay Area '97 Clean Air Plan* (Bay Area Air Quality Management District, 1997).

Carbon Monoxide

Carbon monoxide is a non-reactive pollutant that is a product of incomplete combustion. Ambient carbon monoxide concentrations generally follow the spatial and temporal distributions of vehicular traffic and are also influenced by meteorological factors such as wind speed and atmospheric mixing. Under inversion conditions, carbon monoxide concentrations may be distributed more uniformly over an area out to some distance from vehicular sources. When inhaled at high concentrations, carbon monoxide combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease or anemia, as well as fetuses.

Violations of ambient carbon monoxide standards were recorded at some locations in the Bay Area until 1992. On-road motor vehicles are responsible for approximately 65 percent of the carbon monoxide emitted within Sonoma County (California Environmental Protection Agency, 1998). Carbon monoxide emissions are expected to decrease within the region by approximately 25 percent between 1999 and 2010 (Association of Bay Area Governments, 1994b). Table IV.E-1 indicates that background concentrations of carbon monoxide in Santa Rosa are well below the corresponding ambient standards.

Particulate Matter (PM-10 and PM-2.5)

PM-10 and PM-2.5 consists of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. (A micron is one-millionth of a meter). PM-10 and PM-2.5 represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as demolition and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility.

In Sonoma County, the major sources of direct PM-10 emissions are paved and unpaved road dust (approximately 32 percent), construction and demolition activities (24 percent), residential fuel combustion (23 percent), and industrial processes (12 percent) (California Environmental Protection Agency, 1998). Particulate concentrations near residential sources generally are higher during the winter, when more fireplaces are in use and meteorological conditions prevent the dispersion of directly emitted contaminants. Direct PM-10 emissions in the Bay Area are expected to increase by approximately six percent between 1999 and 2003 (Bay Area Air Quality Management District, 1997). In Santa Rosa, PM-10 concentrations violate the state 24-hour-average standard approximately one percent of the time, which is equivalent to approximately four days per year.

UNIVERSITY EMISSIONS SOURCES

The principal source of emissions associated with the University is motor vehicle traffic. Lesser sources of emissions include exhaust from off-road maintenance equipment, natural gas combustion by boilers and other similar equipment, and evaporative emissions from fuel storage tanks and laboratory fume hoods. In addition, electricity consumption at the University generates emissions at distant power plants. Taking into account the motor vehicle traffic, natural gas combustion, and electricity consumption, existing emissions associated with the University are estimated to be approximately 2,700 pounds per day of carbon monoxide, 360 pounds per day of reactive organic gases, 390 pounds per day of nitrogen oxides, and 120 pounds per day of PM-10. These estimates correspond to a typical weekday during the regular school year. University-related emissions represent approximately 0.5 to 0.8 percent of the emissions inventory for the Sonoma County portion of the Bay Area Air Basin (i.e., the southern half of the county).

IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

Generally, a project would have a significant effect on the environment if it would: (1) conflict with or obstruct implementation of the applicable air quality plan; (2) violate any air quality standard or contribute substantially to an existing or projected air quality violation; (3) result in a cumulatively considerable net increase of any nonattainment pollutant; (4) expose sensitive receptors to substantial pollutant concentrations; or (5) create objectionable odors affecting a substantial number of people. The following air quality analysis addresses the first four of these general criteria; the fifth is not discussed since the project would not include development of the types of land uses generally associated with potential odor impacts.

BAAQMD has published a set of recommendations that provide specific guidance on evaluating projects under CEQA relative to the above general criteria (Bay Area Air Quality Management District, 1996). For temporary construction-phase impacts, BAAQMD recommends a qualitative approach that focuses on the dust control measures that would be implemented. If appropriate mitigation measures are implemented to control PM-10 emissions, then the impact from construction would be less than significant. For evaluating long-term emissions increases, BAAQMD recommends that agencies use a criterion of 80 pounds per day from indirect sources (such as motor vehicle trips) to identify significant increases in emissions of ROG, NO_x, or PM-10. Carbon monoxide impacts are evaluated through application of dispersion modeling techniques and a direct comparison of modeled concentrations with ambient carbon monoxide standards. Lastly, BAAQMD recommends that cumulative air quality effects be discussed with reference to the consistency of a project to the regional Clean Air Plan. The BAAQMD recommendations are used herein to identify significant effects of the project and significant cumulative effects.

APPROACH TO ANALYSIS

Construction-phase impacts are discussed qualitatively, and the applicable BAAQMD-recommended dust abatement measures are identified. Long-term emissions changes associated with the University have been estimated using the URBEMIS7G computer program (Jones & Stokes Associates, 1998). University-related emissions increases are then compared with the BAAQMD-recommended significance criteria (80 pounds per day for ROG, NO_X, or PM-10).

Local carbon monoxide concentrations were quantified using methods and emissions factors developed by the BAAQMD. Local concentration increments are added to projected background concentrations to estimate total carbon monoxide concentrations. Eight-hour-average carbon monoxide concentrations were estimated from the one-hour concentrations by using a persistence factor of 0.7 and then adding in the appropriate eight-hour background concentration. The resulting ambient carbon monoxide concentrations were then compared to the one-hour and eight-hour state carbon monoxide standards to determine if there would be any air quality standard violations.

Generally, if a project results in a project-specific increase in ROG, NO_X, or PM-10 of more than 80 pounds per day, then it would also be considered to contribute substantially to the significant cumulative effect. If the increase in emissions would be less than the project-specific criterion, the cumulative effect is evaluated based on a determination of the consistency of the project with the regional Clean Air Plan.

For evaluating cumulative air quality effects, if a project would be significant using the project-specific criteria described above, then it would be considered to be significant from a cumulative perspective as well. If a project would not result in a significant effect on an individual basis, BAAQMD recommends that the analysis focus on the consistency between the project and the most recently adopted Clean Air Plan. To be consistent with the Clean Air Plan, a project like a University Master Plan must be consistent with the population and vehicle-miles-traveled assumptions used to develop the Clean Air Plan, must implement the applicable Transportation Control Measures (TCMs), and must address potential impacts related to odors and toxic air contaminants. TCMs that apply to a University setting include development and implementation of ridesharing programs, improvement of bicycle access and facilities, improvement in traffic management, and provision of transit use incentives. Projects that are found to be consistent with the Clean Air Plan would have a less than significant cumulative effect on air quality.

Impact E.1: Construction activities under the project would generate substantial amounts of dust, which would result in potential health and visibility impacts in the immediate vicinity of construction sites. This would be a significant impact.

Construction activities under the Master Plan Revision would generate substantial amounts of dust (including PM-10 and PM-2.5) primarily from "fugitive" sources (i.e., emissions released through means other than through a stack or tailpipe) and lesser amounts of other criteria air pollutants primarily from operation of heavy equipment. With respect to the emissions sources associated with construction other than fugitive dust, their related emissions are generally included in the emissions inventory that is the basis for regional air quality plans and would not be expected to impede attainment or maintenance of ozone and carbon monoxide standards in the Bay Area (Bay Area Air Quality Management District, 1996). Therefore, construction-related emissions, other than dust, would not be significant.

Dust emissions would vary from day to day, depending on the level and type of activity, silt content of the soil, and the weather. In the absence of mitigation, construction activities may result in significant quantities of dust, and as a result, local visibility and PM-10 concentrations may be adversely affected on a temporary and intermittent basis during the construction period. This would be a significant effect of the project.

A possible exception to the above general description of potential air quality impacts from construction dust would arise if asbestos had been used in the construction of the Ruben Salazar Building which would be renovated under the Master Plan revision. If asbestos had been used in its construction, then renovation could lead to entrainment of asbestos fibers into the atmosphere and such fibers would have carcinogenic potential. However, BAAQMD Regulation 11 (Hazardous Pollutants), Rule 2 (Asbestos Demolition, Renovation and Manufacturing) sets forth specific requirements related to demolition activities involving asbestos, and if those requirements are met, then the resultant impact associated with asbestos would be less than significant.

Mitigation Measure E.1a: The University should determine whether asbestos was used in the construction of the Ruben Salazar Building and, if applicable, shall comply with the requirements of BAAQMD Regulation 11, Rule 2 in connection with renovation of that building and should demonstrate compliance in the form of documentation of its consultation with the BAAQMD.

Compliance with the requirements of BAAQMD Regulation 11, Rule 2 would reduce this potential impact to less than significant.

Mitigation Measure E.1b: The University should require construction contractors to implement a dust abatement program.

For individual construction projects affecting less than four acres in areas, the dust abatement program should include following elements:

- Water all active construction areas at least twice daily;
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer);
- Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites;
- Sweep daily (preferably with water sweepers) all paved access roads, parking areas and staging areas at construction sites; and

- Sweep streets daily (preferably with water sweepers) if visible soil material is carried onto adjacent public streets.

- Designate a person or persons to oversee the implementation of a comprehensive dust control program and to increase watering, as necessary.

For individual construction projects affecting four acres or more, the dust abatement program should include the above measures plus the following measures:

- Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas 9previously graded areas inactive for ten days or more);

- Enclose, cover, water twice daily or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.);

- Limit traffic speeds on unpaved roads to 15 miles per hour;

- Install sandbags or other erosion control measures to prevent silt runoff to public roadways; and

- Replant vegetation in disturbed areas as quickly as possible.

The above list of measures are recommended by BAAQMD as feasible control measures to reduce construction dust emissions. With implementation of these mitigation measures, the residual effect would be less than significant.

Significance After Mitigation: Less than Significant.

Impact E.2: Development under the project would increase criteria air pollutant emissions associated with the University relative to existing conditions. This would be a significant impact.

University-related emissions under the Master Plan Revision would be affected by expected increases in enrollment and employment primarily due to the related increases in motor vehicle trips. Emissions would also be affected by the increase in energy consumption that would occur due to operation of new buildings. The changes in emissions associated with student- and employee-related vehicle trips and energy consumption would be gradual and incremental, but would be more substantial on days when special events would be held at the proposed Center for the Musical Arts. As a general matter, however, the increase in emissions from increased motor vehicle trips and energy consumption would be offset to a degree by continued reduction in emissions per vehicle-mile traveled due to increasingly stringent state and federal motor vehicle emissions programs.

In recognition of the day-to-day, as well as seasonal, variations in University-related motor vehicle trip generation, the net change in motor vehicle emissions has been calculated for four different emissions scenarios. The first scenario (Emission Scenario 1) reflects a large festival at the proposed Center for the Musical Arts in the summer of year 2002, the first year when the Center is scheduled to be operational. While the Center is expected to ultimately draw as many as 10,000 persons, it would not attract such attendance levels during the early years; therefore, for purposes of this EIR, emissions scenario 1 assumes 5,000 people in attendance. Emissions scenario 2 corresponds to a typical weekday during the school year in 2015, which for purposes of this EIR, is the earliest year when the maximum planned student population (10,000 FTE) is assumed to be accommodated under the project. Emissions scenario 3 adds the motor vehicle emissions from a special event at the Center for the Musical Arts of size expected for concerts by the Santa Rosa Symphony onto those described for emissions scenario 2 (typical weekday during the school year in 2015). The fourth scenario repeats scenario 1, but adjusts that scenario to 2015 by assuming 10,000 persons in attendance at the Center for the Musical Arts and using 2015 vehicle emissions factors.

Table IV.E-2 presents the net change between motor vehicle emissions under the four scenarios described above and those emissions under existing conditions and compares the net change estimates with the BAAQMD-recommended significance criteria. As shown in Table IV.E-2, the change in emissions would not be significant on a regular day-to-day basis, as reflected in scenario 2, but would be significant on days during the regular school year when larger special events, such as Santa Rosa Symphony concerts, would be held (emissions scenario 3) and on days during the summer when the large festivals would be held at the Center for the Musical Arts (emissions scenarios 1 and 4). Emissions under emissions scenario 4 (10,000–person summertime festival in 2015) would be less for carbon monoxide, ROG and NO_x than the emissions under emissions scenario 1 (5,000–person summertime festival in 2002), despite the higher attendance level, because of the expected continued decline in vehicle exhaust missions per mile-traveled into the foreseeable future. PM-10 emissions, in contrast, would be higher under emissions scenario 4 since they mostly reflect entrained road dust rather than vehicle exhaust and therefore are roughly proportional to vehicle miles traveled, which is roughly proportional to attendance levels.

As a general matter, increases in ROG, NO_x, and PM-10 under the Master Plan revision would contribute incrementally to regional concentrations of ozone and PM-10, two pollutants for which the Bay Area is designated, and will continue to be designated for the foreseeable future, as "nonattainment." The frequency of large festivals, such as those characterized by emissions scenarios 1 and 4, would be approximately 10-12 events per year, but as summertime events, these festivals would coincide with the regional "ozone season," which runs roughly from mid-April through mid-September. The frequency of Santa Rosa Symphony events, such as those characterized by emissions scenarios 2, would be approximately 26 per year, and while most of those events would occur outside of the "ozone season," they would occur mostly during winter when maximum PM-10 concentrations typically occur. Since the increase in emissions over existing conditions would exceed 80 pounds per day for ROG, NO_x, or PM-10 on those days when the larger special events would occur at the Center for the Musical Arts, the related effect on regional emissions would be significant.

TABLE IV.E-2
ESTIMATED NET CHANGE IN MOTOR VEHICLE EMISSIONS RELATIVE TO EXISTING CONDITIONS

	Net Change in Emissions (pounds per day)[a]				
	Scenario 1[b]	Year 2015			Significance
Pollutant	Year 2002	Scenario 2[c]	Scenario 3[d]	Scenario 4[e]	Criteria
Carbon Monoxide	664	-1,191	-1,056	633	NA[f]
Reactive Organic Gases	**185**	-129	-106	**140**	80
Nitrogen Oxides	69	4	37	65	80
Particulate Matter (PM-10)	62	67	**84**	**124**	80

[a] These emissions estimates correspond to the net change in motor vehicle emissions under the various scenarios relative to existing conditions.
[b] Scenario 1 reflects the motor vehicle emissions in 2002 of a large festival held at the Center for the Musical Arts that is attended by 5,000 persons. Such festivals are expected to occur only during the summer.
[c] Scenario 2 reflects the net change in motor vehicle emissions relative to existing conditions on a typical weekday during the school year in 2015 assuming an enrollment of 10,000 FTE.
[d] Scenario 3 reflects the net change in motor vehicle emissions relative to existing conditions on a weekday during the school year in 2015 assuming an enrollment of 10,000 FTE and including a special event held at the Center for the Musical Arts that is attended by 1,300 persons.
[e] Scenario 4 reflects the motor vehicle emissions in 2015 of a large festival held at the Center for the Musical Arts that is attended by 10,000 persons. Such festivals are expected to occur only during the summer.
[f] NA = Not Applicable. This analysis evaluates carbon monoxide impacts on the basis of a comparison of calculated concentrations with the applicable ambient air quality standards. See Impact E.3.

NOTE: Values shown in **bold** type exceed the corresponding significance threshold.

SOURCE: Environmental Science Associates, 1999.

Mitigation Measure E.2a: The University should select the mixed use or higher-density housing scenarios in the northwest acquisition area.

The Master Plan Revision includes three different housing scenarios for the northwest acquisition area. The lower-density scenario would accommodate approximately 510 persons and the mixed-sue and higher-density scenarios would accommodate approximately 1,170 and 1,420 persons, respectively. Emissions scenarios 2 and 3 (shown in Table IV.E-2) conservatively assume the lower density scenario because it would generate the most off-campus vehicle trips among the three scenarios. Selection of either of the other housing scenarios would probably be sufficient to reduce the net change in emissions under emissions scenario 3 to less than 80 pounds per day for PM-10, which would mean that significant increases in emissions would only be associated with the days during summer when large festivals would be held at the Center for the Musical Arts. As a general matter, development of on-Campus student housing reduces University-related motor vehicle trip generation by eliminating the student's vehicle trip to and from the University, and for some students, by eliminating the need for a vehicle at all.

Mitigation Measure E.2b: The University should offset expected increases in emissions from vehicular traffic by increasing the energy efficiency of future buildings. The following measures that are proposed as part of the project or that are identified in this report would reduce emissions associated with energy consumption under the project:

- All new buildings shall be developed in accordance with the CSU Design Standards (Proposed as Part of the Project). These standards are intended to achieve greater energy-efficiency than required under Title 24 (i.e., California Energy Code). As such, the CSU Design Standards would reduce the possibility of wasteful energy use with respect to building heating, cooling, and lighting.

- To avoid unnecessary consumption of energy during construction phases of individual building projects, the University should direct construction contractors to minimize idling of construction equipment when not in use (unless turning the equipment off would result in damage to the equipment) (Identified in This Report).

- The University should review and revise its policies regarding the purchase of electricity to maximize the extent to which electricity consumed at the University is derived from renewable energy resources (Identified in This Report).

- The University should use high-albedo (reflective) roofing and road surface materials where feasible for such projects as new buildings, new parking lots and roadways, and resurfaced roadways. This measure would implement one of the control measures identified in the 1997 Clean Air Plan.

Mitigation Measure E.2c: The University should implement the following measures to facilitate transit use:

- Coordinate with the Sonoma County Transit (SCT) to provide for a potential public transit stop, including a transit shelter along the north entrance, adjacent to the proposed Center for the Musical Arts, and potential additional queuing space at the existing transit stop at the southern campus entrance

- Encourage the continuance of SCT's free transit ride program to the University's students, faculty and staff.

- Additional transit use could also be realized upon establishment of light rail service on the Northwestern Pacific railroad. Should the proposed train service begin operation, it is recommended that a University-sponsored shuttle service be established between campus and the nearest light rail station, which would be on East Cotati Avenue. It should be noted that the City of Cotati is currently developing a Specific Plan for the area surrounding the future rail station on East Cotati Avenue.

Significance After Mitigation: Significant. The measures would reduce the number of days during which emissions in the future would be significantly greater than under existing conditions, but, on summer weekend days during which large festivals would be held at the Center for the Musical Arts, or on school weekdays when a large special event at the Center would be held, vehicular emissions would still exceed 80 pounds per day of ROG and PM-10. However, the number of these occurrences throughout the year would be infrequent.

Impact E.3: Motor vehicle emissions generated by project traffic would increase carbon monoxide concentrations at intersections in the project vicinity. This would be a less than significant impact.

Traffic volumes on the local street network in the University vicinity would increase due to increases in enrollment and employment at the University as well as cumulative development in the City of Rohnert Park and the region. In addition, traffic volumes would be affected by the redistributive effect of the new northern entrance to the University from Rohnert Park Expressway as called for under the project. Increases in traffic from growth and redistribution would affect local carbon monoxide concentrations along the local street network. To determine whether this effect would be significant, carbon monoxide concentration estimates were made at nine area intersections as shown in Table IV.E-3.

The BAAQMD's carbon monoxide screening model was used to evaluate worst-case concentrations at the nine intersections analyzed in Section 4.D, Traffic, Transportation, Parking, and Circulation. The screening model was performed for the existing scenario (1999) and for 2015, the year of projected build-out assumed in this EIR. Modeling results are presented in Table IV.E-3. As shown in Table IV.E-3, despite increases in traffic volumes, carbon monoxide concentrations would violate carbon monoxide concentrations. These worst-case concentrations correspond to wintertime conditions when carbon monoxide concentrations are typically the greatest of the year. Year 2015 estimates reflect the traffic associated with student enrollment of 10,000 FTE as well as cumulative development in the area. Since the increase in traffic would not cause a violation of carbon monoxide standards, the related impact would not be significant.

Mitigation: None required.

CUMULATIVE

Impact E.4: The project would contribute to cumulative increases in regional emissions of criteria air pollutants. This would be a significant impact.

As discussed under Impact E.2, the project would result in a significant effect on regional emissions on an individual basis. Consequently, based on the approach to cumulative impact analysis in *BAAQMD CEQA Guidelines*, project emissions would also be considered to contribute to a significant cumulative air quality effect.

Mitigation Measure E.4: Implement Mitigation Measures E.2a-c.

Significance After Mitigation: Significant. See discussion under Mitigation Measures E.2a-c.

TABLE IV.E-3
ESTIMATED CARBON MONOXIDE CONCENTRATIONS AT SELECTED INTERSECTIONS IN PROJECT VICINITY, 1999 AND 2015[a]

Intersection	*State Standard*[b]	**Year 1999 Baseline**	**Year 2015 +SSU Build-out**
Rohnert Park Expressway / Snyder Lane			
1-hour	*20.0*	8.1	9.6
8-hour	*9.0*	4.7	6.1
Rohnert Park Expressway / North Entrance			
1-hour	*20.0*	6.5	6.5
8-hour	*9.0*	3.6	3.8
Rohnert Park Expressway / Petaluma Hill Rd.			
1-hour	*20.0*	9.1	10.4
8-hour	*9.0*	5.4	6.6
Laurel Drive / Petaluma Hill Road			
1-hour	*20.0*	9.0	11.2
8-hour	*9.0*	5.4	7.2
East Cotati Avenue/ Petaluma Hill Road			
1-hour	*20.0*	9.2	11.5
8-hour	*9.0*	5.5	7.3
East Cotati Avenue/ Cypress Drive			
1-hour	*20.0*	7.0	6.6
8-hour	*9.0*	4.0	3.9
East Cotati Avenue / Sequoia Way			
1-hour	*20.0*	7.2	6.9
8-hour	*9.0*	4.1	4.2
East Cotati Avenue / Construction Road-Bodway Parkway			
1-hour	*20.0*	8.0	7.7
8-hour	*9.0*	4.6	4.7
East Cotati Avenue / Snyder Lane			
1-hour	*20.0*	8.6	9.0
8-hour	*9.0*	5.1	5.6

[a] All values are parts per million (ppm) of carbon monoxide. Eight-hour concentrations were derived from one-hour concentrations by apply a 0.7 persistence factor to the local carbon monoxide increment. Estimates reflect background concentrations of 4.7 ppm, one-hour average, and 2.3 ppm, eight-hour average, in 1999 and 3.5 ppm, one-hour average, and 1.7 ppm, eight-hour average in 2015.

[b] The state one-hour carbon monoxide standard is are more stringent than the national standard, which is 35 ppm. The eight-hour national carbon monoxide standard is the same as the state standard.

SOURCE: Environmental Science Associates, 1999.

REFERENCES – Air Quality

Association of Bay Area Governments, Bay Area Air Quality Management District, Metropolitan Transportation Commission, *Proposed Final San Francisco Bay Area Redesignation Request and Maintenance Plan for the National Ozone Standard*, July 1994a.

Association of Bay Area Governments, Bay Area Air Quality Management District, Metropolitan Transportation Commission, *Proposed Final San Francisco Bay Area Redesignation Request and Maintenance Plan for the National Carbon Monoxide Standard*, July 1994b.

Association of Bay Area Governments, Bay Area Air Quality Management District, Metropolitan Transportation Commission, *San Francisco Bay Area Ozone Attainment Plan for the 1-Hour National Ozone Standard*, June 1999.

Bay Area Air Quality Management District, *BAAQMD CEQA Guidelines, Assessing the Air Quality Impacts of Projects and Plans*, April 1996.

Bay Area Air Quality Management District, *Bay Area '97 Clean Air Plan*, December 1997.

California Department of Water Resources, *Wind in California*, January 1974.

California Environmental Protection Agency, Air Resources Board, *Emissions Inventory 1996*, October 1998.

California Environmental Protection Agency, Air Resources Board, *Maps and Tables of the Area Designations for the State and National Ambient Air Quality Standards and Expected Peak Day Concentrations and Designation Values*, January 1998.

Jones & Stokes Associates, *URBEMIS7G Computer Program User's Guide, Version 3.1*, prepared for San Joaquin Valley Unified Air Pollution Control District, August 1998.

F. NOISE

SETTING

NOISE PRINCIPLES AND DESCRIPTORS

Human response to noise is subjective and can vary greatly from person to person. Factors that can influence individual response include: intensity, frequency, and time pattern of the noise; the amount of background noise present prior to the intruding noise; and the nature of work or human activity that is exposed to the noise. The adverse effects of noise include interference with concentration, communication and sleep. At the highest levels, noise can induce hearing damage.

Environmental noise is usually measured in A-weighted decibels (dBA).[1] Environmental noise typically fluctuates over time, and different types of noise descriptors are used to account for this variability. Typical noise descriptors include the energy-equivalent noise level (L_{eq}) and the day-night average noise level (DNL).[2] The DNL noise descriptor is commonly used in establishing noise exposure guidelines for specific land uses.

Noise levels are measured on a logarithmic scale, instead of a linear scale. On a logarithmic scale, the sum of two noise sources of equal loudness is 3 dBA greater than the noise generated by just one of the noise sources (e.g., a noise source of 60 dBA plus another noise source of 60 dBA generate a composite noise level of 63 dBA). To apply this formula to a specific noise source, in areas where existing levels are dominated by traffic, a doubling in the volume of the traffic will increase ambient noise levels by 3 dBA. A 3 dBA increase is generally considered the smallest change in noise level detectable to the average person.

The noise level experienced at a receptor depends on the distance between the source and the receptor, presence or absence of noise barriers and other shielding features, and the amount of noise attenuation (lessening) provided by the intervening terrain. For line sources, such as motor or vehicular traffic, noise decreases by about 3.0 to 4.5 dBA for every doubling of the distance from the roadway. For point or stationary noise sources, such as electric motors, a noise reduction of 6.0 to 7.5 dBA is experienced for each doubling of the distance from the source.

EXISTING NOISE ENVIRONMENT

The noise environment within and around the University is primarily influenced by traffic on the local street network, including East Cotati Avenue, Petaluma Hill Road, and Rohnert Park Expressway. The *Rohnert Park General Plan* indicates that noise levels from traffic are 65 DNL

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1 A decibel (dB) is a unit of sound energy intensity. Sound waves, traveling outward from a source, exert a sound pressure level (commonly called "sound level") measured in dB. An A-weighted decibel (dBA) is a decibel corrected for the variation in frequency response to the typical human ear at commonly encountered noise levels.

2 L_{eq}, the energy-equivalent noise level (or "average" noise level), is the equivalent steady-state continuous noise level which, in a stated period of time, contains the same acoustic energy as the time-varying sound level that actually occurs during the same period. DNL, the day-night average noise level, is a weighted 24-hour noise level. With the DNL descriptor, noise levels between 10:00 p.m. and 7:00 a.m. are adjusted upward by 10 dBA to take into account the greater annoyance of nighttime noise as compared to daytime noise. All L_{eq} and DNL values reported herein reflect A-weighted decibels unless stated otherwise.

along Rohnert Park Expressway and 60 DNL along East Cotati Avenue (City of Rohnert Park, 1995a). The *Rohnert Park General Plan* also notes that aircraft taking off from Petaluma Airport, which is located approximately 8 miles to the southeast of the city, are in a direct line with the University. General aviation aircraft overflights associated with Petaluma Airport generate occasional single-noise events that intrude over the background noise environment generated by traffic sources.

Noise measurements and observations were made to further characterize the existing noise environment in the University vicinity.[3] A long-term (24-hour) measurement was taken at a location approximately 100 feet from the edge of Rohnert Park Expressway near the existing northwest corner of the University. Hourly average noise levels ranged from a low of 43 L_{eq} from 2:00 a.m. to 3:00 a.m. to a high of 53 L_{eq} during the morning peak-hour (7:00 a.m. to 8:00 a.m.). The 24-hour noise level was approximately 55 DNL.

Two short-term (10-minute) noise measurements were taken along the University periphery: one along Petaluma Hill Road and the other along East Cotati Avenue. From a distance of 50 feet from the centerlines of these roads, the measurements indicate typical mid-afternoon noise levels of 60 to 61 L_{eq}.

REGULATORY SETTING

Title 24 of the *California Code of Regulations*, the Building Standards Administrative Code, contains the State Noise Insulation Standards (Part 2, Appendix Chapter 12A), which specify interior noise standards for new hotels, motels, apartment houses, and dwellings other than single-family dwellings. Such new structures must be designed to reduce outdoor noise to an interior level of (no more than) 45 DNL. The California Noise Insulation Standards also establish standards for sound isolation of separating walls, corridor walls, and floor/ceiling assemblies in multi-family residential construction. State noise standards for on-road motor vehicles are contained in the Motor Vehicle Code.

Local general plan policies and local noise ordinances do not apply to the University. However, they are useful in evaluating the effects of University-related noise sources and activities on the surrounding community. In this case, most of the developed areas in the vicinity of the University lie within the City of Rohnert Park. Areas that lie north, south, and east of the University lie within an unincorporated portion of Sonoma County and are primarily used for agriculture. In its General Plan, the City of Rohnert Park establishes policies for acceptable noise exposures for different types of land uses. For residential and school uses, Rohnert Park considers noise levels up to 60 DNL as normally acceptable for residential and school uses and noise levels between 60 and 70 DNL as "conditionally acceptable" for such uses.[4] Above 70 DNL, such uses would be considered normally or clearly unacceptable with the noise environment. Sonoma County also recognizes 60 DNL as the maximum acceptable noise exposure for residential uses.

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3 Noise measurements were made on October 7th and 8th, 1999, using Metrosonics' dB-308 sound level meters.
4 "Conditionally acceptable" means that new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.

The City of Rohnert Park also has adopted a noise ordinance, which identifies "ambient base noise level" standards for different land uses, specifies hours during which construction activities are allowed, and specifies time restrictions on outdoor concerts (City of Rohnert Park, 1995b). For the most restrictive period of the day (7:00 p.m. to 10:00 p.m.) and the most restrictive land use (low-density residential), the ambient base noise level standard is 40 dBA. Under the noise ordinance, machinery, equipment pumps, fans, air conditioning apparatus, and similar mechanical devices are not allowed to create noise which would cause the noise level at the property line to exceed the ambient base noise level for that land use by more than five decibels. Noisy construction activities within 500 feet of residential areas are prohibited under the noise ordinance outside of the hours of 8:00 a.m. to 6:00 p.m. without a permit. Under certain conditions and at certain locations, the noise ordinance allows an exception to the normal ambient base noise levels standards for concerts so long as they do not extend past 10:00 p.m. on weekdays (Sunday through Thursday) or 11:00 p.m. on Friday or Saturday. Sonoma County does not have a noise ordinance, but regulates noise through conditions of approval on individual development projects.

SENSITIVE RECEPTORS

Some land uses are considered more sensitive to ambient noise levels than others, due to the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved. Residences, motels and hotels, schools, libraries, churches, hospitals, nursing homes, auditoriums, and parks and other outdoor recreation areas generally are more sensitive to noise than are commercial (other than lodging facilities) and industrial land uses. Nearby sensitive land uses include residential uses west and south of the University. Rancho Cotati Senior High School lies directly west of the University. On-campus housing units are also considered noise-sensitive uses.

IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

A project would normally result in a significant noise impact if it would:

- Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

To assess long-term changes in the ambient noise environment, the following significance criteria take into account both the absolute change in noise levels due to a project and the relationship between the resultant noise level and noise/land use compatibility guidelines. Where the resultant noise level would remain "normally acceptable" for the affected land use, an increase of 5-DNL or more is significant. Where the resultant noise level would be in the range described as "conditionally acceptable," an increase of 3-DNL or more is significant, and where the resultant noise level would be "normally or clearly unacceptable," an increase of 1.5-DNL or more would be considered significant. The compatibility guidelines adopted by the City of Rohnert Park provide the basis herein for distinguishing among "normally acceptable," "conditionally acceptable," and "normally or clearly unacceptable" noise exposures.

Temporary impacts during construction are considered significant if they would be substantially greater than existing ambient noise levels, would substantially interfere with affected land uses, would continue for a substantial period, or would affect noise-sensitive uses during the nighttime.

IMPACTS AND MITIGATION

Impact F.1: Development under the project would result in temporary and localized noise impacts during individual construction projects. This would be a significant impact.

Under the project, new buildings and other facilities would be constructed at various locations and at various times on the campus throughout the planning period. At each individual site, building construction would involve ground clearing activities and excavation, followed by building construction and finishing operations. Different types of construction equipment would predominate during different phases of construction. Table IV.F-1 shows typical noise levels generated during various phases of building construction. In addition, construction-related material haul trips would also increase roadside noise levels along haul routes, depending on the number of haul trips made and types of vehicles used.

TABLE IV.F-1
TYPICAL CONSTRUCTION NOISE LEVELS

Construction Activity	Noise Level (L_{eq})[a]
Ground Clearing	84
Excavation	89
Foundations	78
Erection	85
Finishing	89

[a] Noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.

SOURCE: U.S. Environmental Protection Agency, *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances*, December 1971.

By its nature, construction would result in a temporary noise impact that would last for so long as the construction period would last, and the level of construction noise at any one location would depend upon the phase of construction and the distance from the construction site. Nearly all of the proposed buildings that would be constructed under project would be located more than 500 feet from the University boundary, and thus, sensitive uses located on the campus would experience relatively greater construction noise impacts than sensitive uses located off-campus. For example, at a distance of 200 feet from an individual construction site, the noise levels shown in Table IV.F-1 would be reduced by approximately 12 dB, while at 500 feet, the corresponding noise levels would be reduced by approximately 20 dB. In either location, however, construction noise levels would be substantially above existing ambient noise levels, and, for students, faculty and staff, construction noise could interfere with basic communication and learning. As such, construction noise would be a significant effect of the project.

Mitigation Measure F.1a: Construction activities should be limited to a schedule that minimizes disruption as much as possible to noise-sensitive uses on the University and in the vicinity.

Where residential uses would be affected, the construction schedule should be limited to 8:00 a.m. to 6:00 p.m. A different time restriction may be appropriate where other uses, such as classrooms or libraries, would be affected.

Mitigation Measure F.1b: To reduce daytime noise impacts due to construction, the University should require that construction contractors muffle or otherwise control noise from construction equipment through implementation of the following measures:

- Equipment and trucks used for construction should utilize the best available noise control techniques (*e.g.*, improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible and necessary);

- Impact tools (*e.g.*, jack hammers, pavement breakers, and rock drills) used for construction should be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust should be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves should be used where feasible, and this could achieve a reduction of 5 dBA. Quieter procedures should be used such as drilling rather than impact equipment whenever feasible; and

- Stationary noise sources should be located as far from sensitive receptors as possible. If they must be located near sensitive receptors, they should be muffled to the extent feasible and enclosed within temporary sheds.

Mitigation Measure F.1c: The University should require that construction contractors schedule loading and unloading so as to minimize disruptions to on-campus activities, where feasible.

Significance After Mitigation: Less than Significant.

Impact F.2: Growth and development under the project would result in a long-term increase in noise levels. This would be significant impact.

Over the long-term, growth and development of the University under the Master Plan Revision would affect the ambient noise environment in three principal ways, as discussed below: 1) operating additional mechanical devices associated with building heating, ventilation, and air conditioning systems, 2) generating additional motor vehicle traffic from increased enrollment and employment, and 3) noise sources associated with sports events associated at the new soccer stadium, and musical events at the proposed Center for the Musical Arts. Based on the following discussion, operation of additional mechanical devices could result in significant on-campus noise impacts, and use of sound amplification systems associated with the soccer stadium could result in significant off-campus noise impacts.

1) New mechanical devices associated with building heating, ventilation, and air conditioning systems would be installed as part of the construction of new buildings. These new stationary noise sources can generate substantial amounts of noise. However, since proposed new buildings would be developed at distances greater than 500 feet from the University boundary, negligible off-campus noise impacts would be expected as a result of the operation of this equipment. On-campus uses could be significantly affected by operation of such equipment, but standard design features (e.g., installation of relatively quiet models, orientation or shielding to protect sensitive uses, installation within an enclosure) are available to ensure that the effect would be less than significant.

2) Additional motor vehicle traffic from increased enrollment and employment at the University would increase noise levels along the principal roads that provide access to the University, including Rohnert Park Expressway, Petaluma Hill Road, and East Cotati Avenue. In addition, an element of the Master Plan Revision, a new northern entrance road along Rohnert Park Expressway, would redistribute existing and future University-generated traffic among the various affected roadways.

To evaluate the effect of increased University traffic and redistribution caused by the new northern entrance, roadside noise levels were estimated under existing conditions and under buildout of the Master Plan Revision (i.e., at 10,000 FTE). These estimates are shown in Table IV.F-2. These estimates were made using the Federal Highway Administration's (FHWA's) noise prediction model and p.m. peak-hour traffic volume estimates prepared for this report. The estimated noise levels shown in Table IV.F-2 correspond to a distance of approximately 50 feet from the centerline of a given road segment.

As shown in Table IV.F-2, buildout under the Master Plan Revision (including use of a new northern entrance) would result in an increase in noise along all three of the major roads in the vicinity. The increase in p.m. peak-hour noise levels would be highest (2 L_{eq}) along Rohnert

TABLE IV.F-2
ESTIMATED P.M. PEAK-HOUR TRAFFIC NOISE LEVELS ALONG ROAD SEGMENTS IN UNIVERSITY VICINITY

	Peak-Hour Noise Level, L_{eq} [a]		
Roadway Segment	**Existing**	**Existing plus Master Plan Revision**	**Existing plus Master Plan Revision Plus Cumulative**
Rohnert Park Expressway (west of Petaluma Hill Road)	66.9	67.9	69.7
Rohnert Park Expressway (east of Snyder Lane)	66.9	68.9	70.2
Petaluma Hill Road (between Rohnert Park Expressway and East Cotati Avenue	69.3	69.7	73.2
East Cotati Avenue (west of Petaluma Hill Road)	65.2	65.5	66.5

[a] Noise levels were calculated using the FHWA traffic noise prediction model for p.m. peak-hour conditions. Noise level estimates correspond to a distance of 50 feet from the centerline of the roadway. The estimates assume an average vehicle speed on Rohnert Park Expressway and Petaluma Hill Road of 45 miles per hour and an average vehicle speed along East Cotati Avenue of 35 miles per hour. The vehicle mix on all three roads is assumed to be 98 percent automobiles and 2 percent medium trucks.

SOURCE: Environmental Science Associates, 1999.

Park Expressway between the University and Snyder Lane. The p.m. peak-hour L_{eq} typically is equivalent to the DNL at locations where the predominant source of noise is from traffic sources. Thus, the increase in p.m. peak-hour average noise levels (in L_{eq}) shown in Table IV.F-2 can be used to estimate the increase in DNL values along these roads as well. Since the increase in p.m. peak-hour noise would be less than 3 dBA along the roads most affected by University traffic, the increase in 24-hour DNL would also be less than 3 dBA, and since 3-DNL is the corresponding significance criterion, the increase in roadside noise due to the project would be less-than-significant.

3) Sports events associated with the new soccer stadium and musical events associated with the new Center for the Musical Arts would generate additional traffic volumes, not included in the estimates shown in Table IV.F-2, and would generate noise from sound amplification systems. The additional traffic generated by special events would not have a significant effect on roadside noise levels because events would be infrequent and because the traffic would be concentrated immediately before an event and immediately after an event, and as such, would have little effect on 24-hour-average noise levels (in DNL) along those roads.

Sound amplification systems associated with events at either the soccer stadium or Center for the Musical Arts could have a significant effect on off-campus uses depending upon their orientations and relative source strengths. The soccer stadium would be located approximately 500 to 600 feet from the nearest residences, which are located south of the university on East Cotati Avenue. This distance should provide sufficient buffer so long as the sound amplification system is oriented and designed to avoid significant impacts at those nearest residences.

The Center for the Musical Arts is designed to avoid noise impacts on adjacent uses, and conversely, to avoid noise impacts on concert patrons from off-campus noise sources, principally traffic on Rohnert Park Expressway and Petaluma Hill Road. The current site design for the center achieves these results by including a substantial buffer zone along Rohnert Park Expressway and Petaluma Hill Road, by orienting the concert hall to the south, and by constructing earthen berms in the buffer zone of up to 15 feet in height along Rohnert Park Expressway and up to 13 feet in height along Petaluma Hill Road (William Rawn Associates, 1998). The center design also includes video/sound towers for the lawn seating areas, but given the attenuating effects of distance and the berm and the lack of noise-sensitive land uses in the vicinity, the impact of sound amplification for special events at the center would be less-than-significant.

Mitigation Measure F.2a: The University should ensure that mechanical equipment noise associated with new buildings would not conflict with adjacent uses.

Standard design features (e.g., installation of relatively quiet models, orientation or shielding to protect sensitive uses, installation within an enclosure) are available to ensure that such stationary noise sources would have a less than significant effect on adjacent uses.

Mitigation Measure F.2b: The University should orient sound amplification systems at the new soccer stadium to the north.

This measure would avoid a potential significant effect from the use of sound amplification systems on residential land uses south of the University along East Cotati Avenue.

Mitigation Measure F.2c: The University should not allow special events at the soccer stadium to extend past 10:00 p.m. on weekdays (Sunday through Thursday) or 11:00 p.m. on Friday or Saturday if such events prove to be clearly audible at the nearest noise-sensitive uses.

This measure would reduce the potential noise impacts from special events on existing and (possible) future residential areas to a less than significant level.

Significance After Mitigation: Less than Significant.

Impact F.3: The project would introduce new noise-sensitive uses into an area where noise levels exceed 60 DNL. This would be a significant impact.

Under the project, residential land use would be developed in the northwest acquisition area of the site. The northern portion of the northwest acquisition area experiences relatively high noise levels from traffic using Rohnert Park Expressway and such levels are expected to increase in the future from increases in traffic associated with the University and from increases in traffic associated with cumulative development in the area. Assuming that the State Noise Insulation Standards contained in Title 24 of the *California Code of Regulations* apply to construction undertaken by the University, the interior noise environment within future multi-family residential units in this area would be protected either by selection of an appropriate site design (e.g. use of a setback to the 60 DNL exposure level), by construction of sound walls or berms along the expressway, by including necessary insulating features into the residential façades, or some combination of these or similar techniques.

However, under the lower-density housing scenario, single-family detached units could be constructed in the Northwest Parcel. Title 24 standards do not apply to single-family detached units, and if they were to be situated close to Rohnert Park Expressway without any insulating design features, they could experience an unacceptable interior noise environment (i.e., higher than 45 DNL) due to the high traffic noise levels. This would be a significant effect of the project.

Mitigation Measure F.3: The University should extend Title 24 Noise Insulation Standards to all new residential development under the project.

This measure would ensure an acceptable interior noise environment (i.e., less than 45 DNL from outdoor sources) within all new residential units at the University.

Significance After Mitigation: Less than Significant.

Impact F.4: Outdoor sound amplification systems at the Center for the Musical Arts could result in nuisance-type impacts if residential uses were to be developed north of Rohnert Park. This would be a potentially significant, cumulative impact.

As discussed under Impact F.2, above, the Center for the Musical Arts has been designed to avoid noise impacts on adjacent uses, and conversely, to avoid noise impacts on concert patrons from off-campus noise sources, principally traffic on Rohnert Park Expressway and Petaluma Hill Road. Impact F.2 indicates that the center would be developed with outdoor video/sound towers for the lawn seating areas but concludes that the impact would be less than significant given the attenuating effects of distance and the berm and the lack of noise-sensitive land uses in the vicinity. If, however, residential uses were to be developed north of Rohnert Park Expressway, as anticipated under the Rohnert Park General Plan Update (currently being prepared), then significant noise impacts from the use of sound amplification systems for special events at the

Center for the Musical Arts could occur on these future uses. This would be a potentially significant cumulative effect.

Mitigation Measure F.4: The University should not allow special events at the Center for the Musical Arts to extend past 10:00 p.m. on weekdays (Sunday through Thursday) or 11:00 p.m. on Friday or Saturday if such events prove to be clearly audible at the nearest noise-sensitive uses.

This measure would reduce the potential noise impacts from special events on (possible) future residential areas to a less than significant level.

Significance After Mitigation: Less than Significant.

Impact F.5: The increase in traffic due to University and area-wide growth and development would result in cumulative increases in roadside noise levels. This would be a significant, cumulative impact.

Table IV.F-2 indicates that cumulative traffic increases would result in a significant increase in noise along Rohnert Park Expressway between the University and Snyder Lane. Residential uses are located along this segment of Rohnert Park Expressway, and the City of Rohnert Park plans to develop additional residential uses north of the University along Rohnert Park Expressway in the future (City of Rohnert Park, 1999). While remedial features, such as buffers, sound walls or berms, can be incorporated into future residential development, the existing residences along Rohnert Park Expressway would experience a significant increase in noise due to increases in cumulative traffic volumes.

The cumulative increase in noise along Petaluma Hill Road between Rohnert Park Expressway and East Cotati Avenue would be even greater than the cumulative increase in noise along Rohnert Park Expressway, but the related impact would not be significant because neither the University-related land uses west of that road segment nor the agricultural uses east of that road segment are noise-sensitive. In addition, the area east of Petaluma Hill Road lies outside Rohnert Park's proposed future (extended) sphere of influence and would not be expected to be developed with noise-sensitive uses for the foreseeable future.

Mitigation Measure F.5a: Implement Mitigation Measure E.2c in Section IV.E., Air Quality, of this EIR.

This measure seeks to reduce the overall trip generation rate associated with the University by facilitating transit use.

Mitigation Measure F.5b: The University should encourage the City of Rohnert Park to address future cumulative noise levels along Rohnert Park Expressway during annexation and subsequent development.

This measure would ensure land use compatibility for future residential land uses developed along Rohnert Park Expressway but would not reduce the effect for existing residences.

Significance After Mitigation: Significant.

REFERENCES – Noise

City of Rohnert Park, *Rohnert Park General Plan*, 1995a.

City of Rohnert Park, Municipal Code, Chapter 9.44, February 1995b.

City of Rohnert Park, *Rohnert Park General Plan Update, Land Use Alternatives and Preferred Plan*, May 1999.

William Rawn Associates, *A New Concert Hall and Musical Center at Sonoma State University, Program and Master Plan*, September 1998.

G. VISUAL QUALITY

INTRODUCTION

This section addresses existing visual conditions and the potential for the project to affect those conditions, focusing on visual character of the project site and views from surrounding public areas.

SETTING

VISUAL CHARACTER

Vicinity of the Site

The project site is located in the south central portion of Sonoma County, between the east limits of the City of Rohnert Park and the west foothills of the Sonoma Mountains. The immediate vicinity is characterized by a diversity of land uses, including residential, commercial, agricultural and recreational uses.

Rohnert Park Expressway forms the north border of the project site. To the north across Rohnert Park Expressway is agricultural land. Petaluma Hill Road forms the east border of the site. Across Petaluma Hill Road to the east is also agricultural land, containing some single-family ranchettes and produce stands. East Cotati Avenue forms the south border of the project site. To the south across East Cotati Avenue is a mix of uses, including single-family residences, fast-food restaurant, church office, a day-care facility and golf center. Uses within the City of Rohnert Park form the west border of the project site, including single-family residences and the Rancho Cotati Senior High School.

Project Site

The approximate 300-acre, roughly square-shaped project site is located on relatively level terrain. The site is approximately 120 foot above sea level (asl) along its west border, gradually increasing to approximately 175 feet asl along its east border. The visual character of the site is distinguished by distinct visual environments, including the primarily developed main campus located south of Copeland Creek, and the mostly undeveloped area north of, and including, Copeland Creek.

The campus property located south of Copeland Creek is mostly developed with existing University-related facilities, infrastructure and landscaping. The primary academic facilities are centrally located within the main campus. Visually prominent academic buildings on the site include Stevenson Hall, Darwin Hall, Rueben Salazar Building (existing library), Physical Education Building, Ives Hall and the Evert P. Person Theater. (See Figure III-4 in Chapter III, Project Description, for location of existing campus facilities.) Academic buildings at the University range between one and three stories.

The earliest-built academic buildings, including Stevenson Hall and Darwin Hall, are formal and institutional in design and appearance, consisting of large, single-block building plans, with panelized concrete exteriors. Subsequent buildings, including Rachel Carson Hall, the health services building, the art building and the student union, are less formal in character, featuring more articulated building plans, varied exterior surfaces and textures (including stucco, brick or redwood), and incorporating courtyards and patios. This design theme continues with the Information Center, under construction, and the soon to be constructed Environmental Technology Center (see description in Chapter III, Project Description).

The student housing complex comprises the west portion of the main campus, consisting of a series of clusters of apartment buildings. The residence halls are designed to have a non-institutional, residential quality, containing pitched roofs, stucco exteriors and landscaped courtyards. Sauvignon Village, under construction, is in the southwest corner of the main campus, is the latest addition of student housing on the campus. Sauvignon Village is designed to be similar in character to, and compatible with the existing residence hall buildings (see description in Chapter III, Project Description). Student housing at the University ranges between one and three stories. Many of the University's administrative uses are currently housed within a complex of temporary one-story structures, located south of Darwin Hall.

The main campus is well-landscaped, providing a rural, natural visual setting. The largest open spaces on the main campus are provided by the playing fields located on the east side of the campus, the open space near two man-made lakes in the north-central area of the main campus, and the Copeland Creek corridor. In addition, landscaping, including trees, shrubs, and grass areas are abundant throughout the main campus alongside buildings, at campus courtyards, and along pedestrian paths and vehicular entrances. Trees are also utilized on the main campus to provide natural screening of the campus parking lots, corporation yard facilities and boiler plant, as well as along the perimeter of the property. Although well-landscaped, the main campus maintains many off-site vistas, including the hills and mountains to the north and east. Campus pathways and parking areas are lighted at nighttime. Athletic fields are only lighted during nighttime athletic events.

Copeland Creek, a seasonal creek, extends east-west through the northern portion of the campus. The creek corridor, bounded by a dense growth of trees and brush, provides a natural separation between the developed main campus to the south of the creek and the mostly undeveloped area north of the creek. Most of the project site north of Copeland Creek consists of cropland and former cropland. This area also contains a freshwater marsh and a tributary/artesian seep. A variety of natural vegetation, including trees and shrubs, are located along these drainages.

VIEWS OF THE SITE

The project site is primarily visible from roads and land uses adjacent to the site, and from some of the surrounding hills and mountains. For the purposes of analysis in this document, views of the site can be placed in one of two categories: short-range (adjacent to the site) and long-range views (more than one-half mile from the site). The following describes the views of the project site from a variety of perspectives and from these two ranges. See Figure IV.G-1 for a key to viewpoints of, and within the project site).

Short-Range Views

The project site is visible at short range from private and public land uses and roads adjacent to the site. Northerly and westerly views of the main campus from uses along East Cotati Avenue and Petaluma Hill Road, respectively, are primarily limited to the most outer campus facilities, including athletic fields, parking lots and undeveloped land, and are partially screened by large trees along project site border (see Figure IV.G-2, Viewpoints A and B). Westerly views towards the University football stadium from Petaluma Hill Road are completely obstructed by a landscaped earthen berm.

Easterly views of the main campus from adjacent uses located west of the project site are primarily of the existing students apartments and Sauvignon Village, currently under construction. Views of the main campus from Rancho Cotati High School are partially screened by large trees.

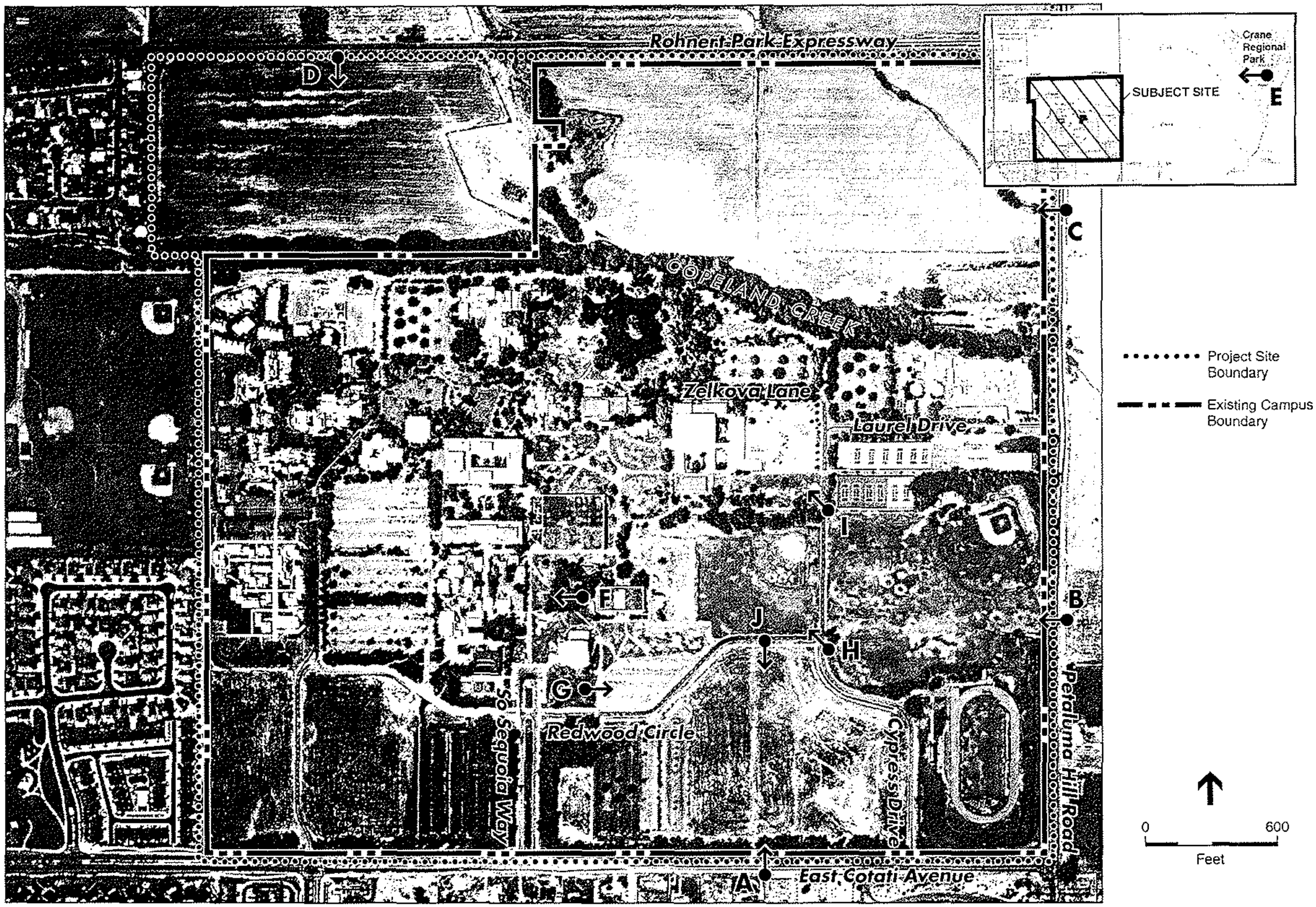
Westerly and southerly views (from Petaluma Hill Road and Rohnert Park Expressway, respectively) of the northern acquisition area (the undeveloped portion of the project site north of Copeland Creek) are rural and picturesque, with the open land in the foreground contrasting with the dense vegetation along the Copeland Creek corridor (see Figure IV.G-3, Viewpoints C and D). Views of the main campus (south of Copeland Creek) from these vantage points are obstructed by vegetation along the creek corridor. Views of the northern acquisition area near the corner of Petaluma Hill Road and Rohnert Park Expressway (northeast corner of project site) are partially obstructed by mounds of soil deposited there (displaced from the Sauvignon Village construction site).

Long-Range Views

Discernable, long-range views of the site are possible from the foothills east of the project site. Views at this range toward the project site are dominated by rolling, open hills in the immediate foreground, the City of Rohnert Park, and the coastal range in the far distance. Long-range public views of the project site are possible from Crane Regional Park, located approximately one mile east of the project site. Views of the project site from hiking trails within Crane Regional Park are limited to the northern acquisition area, as views of the main campus from this vantage point are obstructed by an intervening hill (see Figure IV.G-4, Viewpoint E).

REGULATORY ENVIRONMENT

The California Constitution exempts the University from local land use controls, including local general plans and zoning ordinances. However, the University makes every effort to ensure its Master Plan is compatible with the goals and policies of local jurisdictions. The Open Space Element of the *Sonoma County General Plan* provides for scenic resources as one of its classifications for open space. Scenic resources within Sonoma County are divided into three



SOURCE: Pacific Aerial Surveys, Environmental Science Associates

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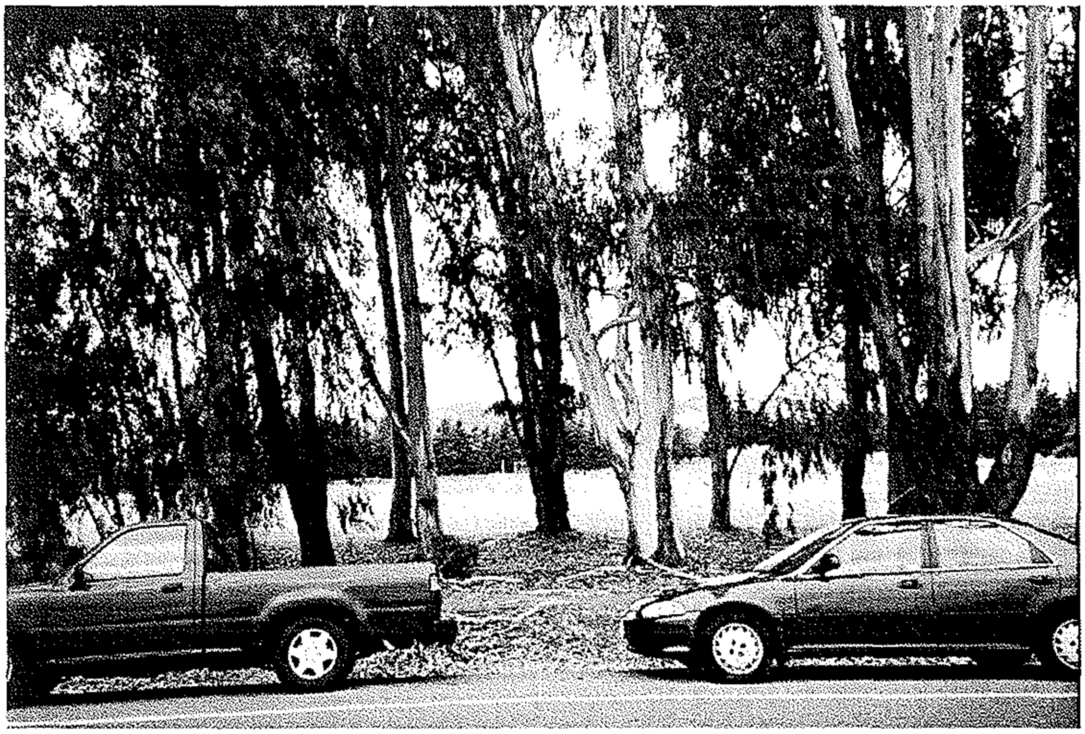
Figure IV.G-1
Public Viewpoint Diagram



Off-site Viewpoint A: Looking north from East Cotati Avenue

Off-site Viewpoint B: Looking west from Petaluma Hill Road

SOURCE: Environmental Science Associates

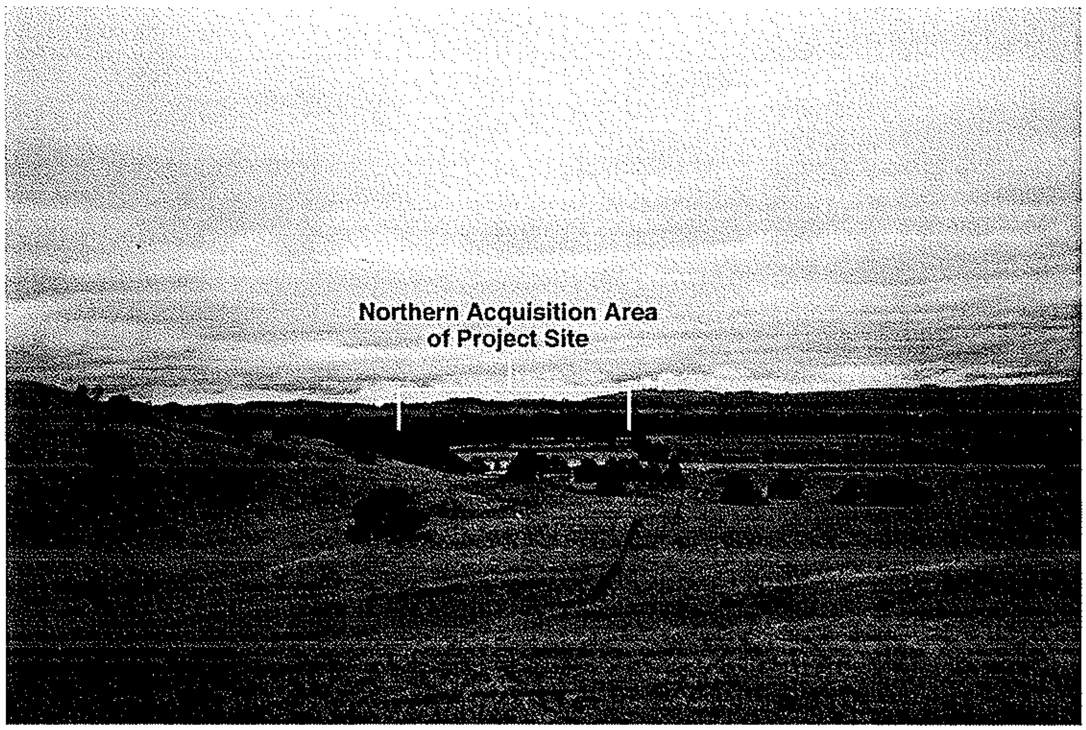
Figure IV.G-2
Off-site Viewpoints A and B

Off-site Viewpoint C: Looking west from Petaluma Hill Road (towards site of proposed Center for the Musical Arts)

Off-site Viewpoint D: Looking south from Rohnert Park Expressway (towards site of proposed University housing)

SOURCE: Environmental Science Associates

Figure IV.G-3
Off-site Viewpoints C and D



Off-site Viewpoint E: Looking west from Fiddleneck Trail in Crane Regional Park (only northern acquisition area of project site is visible)

SOURCE: Environmental Science Associates

Figure IV.G-4
Off-site Viewpoint E

resources categories, including scenic corridors, community separators, and scenic landscape units.

Scenic corridors are defined by the Open Space Element as important landscapes viewable from roadways with a high visual quality. The Open Space Element designates Petaluma Hill Road as a scenic corridor. Goal OS-3 of the Open Space Element is ". . .preserve roadside landscapes which have a high visual quality as they contribute to the living environment of local residents and the county's tourism economy."

IMPACTS AND MITIGATION MEASURES

APPROACH TO ANALYSIS

The existing visual character of the site and surroundings is determined by the attributes of specific features and patterns that the features have assumed as a result of natural and/or cultural processes. Evaluation of potential project impacts on the existing visual character of the site and surroundings requires analysis of the elements of the project that would be introduced and how those changes (separately or collectively) would affect the character of the site and views of it from off-site locations.

SIGNIFICANCE CRITERIA

The existing visual character of the site and surroundings is determined by the attributes of specific features and patterns that the features have assumed as a result of natural and/or or cultural processes. Evaluation of potential project impacts on the existing visual character of the site and surroundings requires analysis of the elements of the project that would be introduced and how those changes (separately or collectively) would affect the character of the site and views of it from off-site locations.

For the purposes of this EIR, and taking guidance from Appendix G of the CEQA Guidelines, impacts to the visual quality or character of a site may occur as a result of a substantial adverse effect on a scenic vista, substantial damage to scenic resources, substantial degradation of the existing visual character or quality of the site and its surroundings, or production of substantial light or glare. The impacts of each of these aspects are discussed in detail below.

Impact G.1: The project would alter the existing visual character of the site and result in a change to the scenic vistas of which the proposed project site is a part. This would be a less than significant impact.

Long-range public views of the project site, which are possible primarily from the foothills to the east and northeast of the project site, would not substantially change as a result of the project. Under the project, long-range views of the northern acquisition area of the project site from Crane Regional Park would change from an undeveloped and indiscernible part of the scenic vista to a more identifiable and structured part of the scenic vista. From other long-range vantage points where the main campus is visible, the project site would have a slightly more intensified appearance under the project, with the various proposed infill developments interspersed with existing campus facilities.

Close-range views of the project site from off-site locations, particularly views of the northern acquisition area from Petaluma Hill Road (a County–designated scenic corridor) and Rohnert Park Expressway, would change dramatically under the project. Previously open agricultural land would be partially occupied by the proposed Center for the Musical Arts, including the main building, ancillary structures, and new parking facilities. The main building complex would be set back over 300 feet from the edge of Rohnert Park Expressway, and over 750 feet from the edge of Petaluma Hill Road. One of the special function dining facilities, separate from the main building complex, would be set back over 300 feet west from the edge of Petaluma Hill Road. Proposed parking facilities would be set back approximately 200 feet from the edge of Rohnert Park Expressway.

Sound attenuating landscaped earthen berms would be constructed to surround the Center for the Musical Arts and parking facilities along the north and east edges of the northern acquisition area. The berms would serve to shield the site from visual and noise distractions on Rohnert Park Expressway and Petaluma Hill Road, as well as provide a visual barrier of the developed on-site uses from drivers along Rohnert Park Expressway and Petaluma Hill Road. The berms are proposed to gradually rise by a slope of five percent to a height of approximately eight to ten feet along Rohnert Park Expressway, and twelve feet along Petaluma Hill Road. The top of the berms would be set back approximately 250 feet from the edge of Rohnert Park Expressway and Petaluma Hill Road. The berms would be covered with landscape features characteristic of the region. Proposed extensive additional landscaping throughout the northern acquisition area would continue landscaping themes found on the main campus.

The location of the proposed Center for the Musical Arts and earthen berms would not block or affect long-range views of the Sonoma foothills from off-site adjacent land uses, however could affect views of the Copeland Creek corridor from Rohnert Park Expressway and Petaluma Hill Road adjacent to the site.

Close-range views of the portion of the northern acquisition area containing proposed University housing would also be directly affected. No site plans are available for this component of University housing. As with the proposed Center for the Musical Arts, any potential addition of earthen berms along Rohnert Park Expressway adjacent to the housing would serve to shield the site from visual distractions on Rohnert Park Expressway, as well as provide a visual barrier of the developed on-site uses from drivers along Rohnert Park Expressway. Given the level grade of this site and the residential scale of the proposed University housing, it would not be expected to significantly block or affect long-range views of the Sonoma foothills from off-site adjacent land uses, including from residences adjacent to the site to the west which are partially screened by trees. However, the proposed housing development could affect views of the Copeland Creek corridor from Rohnert Park Expressway adjacent to the site.

Proposed development on the main campus would be considered infill development, resulting in a physical and visual change of existing University facilities. The site of the proposed University

Center currently contains the Village (consisting of temporary one-story structures used for various administrative uses) and a portion of parking lot D (see Figure IV.G-5, Viewpoint F). The site of the three proposed instructional expansion buildings are on existing parking lot E, and on the existing athletic fields containing the softball field (see Figure IV.G-5, Viewpoint G; and Figure IV.G-6, Viewpoint H). The site of the proposed physical education expansion buildings is located on a landscaped grassy area, adjacent to the existing physical education building (see Figure IV.G-6, Viewpoint I). The site of the proposed soccer stadium is on undeveloped land just south of the existing soccer facilities, across Redwood Circle. The site of the proposed University housing within the main campus is on existing parking lot D (see Figure IV.G-7, Viewpoint J). The site of the proposed Art Building addition is located on a landscaped area adjacent to the existing Art Building.

Development proposed within the main campus under the project, including the proposed instructional expansion, physical education expansion and University Center would partially obstruct some long-range scenic views of the Sonoma foothills within the main campus, particularly from vantage points just west of these proposed structures. However, the buildings proposed on the main campus are proposed to be located with an east-west orientation and a separated building profile, minimizing the obstruction of easterly views from these perspectives. Most long-range views from within the campus would be maintained, including from the open space areas of the campus (e.g., athletic fields, the lakes and near Copeland Creek corridor). New buildings on the main campus would be centrally located within the campus, set back over 500 feet from the west property boundary, over 600 feet from East Cotati Avenue to the south, and over 1,000 feet from Petaluma Hill Road. As with existing development on the campus, all proposed buildings would not exceed three stories in height. Thus, development of these buildings would not block or affect long-range views, including of the Sonoma foothills, from off-site adjacent land uses.

Although the University is not required to comply with local plans, the project would nonetheless be generally compatible with the open space goals and policies of the *Sonoma County General Plan* related to scenic corridors. Although the project would to a degree alter the landscape of the roadside landscape, particularly in the northern acquisition area, the proposed landscape features would provide a high visual quality to the site. In addition, as described above, proposed facilities would be set back a considerable distance from Petaluma Hill Road.

As discussed in Section IV.A, Population, Land Use and Planning, the building and landscaping plans for the various facilities under the project would be developed in consultation with, and subject to review and approval by, the University's Campus Planning Committee (comprised of the President of the University, the University building program officer, the University Consulting Architect, the Campus Planner, and the Director of Public Safety, various faculty, staff and students, and a representative from the community). This process would ensure all development proposed under the project would be designed in a manner that would be consistent with the aesthetic guidelines of the University, and the visual character of the local community.

As such, the proposed project would not result in a substantial adverse effect on a scenic vista and would not create a significant impact.

On-site Viewpoint F: Looking west towards temporary University buildings (site of proposed University Center)

On-site Viewpoint G: Looking east towards Parking Lot E (site of proposed instructional expansion)

SOURCE: Environmental Science Associates

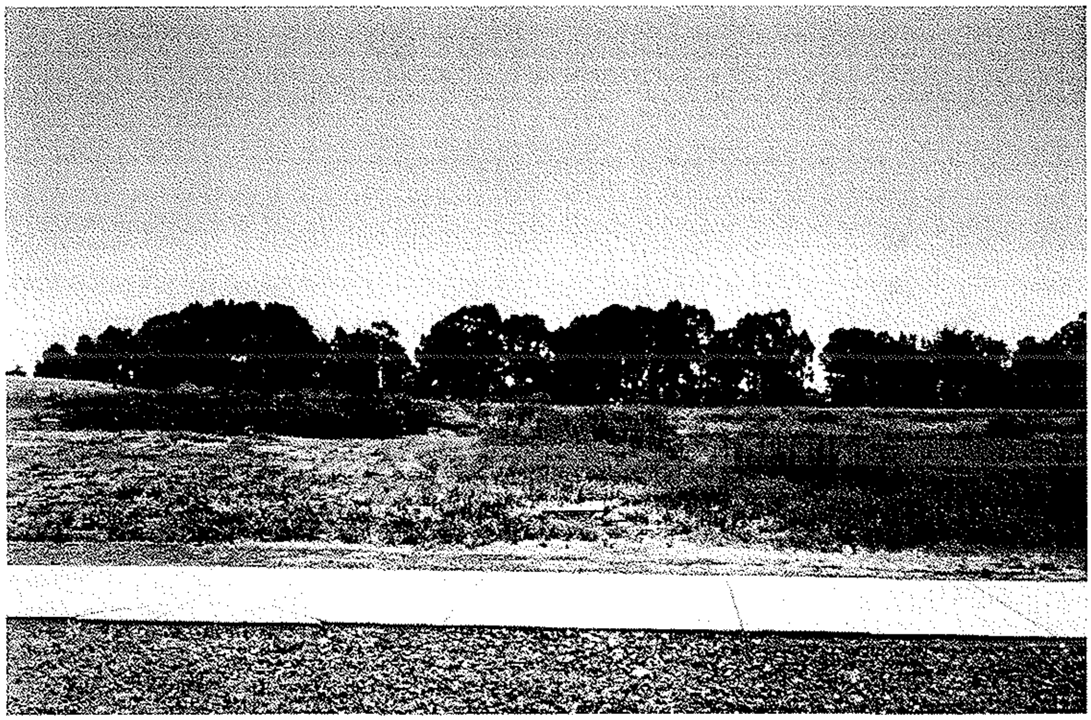
Figure IV.G-5
On-site Viewpoints F and G

On-site Viewpoint H: Looking northwest towards softball field (site of proposed instructional expansion)

On-site Viewpoint I: Looking northwest towards Physical Education Building (site of proposed physical education expansion in foreground)

SOURCE: Environmental Science Associates

Figure IV.G-6
On-site Viewpoints H and I



On-site Viewpoint J: Looking south towards site of proposed soccer stadium

SOURCE: Environmental Science Associates

Figure IV.G-7
On-site Viewpoint J

Mitigation: No mitigation is required for the less than significant visual impact discussed above. However, the following measures would further reduce visual impacts under the project:

- For each project component, the landscaping plan will identify landscaping of an appropriate type and scale to enhance the visual integration of the proposed developments with their surroundings.
- For all new development proposed within the northern acquisition area, the landscaping plan will ensure a vegetative buffer will be created to minimize visual contrast and partially screen project facilities from view from off-site land uses.
- Provide shade trees around proposed paved parking areas and roadways.

Impact G.2: The proposed project would result in an increase in the production of light and glare at the project site. This would be a less than significant impact.

As a result of new development and the related increase in intensity of use at the site, there would be an increase in the amount of light and glare produced at the project site. Light and glare would be produced from lighting on the proposed buildings, from lighting on open spaces and athletic fields, from the headlights of vehicles entering and existing the site, and from the reflection of these sources of light off of the proposed buildings and paved areas.

As with much of the more recent construction at the University, the proposed project would make use of natural colors. The natural colors would not be reflective, but would be visible in the distance, however not to a degree that would be intrusive or would create traffic safety problems. As discussed in Impact G.1, the parking facilities in the northern acquisition area would be shielded along its north, west and east sides by an earthen berm, which would minimize off-site glare. As discussed in Impact G.1, proposed buildings would be set back a considerable distance from adjacent off-site roadways. For these reasons, light and glare produced by the proposed project would not be substantial and would not result in a significant impact.

Mitigation: No mitigation is required for the less than significant visual impact discussed above. However, the following measures would further reduce visual impacts under the project:

- Design and direct outdoor lighting to minimize off-site disturbance. Where feasible, low-intensity lighting should be employed that would sufficiently illuminate on-site facilities without creating excessive glare off-site. Use hooded, downward, directed lights and low elevation standards for lighting parking areas.
- Minimize use of highly reflective surface materials for proposed structures. Exterior building should be treated or painted with non-reflective colors.

REFERENCES – Visual Quality

Sonoma County, *Sonoma County General Plan*, 1994.

H. BIOLOGICAL RESOURCES

INTRODUCTION

This section describes the biological resources at the project site, as well as project-related impacts on those resources. Several federal and state agencies are involved directly and indirectly in the evaluation and mitigation of impacts to sensitive species and their habitats, and this section also provides a brief overview of the regulatory agencies involved when potentially affecting endangered species or their habitats. Please refer to the section on regulatory framework for a description of state and federal laws. The Federal Endangered Species Act (FESA) provides programs to conserve endangered and threatened species and the ecosystems used by these species. Determination of the status of these species falls under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS). The Clean Water Act mandates that the filling of wetlands be avoided unless it can be demonstrated that there are no practical alternatives. The potential filling of wetlands and waters of the United States falls under the jurisdiction of the U.S. Army Corps of Engineers (Corps), U.S. Department of Agriculture Natural Resource Conservation Service (NRCS), U.S. Environmental Protection Agency (EPA), USFWS, and the National Marine Fisheries Service (NMFS).

In California, three separate statutes affect endangered and threatened species: the California Endangered Species Act (CESA), the California Native Plant Protection Act (CNPPA) and the Natural Community Conservation Planning Act (NCCP). The California Department of Fish and Game (CDFG) is required to regulate actions that might effect endangered species and their habitat. Also under their jurisdiction are streams, both perennial and annual.

APPROACH TO ANALYSIS

Sources used in the preparation of this section include information gained from previous field surveys and records from biological literature. These sources included California Department of Fish and Game (CDFG) and U.S. Fish and Wildlife Service (USFWS) compilations of listed species by county; California Native Plant Society (CNPS) literature (CNPS, 1998; Skinner and Pavlik, 1994), and the CDFG's California Natural Diversity Data Base (CDFG, 1999), which contains reported occurrences of sensitive species by U.S. Geologic Survey (USGS) 7.5-minute topographic quadrangles. One USGS quadrangle was used for this project: Cotati. In addition, information from reports within the project area and environs was reviewed, including: 1) *Sonoma State University 1998 Master Plan - Preliminary Overview of Environmental Issues*, (Brelje and Race, 1998), 2) data sheets and maps from Dr. Laurence Stromberg's 1996 wetland delineation for Vast Oak West (Stromberg, unpubl.), 3) *Special Status Amphibian and Reptile Surveys, Vast Oak West Property* (Biosearch, 1998), and 4) *Copeland Creek Restoration Project, Initial Study and Mitigated Negative Declaration of Environmental Impact* (SCWA, 1999).

The area reviewed for this EIR consisted of the project site, including the "footprints" for possible facilities and siting areas for other project development. For each sensitive species, habitat requirements were assessed and compared to the habitats present in the project area. No species-specific surveys were conducted. Factors such as habitat quality and species distribution were also considered in evaluating the likelihood of sensitive species occurring in the project area. Please see Table IV.H-1, below, for a list of the special status species, and their habitat requirements, with a moderate to high potential for occurring within the project area; those with a low potential are included in Appendix D.1.

Vegetation types and wildlife habitats were characterized on the basis of both records and field observations. ESA's wildlife and plant ecologists conducted surveys of the project site on May 10 and July 26, 1999, to gather information on vegetative communities, wildlife habitats, and the potential presence of sensitive species.

REGIONAL SETTING

The project area is located within the North Coast Bioregion, a characterization developed as part of California's Agreement on Biological Diversity (a multi-agency memorandum signed in 1993) (Welsh, 1994). Located within the northern California Coastal Range, this bioregion, including those areas that drain to the Pacific Ocean, has a Mediterranean climate with annual precipitation, typically in the winter, averaging 30 inches per year (Best et al., 1996). The project site is geographically defined in the east by the Sonoma Mountains, which separates Sonoma Valley and the Santa Rosa-Petaluma Valley, and in the west by the southern portion of Llano de Santa Rosa, or the Santa Rosa Plains. The project area is the southern limit of the Russian River Drainage Basin, which encompasses approximately 793 square miles (Kahrl, 1973; USDA, 1973).

PROJECT SETTING

The project site is located in the eastern portion of the Laguna de Santa Rosa watershed, a creek which drains from south to north and feeds into the Santa Rosa Plains and eventually flows into the Russian River. The Laguna de Santa Rosa receives a portion of its water from several drainages and creeks on Sonoma Mountain, including Copeland Creek, which is the southern-most drainage that flows into Llano de Santa Rosa. Soils underlying the project area include Clear Lake-Reyes Association which are poorly drained clays to clay loams usually found in nearly level to gently sloping basins. These soils typically pond in the winter, which can delay cultivation and planting (USDA, 1973).

The project site is bounded by East Cotati Avenue on the south, Petaluma Hill Road on the east, Rohnert Park Expressway on the north, and residential housing and the Rohnert Park city limit on the west. The majority of the project site south of Copeland Creek is either developed with University facilities or landscaped. The northern properties, comprising about 89.3 acres, primarily contains farmed hayfields, seasonal wetlands, marsh/meadow, and riparian vegetation. The University currently owns all but 34.6 acres in the northwest corner of the project site.

TABLE IV.H-1
SPECIAL STATUS SPECIES WITH MODERATE TO HIGH POTENTIAL FOR OCCURRING WITHIN PROJECT AREA[a]

Scientific Name Common Name	Status USFWS/CDFG/ CNPS	General Habitat	CNDDB and Other Reported Occurrence	Presence within the Project Area
		SPECIES LISTED OR PROPOSED FOR LISTING		
Amphibians				
Rana aurora draytonii California red-legged frog	FT/--	Lowlands and foothill in or near ponding water that lasts until the end of Aug. with small mammal burrows adjacent	Reported within ~4 mi of project site (CNDDB 1997)	**High Potential** – Suitable habitat occurs in Copeland Creek
		SPECIES THAT ARE CANDIDATES FOR LISTING OR OF STATE OR FEDERAL CONCERN		
Crustaceans				
Caecidotea tomalensis Tomales isopod	FSC/--	Localized freshwater ponds and streams with still or near-still water	Artesian spring on Roth property (CNDDB 1983)	**High Potential** – found on site in previous studies
Invertebrates				
Hydrochara rickseckeri Rickescker's water scavenger beetle	FSC/--	Freshwater ponds	Found along Lichau Road, 6.5 mi NE of Penngrove (CNDDB 1969)	**High Potential** – surveys for this species are not routinely conducted
Amphibians				
Ambystoma californiense California tiger salamander	FC/--/SC	Annual grasslands and grassy understory of valley foothill hardwood habitats with small mammal burrows for aestivation and vernal pools for breeding	Reported within ~3.5 mi of project site (CNDDB 1992)	**Medium Potential** – Habitat is present although no tiger salamanders have been reported east of Hwy 101
Rana boylii Foothill yellow-legged frog	FSC/--/SC	Partially shaded, shallow streams and riffles with a rocky substrate in a variety of habitats with water running till at least the end of June.	Copeland Creek at Lichau Road Bridge (CNDDB 1993); at Petaluma Hill Road Bridge and 0.6 mi downstream (1996); Fairfield –Osborn Preserve (CNDDB 1996)	**High Potential** – Copeland Creek is known habitat
Reptiles				
Clemmys marmorata marmorata Northwestern pond turtle	FSC/--	Slow moving streams with basking sites and sandy shores within 0.5 mi for laying eggs.	Observed on SSU property in 1996 in ornamental ponds (Biosearch 1998)	**High Potential** – Copeland Creek and artesian seep may provide habitat

TABLE IV.H-1 (Continued)
SPECIAL STATUS SPECIES WITH MODERATE TO HIGH POTENTIAL FOR OCCURRING WITHIN PROJECT AREA[a]

Scientific Name Common Name	Status USFWS/CDFG/ CNPS	General Habitat	CNDDB and Other Reported Occurrence	Presence within the Project Area
SPECIES THAT ARE CANDIDATES FOR LISTING OR OF STATE OR FEDERAL CONCERN (Continued)				
Elanus leucurus White-tailed kite	--/3511	Nests in tall trees adjacent to open grasslands	No reported occurrences	**High Potential** – the trees along the artesian seep and Copeland Creek provide excellent nesting habitat for this species
Lanius ludovicianus Loggerhead shrike	/SC	Nests in trees and shrubs adjacent to open grasslands	No reported occurrences	**High Potential** - the trees along the artesian seep and Copeland Creek provide excellent nesting habitat for this species

STATUS CODES:

FEDERAL: (U.S. Fish and Wildlife Service)
FE = Listed as Endangered by the Federal Government
FT = Listed as Threatened by the Federal Government
FPE = Proposed for Listing as Endangered
FPT = Proposed for Listing as Threatened
FC = Candidate for Federal listing
FSC = Federal Species of Concern (former Category 2 Candidate)

CALIFORNIA NATIVE PLANT SOCIETY
List 1A = Plants presumed extinct in California
List 1B = Plants rare, threatened, or endangered in California
List 2 = Plants rare, threatened, or endangered in California
List 3 = Plants about which more information is needed
List 4 = Plants of limited distribution

STATE: (California Department of Fish and Game)
SE = Listed as Endangered by the State of California
ST = Listed as Threatened by the State of California
SR = Listed as Rare by the State of California (plants only)
SC = State Species of Special Concern
3503.5 = Protection for nesting species of Falconiformes (hawks) and Strigiformes (owls)
3511 = Fully protected bird species under Fish and Game Code.

a Please see Table D-1 in Appendix D for a list of the special status species, and their habitat requirements, with low potential for occurring within the project area.
High Potential = Species expected to occur and meets all habitats as defined in list.
Moderate Potential = Habitat only marginally suitable or suitable but not within species geographic range.
-- = No listing status

SOURCES: CDFG, 1999; Biosearch Wildlife Surveys 1998; USFWS 1999.

HABITATS WITHIN THE PROPOSED PROJECT AREA

Historic vegetation within the project area is assumed to have included native grasslands and oak savannas with seasonal wetlands occurring in the lowlands and riparian vegetation near major waterways such as Copeland Creek. However, human intervention, such as cattle grazing, hay production and development, has changed the landscape, eliminating and restricting the natural vegetation. Based on the Holland (1995) plant classification system and the California Department of Fish and Game's Wildlife Habitat Relationships (WHR) System (Mayer and Laudenslayer, 1988), there are four wildlife habitat types in the project area (Mayer and Laudenslayer, 1988): Urban/Developed, Annual Grassland, Fresh Emergent Wetland, and Valley Foothill Riparian. Please refer to Figure IV.H-1 for the distribution of habitats within the project area, which are described below.

URBAN/DEVELOPED AND RUDERAL

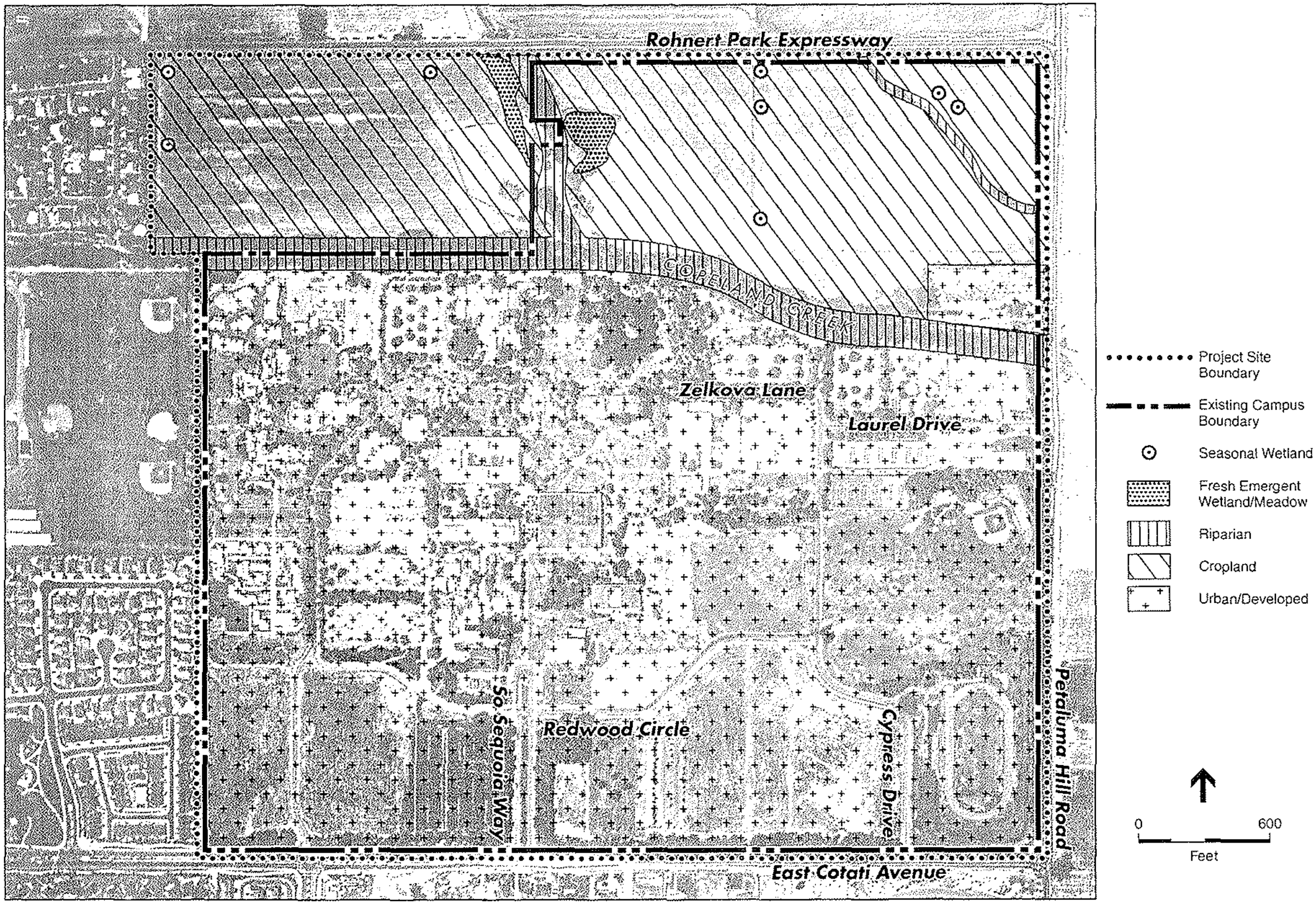
The majority of the project site is currently developed as the University campus. The campus includes university buildings, parking areas, sports fields, residences, supporting facilities, and extensive landscaping. The landscaped areas include two large artificial ponds near Copeland Creek. Some of the areas mapped as urban/developed are currently undergoing construction with project identified under the existing University Master Plan. One large field, north of East Cotati Avenue and west of Cypress Drive, is currently ruderal, supporting mostly annual grasses and weeds. It has been partially graded and therefore was classified as urban/developed, along with the rest of the main campus south of Copeland Creek.

A small area north of Copeland Creek was also mapped as urban/developed and ruderal. This is an old home site adjacent to the creek and fronting on Petaluma Hill Road. It occupied about 2 acres. This area has been graded and the soils compacted, and ornamentals such as tree of heaven (*Ailanthus altissima*) and Monterey pine (*Pinus radiata*) still persist. Other vegetation is weedy, such as poison-hemlock, fennel (*Foeniculum vulgare*), and Queen Anne's lace (*Daucus carota*).

CROPLAND AND FORMER CROPLAND

Most of the project site north of Copeland Creek consists of cropland and former cropland. This area shows evidence of agricultural use; the aerial photograph for the area shows linear traces extending in an east-to-west direction, and the ground itself is generally level. Spring annuals include oats (*Avena sativa* or *A. fatua*), Italian ryegrass (*Lolium multiflorum*), geranium (*Geranium* sp.), and bindweed (*Convolvulus arvensis*). After harvest, the area is dominated by hayfield tarweed (*Hemizonia congesta* ssp. *congesta*) with other summer-flowering annuals, such as poison-hemlock (*Conium maculatum*), bristly ox-tongue (*Picris echioides*), and fireweed (*Epilobium brachycarpum*).

The area north of Copeland Creek and east of the tributary shows evidence of other types of past and current disturbance. Linear microtopographic features evident on aerial photographs suggest that it has been farmed in the past, but does not appear to have been farmed or grazed in recent years. The vegetation over most of this area is a weedy mix of poison-hemlock, prickly lettuce



SOURCE: Pacific Aerial Surveys, Environmental Science Associates

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Figure IV.H-1
Location of Habitat Types

(*Lactuca* spp.), Canary grass (*Phalaris paradoxa*), summer mustard (*Hirschfeldia incana*), oats, ryegrass, vetch (*Vicia* sp.), soft chess (*Bromus hordeaceus*), ripgut grass (*Bromus diandrus*), and red brome (*Bromus madritensis* ssp. *rubens*). Native forbs observed interspersed among the grasses include lupine species (*Lupinus* sp.), creamcups (*Meconella californica*), baby blue-eyes (*Nemophila menziesii* var. *menziesii*), common fiddleneck (*Amsinckia intermedia*), blue dicks (*Dichelostemma pulchellum*), checkerbloom (*Sidalcea malvaeflora*), Johnny jump-ups (*Viola pedunculata*), and wild onion (*Allium* sp.).

The field occupying the north-eastern portion (approximately seven acres nearest the corner of Rohnert Park Expressway and Petaluma Hill Road) has been subject to recent earth-moving, with piles of recently-placed fill evident on this parcel. Elsewhere, weedy vegetation is present similar to the field to the west.

SEASONAL WETLANDS

Seasonal wetlands are areas that are saturated or contain standing water during the winter months, but are completely dry during the dry summer months. A number of small seasonal wetlands are found in topographic lows in the cropland habitat north of Copeland Creek, totaling about 0.25 acres (Golden Bear Biostudies, unpubl.). Plant species associated with seasonal wetlands on site include meadowfoam (*Limnanthes douglasii*), little quaking grass (*Briza minor*), annual phalaris (*Phalaris* cf. *lemmonii*), monkeyflower (*Mimulus guttatus*), hairgrass (*Deschampsia danthonioides*), navarretia (*Navarretia* sp.), and buttercups (*Ranunculus arvensis*).

FRESH EMERGENT WETLAND/MEADOW

Swale along Tributary to Copeland Creek

Fresh emergent wetlands are usually dominated by perennial, herbaceous plants with tall stems and leaves that are rooted in the mud but grow up through the water to emerge into the air. Plant stems are gas filled and allow the plants to root in a zone where oxygen is scarce. This habitat type grades into the wet meadow habitat type, and the wetland within the project area is in fact intermediate between these types.

The area mapped as fresh emergent wetland/meadow is located along the tributary to Copeland Creek. This drainage flows from north to south and is underlain by clay soils. The dominant vegetation is sedges (*Carex* spp.), rushes (*Juncus* sp.) and wood-rush (*Luzula* sp.). The more moist places along the drainageways support several large willows (approximately 30 feet in height), as well as blackberry bushes (*Rubus discolor* and *R. ursinus*), wild rose (*Rosa californica*), curly dock (*Rumex crispus*) and poison oak (*Toxicodendron diversilobum*). Ponded water occurs in the eastern portion of the swale. Plant species dominant in the marsh include tules, cattails (*Typha* sp.), common reed grass (*Phragmites communis*), and rushes. When adjacent to rivers or streams these plants give way to stands of willow (*Salix* sp.), and spike rush (*Eleocharis macrostachya*).

The wetland/meadow habitat in the swale tributary to Copeland Creek occupies about 1.9 acres (Golden Bear Biostudies, unpubl.). It is an unusual habitat in being relatively natural and free from weedy and non-native species. It also appeared to lack obvious alkaline or saline conditions, as is often seen in areas with extended moist conditions.

VALLEY AND FOOTHILL RIPARIAN

Willow Scrub Along Intermittent Drainage

A broken stand of willow scrub occurs within the ditched intermittent drainage that bisects the northeastern corner of the project site north of Copeland Creek. The drainage is approximately two feet wide at the high water mark and approximately one-half foot deep. The drainage cuts diagonally from northwest to southeast between Rohnert Park Expressway and Petaluma Hill Road. The area that met criteria for Waters of the U.S. was about 0.24 acres (Golden Bear Biostudies, unpubl.). The dominant species in this mapping unit is narrow-leaved willow (*Salix exigua*). Vegetation associated with the berm along the edge of the drainage includes hedge nettle (*Stachys ajugoides*), Chinese houses (*Collinsia heterophylla*), poison oak (*Toxicodendron diversilobum*), mugwort (*Artemisia douglasiana*), poison-hemlock, and creeping wildrye (*Leymus triticoides*). Water was not present in the drainage during the site visits in May and July.

Copeland Creek and Tributary – Riparian Forest

Copeland Creek supports a continuous stand of woody riparian shrubs and trees along the length of the project area. Common species occurring within Copeland Creek include big-leaf maple (*Acer macrophyllum*), box elder (*Acer negundo* ssp. *californicum*) and Oregon ash (*Fraxinus latifolia*) with white alder (*Alnus rhombifolia*) along the stream edges. Red willow (*Salix laevigata*) and arroyo willow (*Salix exigua*) also occur along the edges of the creek and in tributaries to Copeland Creek. The most abundant understory species is the non-native blackberry species, Himalayan blackberry (*Rubus discolor*). Water was present in isolated ponds during the field visit in May, but the creek bed was largely dry by late July. Others have reported that water may remain in isolated pools within the creek bed, possibly for much of the summer (Waaland, 1999). The acreage of the area dominated by riparian vegetation along Copeland Creek was not calculated, but occupies several acres.

WILDLIFE MOVEMENT CORRIDORS

The relatively undisturbed riparian habitat along Copeland Creek provides two types of wildlife movement corridors: small travel pathways and habitat linkages. Small travel pathways consist of daily movement corridors within an individual animal's territory. While small travel pathways usually facilitate movement for daily home range activities, such as foraging or escape from predators, they also provide connection between outlying populations and the main corridor.

Habitat linkages, can extend for miles between primary habitat areas and occur on a large scale throughout California. Habitat linkages facilitate movement between populations located in discrete areas and populations located in larger habitat areas. As a result of this mosaic of habitats, most wildlife populations consist of discrete populations and comprise a large single population, often referred to as a meta-population. While patches of pristine habitat may be fragmented, movement between wildlife populations is enabled by habitat linkages, migration corridors and movement corridors such as ephemeral drainages.

Sensitive habitats within the project site, such the vernal pool habitats, are reduced in value as terrestrial wildlife movement corridors or habitat due to the high modification of the habitat from agricultural practices.

SENSITIVE NATURAL COMMUNITIES PRESENT IN THE PROJECT AREA

Riparian habitats are considered sensitive by the CDFG and are documented within the California Natural Diversity Data Base. Copeland Creek supports a continuous and relatively intact example of riparian forest. It does not closely match any of the riparian forest community types described in Holland's (1986) description of plant communities, but since all riparian communities are ranked sensitive by the California Natural Diversity Data Base, it is assumed that this local expression of riparian forest would be as well.

The swale along the tributary to Copeland Creek is also an example of an uncommon natural community in California and Sonoma County. Although it appears not to contain an obvious seep, the fact that it is non-alkaline and occurs at low elevation makes it ecologically similar to the freshwater seep community described in Holland (1986). Freshwater seeps are also ranked as sensitive by CNDDB.

SENSITIVE SPECIES KNOWN OR POTENTIALLY OCCURRING IN THE PROJECT AREA

A brief descriptions of sensitive species known or with at least moderate potential to occur within the project area is included in Appendix D.2.

IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

For the purposes of this EIR, significant environmental effects on biological resources include:

- Substantial interference with the movement of any resident or migratory fish or wildlife species;
- Substantial reduction of habitat for fish, wildlife, or plants (including locally designated species); or
- Impacts to a rare or endangered species of animal or plant (including species of special concern) or its habitat.

Furthermore, *CEQA Guidelines* Sections 15206 and 15380, described below, were also used to determine impact significance.

For the purposes of this EIR, three principal components are considered:

- Magnitude of the impact (e.g., substantial/not substantial),
- Uniqueness of the affected resource (rarity); or
- Susceptibility of the affected resource to disturbance (sensitivity)

The evaluation of significance must consider the interrelationship of these three components. For example, a relatively small-magnitude impact (e.g., disturbing a nest) to a state or federally listed species would be considered significant because the species is at low population levels and is presumed to be susceptible to disturbance. Conversely, a common habitat such as non-native grassland is not necessarily rare or sensitive to disturbance. Therefore, a much larger magnitude of impact (e.g., removal of extensive vegetation) would be required for it to be considered a significant impact.

The definition of these resources and their sensitivity is, to a large extent, continued within the legal framework of other laws not directly related to CEQA. These laws are described in Appendix D.3.

Impact H.1: Development of the project could result in impacts to potentially jurisdictional wetlands/waters of the U.S. and streambeds under the jurisdiction of the Corps of Engineers and the California Department of Fish and Game. This would be a significant impact.

The project site contains approximately 2.9 acres of seasonal wetlands and waters of the U.S. Copeland Creek comprises an additional several acres of jurisdictional waters of the U.S. and streambed. Impacts to these areas could result from filling these wetlands, and altering the vegetation and flow of waters in this area. Any proposed temporary or permanent filling of the wetlands will require a wetland delineation to determine the extent of the wetlands and consultation with the COE and potentially CDFG. This work has already been initiated as part of the Vast Oaks West project.

Mitigation Measure H.1a: A verified wetland delineation for the portion of the project site north of Copeland Creek will be completed and made available prior to any site planning and construction of facilities within or adjacent to potential jurisdictional wetlands, which includes seasonal ponding areas, permanent ponded areas, drainage ditches, and relict streams and creeks.

A COE permit and State of California Stream Alteration Agreement will be required for temporary or permanent construction within any wetlands or waters of the U.S or areas under state jurisdiction. In addition, the following will be required after the COE and/or the CDFG permit has been obtained.

- Prior to construction, the aquatic structure of areas to be disturbed will be photo-documented and measurements of width, length, and depth will be taken no more than four weeks before construction begins. After construction the aquatic structure will be photo-documented and measured to ensure that the channel has been restored to its original condition to the extent practicable.

- During construction, a biological monitor will be on site at all times when construction takes place in aquatic habitat. Any activity within ordinary high water will be photo-documented by the site monitor. In addition, a biologist with the appropriate permits to relocate animals will be available for consultation as needed. The monitor and biologist will provide an environmental protection workshop for workers prior to construction activities.

- All construction adjacent to wetland vegetation will be regularly monitored to ensure that impacts do not exceed those included in the project description. Work within 100 feet of wetlands during ponding periods will be monitored by qualified staff who will document pre-project and post-project conditions to ensure adequate restoration of disturbed aquatic habitat.

The wetland construction boundary will be fenced to control siltation and disturbance to wetland habitat and to prevent the movement of animals into the construction area. Following installation of fencing, its proper location will be verified by a biologist. The monitor will ensure that at no time during construction is vegetation removed outside of the fenced area. If variance in construction requires removal of vegetation outside the fence, the monitor will determine if additional mitigation is warranted. The permitting agencies will also be contacted in the event of any significant deviation from permitting conditions.

Mitigation Measure H.1b: Facilities will be planned and sited to avoid wetland and waters of the U.S. to the extent possible.

The project facilities are sited to largely avoid Copeland Creek and the tributary swale, which will be set aside and protected as part of the project. In addition, the Copeland Creek Ecological Resource Protection (see description in Chapter III, Project Description) calls for protection of Copeland Creek with an average buffer width of 100 feet Plan (Golden Bear Biostudies, 1999) The remaining impact that will not avoid Copeland Creek will be three pedestrian and bicycle crossings and one vehicular bridge crossing of the creek.

Mitigation Measure H.1c: Where impacts to wetlands and waters of the U.S. cannot be avoided, such losses will be compensated for, on-site if feasible, according to ratios established by the U.S. Army Corps of Engineers for the project.

Preliminary assessment suggests that the project could result in the permanent filling of 0.75 acres of jurisdictional wetlands. The highest mitigation ratios for the type of wetlands present typically do not exceed 3:1 (2.25 acres).

There is suitable land on-site on the east side of the north-south tributary to Copeland Creek for the creation of wetlands as mitigation. The drainage historically supported broader alluvial plain wetlands, and restored seasonal wetland features could be created by grading between 6.0 inches and 20.0 inches below the level of the surrounding field. This would allow maximum ponding during the winter and early spring with natural drying during the summer and fall months. Precipitation and sheet flow will be the supporting hydrology.

Significance After Mitigation: Less than significant.

Impact H.2: Development of facilities under the project could result in the loss of natural communities, such as riparian forest and wetland/marsh habitat. This would be a significant impact.

The portion of the project site north of and including Copeland Creek contains significant examples of riparian forest and freshwater seep/meadow natural communities. Impacts to these relatively rare and good-quality examples of these communities would be a significant loss of biological resources.

Mitigation Measure H.2a: Avoid any temporary or permanent impact to the wetland/marsh habitat, and, as much as possible, avoid impacts to Copeland Creek. Where bridges are proposed to be constructed across Copeland Creek, minimize the extent of construction impacts within the Copeland Creek protection area.

Mitigation Measure H.2b: All proposed utilities crossing Copeland Creek shall either be supported by bridge structures or constructed using directional bore methods to avoid disturbance of Copeland Creek.

Significance After Mitigation: Less than significant.

Impact H.3: Development of project facilities could adversely impact habitat for sensitive animal species. This would be a significant impact.

All of the species with a moderate to high potential to occur on the project area are associated with riparian vegetation. Such species include foothill yellow-legged frog, the western pond turtle, the California tiger salamander, Ricksecker's water scavenger beetle, and several raptor and passerine bird species. Construction of facilities in or near the tributary to Copeland Creek or Copeland Creek itself could adversely impact these species.

Mitigation Measure H.3: Carry out preconstruction surveys in areas of suitable habitat to ascertain the presence or absence of sensitive species, and either relocate them out of the construction zone (amphibians, reptiles and insects) or delay construction until nesting activity is completed (i.e., construct during the period July through February).

Significance After Mitigation: Less than significant.

Impact H.4: Construction within the project area may reduce potential upland refugia for adult and breeding pools for tadpoles of foothill yellow-legged frog (FHYLF), a state and federal species of concern. This would be a significant impact.

Although little is known about the movement of this species it is known to congregate around breeding pools in April, May and June. Late summer dispersal of the young has been recorded (Jennings and Hayes, 1994). It is thought that adults move into vegetation, move up tributaries or stream and/or reduce diurnal activity. Therefore, the marsh/meadow along the tributary to Copeland Creek may provide an upland refugium.

Mitigation Measure H.4a: To reduce impacts to the FHYLF, complete avoidance of the freshwater marsh/meadow shall be implemented. (Identified By This Report)

Mitigation Measure H.4b: Construction activity within the Copeland Creek Protection Area shall be minimized, and will be carried out to minimize potential impact to the FHYLF.

If avoidance of impact to Copeland Creek is infeasible, the following mitigation guidelines prior to and during construction will reduce impacts to both species.

- Within the Copeland Creek Protection Area, the construction boundary will be fenced with silt fencing to prohibit the movement of animals into the construction area and control siltation and disturbance to wetland habitat. Following installation of fencing, its proper location will be verified by a biologist. The monitor will ensure that at no time during construction is vegetation removed outside of the fenced area. If variance in construction requires removal of vegetation outside the fence, the monitor will determine if additional mitigation is warranted. The permitting agencies will also be contacted in the event of any significant deviation from permitting conditions.

- Pre-construction surveys within the construction zone will be conducted by a qualified biologist. If no animals are detected during these surveys then construction related activities will proceed. If adult special-status animals are found within the construction disturbance zone they will immediately be moved passively, or captured and moved, to suitable upstream sites by the project biologist.

- All construction adjacent to wetland vegetation will be regularly monitored to ensure that impacts do not exceed those included in the project description. Work within 100 feet of wetlands during ponding will be monitored by qualified staff who will document pre-project and post-project conditions to ensure adequate restoration of disturbed aquatic habitat.

- During construction, a biological monitor will be on site at all times when construction takes place in aquatic habitat. Any activity within ordinary high water will be photo-documented by the site monitor. In addition, a biologist with the appropriate permits to relocate animals will be available for consultation as needed. The monitor and biologist will provide an environmental protection workshop for workers prior to construction activities.

- Vehicles will be confined to existing roads and areas that do not provide upland aestivation habitat, when possible.

Significance After Mitigation: Less than significant.

Impact H.5: The proposed project may result in the removal of, or root damage to significant trees (i.e., trees greater than 12-inch diameter at breast height). This would be a significant impact.

Removal of trees may be required for placement of music hall structures, parking facilities and recreation pathways along Copeland Creek. Loss of trees could decrease wildlife habitat that may potentially provide roosting and nesting for various raptors and other bird species that are protected by California Fish and Game Code 3503 and the Migratory Bird Treaty Act.

Mitigation Measure H.5: The University will avoid all significant trees within the proposed project area to the extent feasible. If infeasible, placing new buildings or sidewalks outside the drip-line and away from tree roots would reduce or avoid damage to significant trees within the proposed project area. (Identified By This Report)

The University will adhere to the following limitations for construction within and around significant trees (i.e., trees greater than 12-inch diameter at breast height):

- For all development that will encroach into the feeder root zone (drip-line) or a twelve foot radius from the trunk whichever is greater of any significant tree, special construction techniques to allow roots to breathe and obtain water shall be required: use hand equipment for trenching, protect natural resources with highly visible protective fencing, allow only one pass through an area with protected or heritage trees.
- The existing ground surface within the drip-line of any significant tree will not be cut, filled or compacted. Excavation adjacent to such trees, when permitted, will be in such a manner that will cause only minimal root damage.
- There shall be no parking or storing vehicles, equipment, machinery or construction materials, construction trailers, mechanical excavation, construction of buildings, dumping of oils or chemicals within the drip-lines of any significant trees.
- Prior to the start of any clearing, stockpiling, trenching, grading, compaction, paving or change in ground elevation on a site with significant trees, install fencing at the drip-line.

Tree removal shall not occur during March through June without a bird survey to determine that the tree is unused during the breeding season by avian species that are protected under California Fish and Game Codes 3503, 3503.5 and 3511. Adherence to this mitigation measure would reduce the impacts to protected trees, as well as protected bird species, to a less-than-significant level.

Significance After Mitigation: Less than significant.

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I. HAZARDOUS MATERIALS

INTRODUCTION

The project would involve new construction on currently developed campus property and undeveloped property owned or to be acquired by the University. The University has occupied the current campus property since the 1960's, and prior to its development was open agricultural land. The parcels north of the developed campus located between Copeland Creek and Rohnert Park Expressway were primarily used for agricultural purposes. These properties were subject of Phase I and Phase II investigations to determine the past use of hazardous materials and presence of residual hazardous materials contamination. This section discusses existing conditions of the properties under the project, and the status of potential public health and environmental issues related to soil and groundwater contamination.

SETTING

DEFINITIONS

Hazardous material and hazardous waste are defined by characteristics of toxicity, ignitability, corrosivity and reactivity. Soils having concentrations of contaminants higher than certain acceptable levels must be handled and disposed as hazardous waste when excavated. The California Code of Regulations, Title 22, §66261.20-24 contains technical descriptions of characteristics that would cause a soil to be classified as a hazardous waste.

REGULATORY SETTING

Hazardous Waste Handling

The California Environmental Protection Agency (Cal EPA), Department of Toxic Substances Control (DTSC) regulates the generation, transportation, treatment, storage, and disposal of hazardous waste. In Sonoma County, remediation of contaminated sites is performed under the oversight of the Cal EPA and with the cooperation of the Sonoma County Public Health Department and the Regional Water Quality Control Board (RWQCB). At sites where contamination is suspected or known to occur, the project sponsor is required to perform a site investigation and draw up a remediation plan, if necessary. For typical development projects, actual site remediation is done either before or during the construction phase of the project.

In accordance with requirements of Chapter 6.95 of the California Health and safety Code, the University maintains a Hazardous Materials Business Plan. This plan includes a hazardous materials inventory, an emergency response contingency plan for hazardous materials releases, and a training matrix for University employees.

Worker Safety

Occupational safety standards exist in federal and state laws to minimize worker safety risks from both physical and chemical hazards in the work place. The California Division of Occupational Safety and Health (Cal OSHA) and the federal Occupational Safety and Health Administration are the agencies responsible for assuring worker safety in the workplace. Cal OSHA assumes primary responsibility for developing and enforcing standards for safe workplaces and work practices.

CURRENT SITE CONDITIONS

Main Campus

The University's main campus was originally developed in the early 1960's on agricultural land. To the north and east of the project site is agricultural land. To the south of the site is a mix of commercial and residential land uses. Residential land uses and the Rancho Cotati Senior High School is located adjacent to the site to the west, within the City of Rohnert Park. The University consists of a multi-purpose campus, small percentage of which consists of laboratories, medical care centers, and plant facility buildings. Some of these facilities store chemicals that are considered hazardous. These chemicals are used in laboratories, custodial operations, equipment and vehicle repair, landscape maintenance and on site improvements. These chemicals include acetone, acetylene gas, chlorine gas (used for drinking water treatment), Aquatreat (water treatment chemicals), argon gas, carbon dioxide gas, diesel fuel, gasoline, herbicides, acids, propane, oxygen gas, sodium nitrate (used in boiler room), and cleaning chemicals such as bleach (Sonoma State University, 1998).

The University uses and stores greater than 50,000 pounds of solid hazardous materials and greater than 5,500 gallons of liquid hazardous materials; these materials are stored in smaller aggregates in accordance with federal and state guidelines. Compressed gas on campus ranges between 201 and 2,000 ft^3 (at standard temperature and pressure). There are no underground storage tanks (USTs) on the University campus (Sonoma State University, 1998). Hazardous waste materials are properly contained, manifested, and removed from the University property for disposal by a State licensed hazardous waste contractor (Dawson, 1999). Hazardous waste materials are typically sent to a Treatment, Storage and Disposal (TSD) facility for blending, reuse, recycling, incineration, or contained disposal.

The Sonoma State University Hazardous Materials Business Plan lists all the hazardous chemicals in use at the University in the Hazardous Waste Inventory. This list is maintained and updated by the Sonoma State University Department of Environmental Health and Safety. This inventory provides vital information regarding the hazardous materials including the location on campus, health hazards, and physical characteristics. This information is used to identify, quantify and inform users of the chemical and it's associated hazards. The Hazardous Materials Business Plan also includes an emergency response contingency plan, which provides procedures for activating and implementing a coordinated response to potential emergencies involving chemical releases. An emergency is defined as a fire, explosion, or unplanned release of hazardous materials that threaten human health or the environment.

Northern Acquisition Area

Under the project, the University proposes new development on 89.3 acres of property north of the main campus across Copeland Creek, including the 54.7 acres of existing campus property and 34.6 acres on property to be acquired by the University. GRA Associates, Inc. completed preliminary environmental assessment work (Phase I, May 1998) and supplemental soil and groundwater sampling investigations (Phase II, October 1998 and June 1998) for the four parcels north of Copeland Creek owned by the University. Gallardo and Associates Inc. performed supplemental assessment work in June and July of 1999. Reports for the Phase I and Phase II assessment work and the supplemental investigations were used as the primary source of information contained in this section for this portion of the project site. This section focuses on the hazardous materials issues previously identified on this property.

The four parcels comprising the University-owned property north of the Copeland Creek were historically used for agricultural purposes such as oat hay production and a Christmas tree farm. There are no records of past hazardous materials use or underground containment of hazardous materials. No evidence was identified suggesting contaminated landfills, storage areas or USTs on these parcels.

In July 1999, Gallardo and Associates performed an additional environmental assessment and reconnaissance for one of the parcels (APN 047-131-23). The assessment did not identify visual signs of petroleum hydrocarbon impact that could pose a human health threat, however, the assessment did identify a power pole and associated electrical transformer. Electrical transformers have the potential of containing PCBs. If leakage occurred from the transformers, surrounding soils could become impacted with PCBs. The assessment recommended further investigation to determine presence of PCBs in the soils below the power pole. If PCBs are not detected, no further investigation or remediation would be warranted (Gallardo, 1999b).

Analysis of soil samples collected during the Phase II investigation (June 1998) from debris piles and shallow pits on APN 047-131-20 indicated one of the parcels indicated the presence of petroleum hydrocarbons and other contaminants in localized areas and at shallow depths. The contaminants result from inadvertent spillage and possible leakage of petroleum materials in the debris piles. A groundwater well described as a "dug" well was identified on the parcel. The depth of this well is uncertain due to gravel obstruction in the casing. This well was tested during the Phase II investigations and was found to contain various petroleum hydrocarbons constituents including gasoline and diesel (GRA, 1998b).

Until recently, the property on APN 0-47-131-08 contained a house originally built in the 1920's, with attached rental units approximately 10 years old. Other structures on this parcel included a barn, garage for automobile repairs, and work areas. The house and associated structures have since been demolished. No asbestos was identified in building material samples during the Phase II work. Some paint samples tested contained lead ranging from 6,800 parts per million (ppm) to

47,000 ppm. During demolition and debris removal, sample analysis determined that the overall concentrations of lead-based paint material were below hazardous waste threshold and did not classify as hazardous waste. Accordingly, these materials were removed from the parcel and disposed of at a Class II landfill (Dawson, 1999). Residual pesticides were not found in the surficial soils. A localized area of surficial soil was found to contain low concentrations of polychlorinated biphenyls (PCBs), diesel and aromatic constituents of gasoline (GRA, 1998 c,d).[1] These constituents were likely inadvertently released in small quantities from auto repair activities and associated with areas containing stockpiled waste material such as paints, oils and lubricants. Supplemental soil assessment performed in July 1999 on the parcel determined that the horizontal and vertical extent of impacted soil is localized (between the former building locations) and restricted to the upper in five feet of soil (Gallardo and Associates, 1999a).

Two groundwater wells were located on APN 047-131-8. An eight-inch diameter, 200-foot groundwater well is located near the main house and was used for potable water supply. Another groundwater well was located on the west end of the parcel and was abandoned in September 1998. The potable water well located near the main house was tested in October 1998 and found to contained very low concentrations (4.5 parts per billion) of the aromatic hydrocarbon Toluene. The California Regional Water Quality Control Board's maximum concentration level for toluene is 1,000 parts per billion (ppb). Based on these results, no further analysis or remediation action was deemed necessary. However, during a subsequent subsurface investigation on the parcel in November 1998, motor oil (310 ppb), diesel (190 ppb), and toluene (3.8 ppb) was detected in groundwater samples collected from soil probes (GRA, 1998d). Supplemental groundwater assessment was performed on the parcel in May 1999 and concluded that no petroleum hydrocarbon impact was present in the groundwater (Gallardo and Associates, 1999a). This assessment also concluded that the groundwater concentrations of petroleum hydrocarbons detected in November 1999 were possibly due to sample cross-contamination from overlying impacted soil.[2] The University will properly decommission the groundwater well located near the main house prior to site development (Dawson, 1999).

Regulatory Listed Sites

Table IV.I-1 presents a summary of properties within or in the vicinity of the project site identified on hazardous waste and underground storage tank lists. The University is listed on the State of California *Hazardous Waste and Substances Sites List* (Cortese list). The listing relates to a previously existing underground storage tank that contained diesel fuel. The tank was located near the campus boiler plant until its removal in 1990. Upon its removal, soil and groundwater sampling determined that the tank had leaked. Diesel product was removed from

1 PCB-containing fluids can withstand high temperatures and were commonly used as insulating materials in electrical transformers or added to heat-transfer and hydraulic systems. In the 1960s, PCBs were determined to cause adverse health effects in humans and its use was discontinued. PCBs are very stable and persist in the environment for extended periods of time. The primary aromatic constituents of gasoline that are readily detected and represent a human health risk are benzene, toluene, ethylbenzene and xylene, commonly referred to as BTEX.

2 If soil and groundwater samples are collected from a hydraulically advanced sampling device, it is possible that overlying soil can be pushed into the groundwater. If the overlying soil is impacted with contaminants, there is a potential that the contaminated soil can impact groundwater.

TABLE IV.I-1
PROPERTY WITHIN OR IN THE VICINITY OF THE PROJECT SITE IDENTIFIED ON THE HAZARDOUS WASTE AND UNDERGROUND STORAGE TANKS LISTS

Listed Property	Source of Listing[a]
Sonoma State University 1801 East Cotati Avenue Sonoma County, California	CORTESE
Sonoma State University 1801 East Cotati Avenue Sonoma County, California	LEAKING TANK
Anderson Ranch 6560 Petaluma Hill Road Sonoma County, California	REGISTERED TANK
Ranch 6652 Petaluma Hill Road Sonoma County, California	REGISTERED TANK

[a] LEAKING TANK -- the property was included on the State List of Leaking Underground Storage Tanks.
REGISTERED TANK -- the property was included on the State List of Registered Underground Storage Tanks.

SOURCE: GRA Associates, Inc., 1998a.

the groundwater and three observation wells were installed within the area to monitor the localized residual groundwater contamination. Regular groundwater monitoring determined that diesel concentrations have declined sufficiently to constitute case closure by the Sonoma County Department of Environmental Health (SCDEH). Upon approval from the SCDEH, the observation wells will be removed (Dawson, 1999). The boiler plant underground tank case is also listed on the California State List of Leaking Underground Tanks. Considering that the underground tank is removed and the impact to groundwater is no longer present, the risk to human health is considered low.

Properties outside of, and adjacent to the project site, at 6560 and 6652 Petaluma Hill Road were listed on the State of California Registered Underground Tank List. One 550-gallon and one 280-gallon underground storage tank is identified as in-use at 6560 Petaluma Hill Road and 6652 Petaluma Hill Road is reported to be operating a 1,100-gallon underground gasoline storage tank. These tanks are not reported as leaking and in the event that a leak occurs, the potential for contamination to migrate and adversely effect the project site is low (GRA, 1998a).

IMPACTS AND MITIGATION MEASURES

INTRODUCTION

Hazardous wastes and hazardous materials, if mishandled, could pose risks to the public. Potential health and safety impacts typically can stem from interactions of students, workers or employees with hazardous wastes encountered during project implementation.

SIGNIFICANCE CRITERIA

The *CEQA Guidelines* suggest standards by which to determine whether the effects of a potential impact should be considered significant (Office of Planning and Research, 1998). Appendix G of the *CEQA Guidelines* provides that a project may be deemed to have a significant impact if it would:

- Create a significant hazard to the public or environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment; or
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

APPROACH TO THE ANALYSIS

This impact analysis focused on potential effects of hazardous materials or waste associated with contamination at the currently developed University main campus property and the northern properties proposed for development. The evaluation was made in light of project plans, current conditions at the project site, applicable regulations and guidelines, and the effectiveness of any remedial measures.

PROJECT CONSTRUCTION

Impact I.1: Disturbance of any remaining contaminated areas during building demolition, site grading and construction on the undeveloped University property north of the campus could inadvertently expose construction workers or the environment to residual hazardous waste or health and safety concerns. This would be a significant impact.

As discussed in the Setting, some of these northern undeveloped parcels were identified to contain concentrations of petroleum-hydrocarbons and PCBs in soils. These soils were identified in areas where former auto repair activities took place and in debris piles. Discarded drums were identified containing electrical equipment. Soil disturbance during construction could further disperse contamination into the environment and expose construction workers or the public to contaminants. This could be a significant health impact of the site development.

Groundwater within the remaining "dug" well on APN 047-131-20 was found to contain levels of gasoline and diesel grade petroleum hydrocarbons. Groundwater wells that are not properly abandoned or destroyed pose a safety hazard and a potential threat to groundwater supplies. If not sealed or properly backfilled, open groundwater wells present an attractive nuisance or a slip and fall hazard. If not properly abandoned, destroyed and backfilled, groundwater wells can act as vertical conduits for contaminants to reach beneficial-use groundwater.

Grading and construction of project-related utilities and building footings would occur during the development of the parcels north of the developed campus. Shallow soils containing elevated concentrations of petroleum hydrocarbons or other chemicals could present a health and safety risks to workers and the public if excavated and exposed during grading operations.. Exposure to elevated concentrations of chemicals in soil that are considered hazardous could cause various short-term or long-term health effects. Possible health effects could be acute (immediate, or of short-term severity), chronic (long-term, recurring, or resulting from repeated exposure), or both. Health effects would be specific to each hazardous substance. For specific hazardous substances, potential health effects of exposure are described in detail in standard references (Budavari, 1989; Sax, 1989; Sittig, 1985).

Mitigation Measure I.1a: As identified in the Phase II investigation, prior to construction, remove petroleum-impacted soils on APN 047-131-08, APN 047-131-20 and APN 047-131-23.

Additional assessment and sampling has been recommended for the shallow soils surrounding the power poles on APN 047-131-23. As discussed previously, this soil may contain PCB's originating from leaking electrical transformers. Depending on the results of the soil sampling and analysis, some soil may require removal if PCB contamination is detected. PCB-impacted soil must be removed and disposed in accordance with appropriate state and federal guidelines.

Removal of petroleum impacted soils on APNs 047-131-08 and -20 should be in accordance with recommendations and guidelines presented in project specific remediation workplans. A site-specific remediation workplan is currently being prepared for APN 047-131-08. Removal of soils contaminated with hydrocarbons, metals, and PCBs to a level consistent with health-based standards would reduce the threat of exposure or dispersion of existing soil contamination during construction on the project site. Detected contaminant concentrations in the shallow soils are not significantly elevated but may indicate areas with higher concentrations. These areas are likely to be beneath debris pile or in areas with storage drums and discarded automobile lubricants or fuel. Areas with concentrations of petroleum hydrocarbons were found on APNs 047-131-08 and -20 to be localized and at shallow depths ranging from the surface to approximately four feet. Verification sampling should be performed following excavation of the soil to insure that soil removal operations are adequate. Excavated impacted soil must be disposed of appropriately and in accordance with state and federal regulations.

Mitigation Measure I.1b: As recommended in the Phase II investigation work, the "dug" groundwater well on APN 047-131-20 should be investigated further and abandoned.

This well should be destroyed in accordance with California Department of Water Resources (DWR) requirements as defined in the DWR California Well Standards, (Bulletin 74-90). Prior to well destruction, additional information such as depth to groundwater, sanitary seal type, and a description of down-well debris should be obtained to assess potential groundwater contamination issues and for issuing a well destruction report to the Department of Water Resources. Groundwater samples should be obtained prior to destruction. As recommended in the Phase II investigation, local regulatory agencies (Sonoma County Health Department) should be notified regarding the presence of the well and their guidelines and recommendations for sampling and reporting.

Significance After Mitigation: Less than Significant.

UNIVERSITY OPERATIONS

Impact I.2: Under the Master Plan revision, development and expansion of on-campus facilities will necessitate an increase in the quantities of hazardous chemicals used, stored and disposed by University facility operations. Additionally, the student population proposed under the revision will increase the number of persons potentially exposed to hazards related to the inadvertent release, upset, or improper use of hazardous materials. This would be a less than significant impact.

With implementation of the Master Plan revision, the University would develop additional on-campus facilities including student housing, instructional expansion and at the Center for the Musical Arts. The project would accommodate a proposed increase in student population over existing conditions (although it would maintain a maximum student population of 10,000 full-time equivalents, as under the existing approved master plan). As the new facilities are developed and operation and maintenance requirements increase, the quantities of hazardous chemicals necessary to maintain the facilities would increase proportionally. Expansion of the existing or development of additional storage areas would be required. The University's use of additional hazardous chemicals will also result in an increase in the amount of hazardous waste.

The University's Department of Environmental Health and Safety (DEHS) is responsible to manage storage, maintain records, and establish emergency response procedures for the use of hazardous materials on campus. The University DEHS also maintains and updates the Hazardous Materials Business Plan, as discussed above. As additional hazardous materials are introduced into the campus environment due to expansion under the Master Plan revision, the University DEHS will update hazardous material use practices accordingly. The DEHS would be responsible for updating the Hazardous Materials Business Plan, establishing appropriate storage facilities for the hazardous materials, updating the hazardous materials inventory, developing appropriate emergency response contingency plans with changes in infrastructure and continue to manage the hazardous waste disposal considering the increased volume. Continued management of hazardous materials and necessary revisions to the emergency response contingency plans by the University DEHS will ensure that the increased use of hazardous materials will not result in additional risks to the campus population.

Mitigation: None required.

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J. PUBLIC SERVICES

SETTING

FIRE/EMERGENCY MEDICAL PROTECTION SERVICES

Fire protection services to the University are provided by the Rancho Adobe Fire Protection District. This district, along with the Rincon Valley Fire Protection District and the Valley of the Moon Fire Protection District, maintain a joint powers agreement under the North Bay Fire Authority. The North Bay Fire Authority also maintains a mutual aid agreement with the City of Rohnert Park Fire Department.

The Rancho Adobe Fire District maintains three fire stations; the station nearest the project site is located approximately 1.5 miles to the west, on East Cotati Avenue in the City of Cotati. The other two District stations are located south of the project site (on Main Street, in Penngrove; and on Liberty Road, west of U.S. 101). Two firefighters and an engine are maintained at each station. Response time to the University from the nearest fire station is estimated to be between two to three minutes. The University does not currently generate a substantial number of calls for emergency response (D'Ambrogie, 1999).

The project site is currently served by adequate on-site fire prevention facilities, including a fire hydrant loop system, sprinkler systems, and fire hoses systems fed by reclaimed water, fire extinguishers, and emergency exit plans in all buildings, and emergency vehicular access to the school facilities. To supplement the existing fire loop system on the campus, the University's two man-made lakes serve as holding tanks for additional campus fire suppression. These lakes are connected by a booster pump to the campus' reclaimed water system.

All fire protection district firefighters are trained for responding to fire and emergency medical responses. The University's police officers are also trained in CPR/first aid; see Police Protection Services, below. The University's Student Health Center maintains on-site doctors and nurses who can treat minor injuries; however, emergency medical patients would be transported to nearby hospitals, including Santa Rosa Memorial, Sutter, and Kaiser Hospitals, in Santa Rosa, and Petaluma Valley Hospital, in Petaluma. Ambulance service to the University and project vicinity is provided by a private firm, Sonoma Life Support.

POLICE PROTECTION

The University's Police Services department provides on-site police protection services to the campus. Police Services currently includes eleven sworn police officers (consisting of a Chief, two Sergeants, three Corporals and five Officers), and five non-sworn police support personnel (including community service officers). Police Services anticipates adding two full-time police officers and ten reserve officer positions in the near future. The University maintains a mutual aid agreement with other northern California universities within the CSU system, as well as Santa Rosa Junior College, for additional police services. In addition, the University maintains joint investigative agreements with the Sonoma County Sheriff's Department and the Rohnert Park Department of Public Safety.

Police Services patrols the campus using police vehicles, bicycles and on foot. Police Services typically responds to a variety of calls, including criminal activities, medical assistance, traffic emergencies and enforcement, and civil disturbances and nuisances. Police Services also oversees on-site building security systems on the campus, including video surveillance and/or burglar alarms for all key facilities.

Under a joint powers agreement with the Sonoma County Office of Emergency Services (OES), the University, along with the Santa Rosa Junior College and all cities in Sonoma County, manage a network of Emergency Operations Centers (EOCs). The University maintains a fully operational EOC on the campus, containing telecommunications equipment, emergency contact lists and meeting area for emergency response personnel to meet and assess a major disaster or emergency. The Chief of the University's Police Services manages the University's EOC.

Off-site police protection in the project vicinity is provided by the Rohnert Park Police Department, Sonoma County Sheriff's Department, and the California Highway Patrol (on state routes).

NON-HAZARDOUS SOLID WASTE

Waste Management and Disposal

The University currently generates an average of less than one ton of non-hazardous waste per day. This waste is transported weekly by the University to the Sonoma County Central Landfill, in Petaluma, which is owned and operated by Sonoma County. The existing lifetime expectancy of the landfill is approximately six years, however, the County is currently in the process of acquiring the necessary permits to expand the landfill, and increase the landfill's lifetime expectancy by additional eight years (Wells, 1999).

Waste Diversion

In 1989, the California legislature enacted the California Integrated Waste Management Act (AB 939) requiring all cities and counties in California to divert 50 percent of their solid waste from landfills by 2000. This act further required every city and county in California to prepare a Source Reduction and Recycling Element (SRRE), that identifies the chief characteristics of each jurisdiction's waste, describes existing waste diversion programs and rates of waste diversion, and identifies new or expanded programs the jurisdiction intends to implement to achieve the mandated rates of diversion. AB 939 specifies that each county create a local task force to assist in coordinating the development of the city and county SRREs. The University maintains a member on this local task force.

Waste diversion rates in Sonoma County were approximately 39 percent in 1998. The County is currently working with the local task force to improve the County's waste diversion rate, including the provision for mandatory recycling for apartment buildings, and single stream recycling (Wells, 1999).

The University currently operates an extensive on-site waste diversion and recycling program. The University diverts a variety of materials generated at the campus, including cardboard, paper, plastic, metals, glass bottles, wood, construction waste, and other miscellaneous materials (e.g., printer toner cartridges). These materials are separated at the source by designated bins/containers located throughout the campus and are then separated further at the University's Recycle Center staff. The University also recycles landscape waste on campus. In total, the University recycles approximately 50 percent of waste generated at the campus; on an annual basis this includes approximately 18,000 pounds (lbs.) of paper, 10,000 lbs. of cardboard, 500 lbs. of aluminum, 3,000 lbs. of glass, and 1,500 lbs. of plastics. The University educates the campus community of its recycling program through flyers, direct contact with the faculty and staff, education tables set up at various campus events, and through the campus newspaper.

PARKS AND RECREATION

Public open space and outdoor recreational areas in the region consists of parks, school grounds, and equestrian, hiking trails and bicycle trails. Regional parks within Sonoma County are maintained by the county's Regional Parks Department. Crane Regional Park, which offers a number of hiking trails, is located approximately one mile to the east of the site. Public parks within the City of Rohnert Park are maintained by the city's Parks and Recreation Department. A number of City public parks are located within one mile of the project site, including Sunrise Park, 0.3 miles to the northwest; Eagle Park, 0.8 miles to the northwest; Rainbow Park, 0.15 miles to the west; Colegio Vista Park, 0.6 miles to the west; Caterpillar Park, two-thirds miles to the west, Meadow Pines Mini-Park, 0.75 miles to the west, and Magnolia Park, 0.3 miles to the south.

The *Sonoma County General Plan* identifies Petaluma Hill Road adjacent to the site as a Class II bikeway, and East Cotati Avenue adjacent to the site as a Class III bikeway. The *Sonoma County General Plan* also identifies a proposed trail in the project vicinity, following Copeland Creek, linking the University to Crane Creek Regional Park.

PUBLIC SCHOOLS

Sonoma County currently has 40 public school districts serving the county, consisting of 31 elementary school districts, three high school districts, and six unified districts. Public elementary and secondary education for school-age children in the project vicinity is provided by the Cotati-Rohnert Park Unified School District. The District serves the City of Rohnert Park and portions of Cotati and unincorporated Sonoma County, including the project site. The District provides education for K-12th grade, and carries an enrollment o 8,278 students (Sonoma County Office of Education, 1999). The Cotati-Rohnert Park Unified School District maintains their district offices at the University.

Other nearby school districts include the Bellview Union Elementary School District (grades K-6; 1,474 student enrollment), Santa Rosa City High School District (grades 7-12, 12,233 students) Petaluma City Elementary School District (grades K-6; 5,131 students), and the Petaluma Joint Union High School District (grades 7-12; 5,131 students), Gravenstein Union School District (grades K-6, 571 students); Dunham School District (grades K-6, 155 students); and the Liberty School District (grades K-6; 167 students) (Sonoma County Office of Education, 1999).

Beginning in Fall, 1999, the Cotati-Rohnert Park School District will begin operating a high school program, named the Technology High School, at the University. Technology High School will serve as an extension program for Rancho Cotati High School (which is located adjacent to the University), and specialize in mathematics, science and engineering classes. Technology High School will initially lease temporary facilities on the campus, and accommodate an enrollment of 60 students. The high school program will eventually lease facilities in the Reuben Salazar Building (existing library), as the University's library operations move to the Information Center (under construction, see Chapter III, Project Description for information), and ultimately will accommodate up to 400 high school students. This student population of this high school will consist primarily of students within the Cotati-Rohnert Park School District, but also include students from other school districts. (Littlefield, 1999).

IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

According to Appendix G of the *CEQA Guidelines*, a project may be deemed to have a significant impact on the environment if it will:

- result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection, police protection, schools, or parks; or

- increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

Impact J.1: The project would increase demand for fire protection services. This would be a less than significant impact.

The Master Plan revision would not involve a change in the University's ultimate planned student capacity of 10,000 full-time equivalents and would not involve an increase in the rate of student enrollment above that anticipated by the existing approved Master Plan. Therefore, the project would not be considered growth inducing. However, the project would result in more facility development and a greater on-site residential population than the existing approved

Master Plan, and therefore would result in the potential for a corresponding increase in response calls to the project site from the Adobe Rancho Fire Protection District. This potential increase in calls would be similar in nature to the existing types of responses at the University and the general area. As stated in the Setting, the University does not currently generate a substantial number of calls for service. The Rancho Adobe Fire Protection District does not anticipate the project would result in a significant increase in response calls for service (D'Ambrogie, 1999).

As identified in the Setting, the project site is currently served by adequate on-site fire prevention facilities, including a fire hydrant loop system, building sprinkler systems, fire hoses, fire extinguishers, and emergency exit plans in all buildings, and emergency vehicular access to the school facilities. All proposed development identified under the Master Plan revision would be required by state regulations to include similar adequate fire protection systems, and be subject to review and approval by the State Architect, State Fire Marshall and the University's Campus Planning Committee. As under existing conditions, the University would continue coordination with the Rancho Adobe Fire Protection District for campus fire drills and emergency response plans. Therefore, the project's impact to public fire protection services would be less than significant.

Mitigation: None required.

Impact J.2: The project would increase demand for police protection services. This would be a less than significant impact.

As discussed in Impact J.1, the project would not be considered growth inducing. However, the project would result in more facility development and a greater on-site residential population than the existing approved Master Plan, and therefore would result in the potential for a corresponding increase the need for on-site police protection. As discussed in the Setting, the University provides its own police protection personnel to provide security and respond to calls for service at the campus. Under the project, the University's police protection services would be increased as needed to maintain adequate police protection levels of service at the campus. As under existing conditions, the University would maintain an Emergency Operations Center at the campus.

The project would also result in a potential incremental increase in off-site calls for response from the local police protection services (e.g., in responding to off-site vehicular accidents); however, these calls would not be expected to be of a nature or magnitude that would significantly affect police protection services in these jurisdictions. Therefore, the project's impact to public police protection services would be less than significant.

Mitigation: None required.

Impact J.3: During construction, the project would generate construction and demolition debris. This would be a less than significant impact.

The project would result in more facility construction than under the existing approved Master Plan, and therefore could generate a greater amount of construction and demolition debris during the construction stages of the project. Demolition debris, such as concrete, can be processed by for reuse. Material that could not be recycled would be transported to available facilities where capacity is presently available.

Mitigation: No mitigation is required for the less than significant impact discussed above. However, the following measure would help to meet the overall waste diversion goals of Sonoma County's *Source Reduction and Recycling Element*:

- Construction contracts shall specify that during the construction and demolition phase, contractors would make arrangements to segregate recyclable construction-generated solid waste from non-recyclable waste, as reasonable and cost effective. Recyclable waste is likely to consist in part of materials such as concrete, asphalt, metals, and wood.

Impact J.4: Operation of the proposed project would increase the amount of non-hazardous solid waste generated at the project site. This would be a less than significant impact.

As discussed in Impact J.1, the project would not be considered growth inducing. However, the project would result in more facility development and a greater on-site residential population than the existing approved Master Plan, and a potential corresponding increase in non-hazardous solid waste generated at the project site. This increase in solid waste generated would not significantly affect the estimated lifetime of the Central Landfill, where the waste would be disposed under the project. As discussed in the Setting, the County is currently in the process of acquiring the necessary permits to expand the landfill, and increase the landfill's lifetime capacity through 2015. As under existing conditions, all non hazardous waste generated at the University under the project would be transported by the University to the landfill.

As described in the Setting, the University currently operates an extensive on-site waste diversion, recycling and education program. These recycling efforts are consistent with the goals of the County's Source Reduction and Recycling Element. The University has recently received a grant to be used towards purchasing additional recycling containers, sorting belts, electric carts, and large 25-cubic yard recycling bins to improve existing waste diversion and recycling operations. Under the project, the University would further expand its waste diversion and recycling program as needed to serve all new academic and housing facilities. Therefore, the project's impact to increases in generation of non-hazardous waste solid waste would be less than significant.

Mitigation: None required.

Impact J.5: The proposed project could increase demand for public open space and recreational facilities in the local area. This would be a less than significant impact.

There is an abundance of off-site open space and recreational facilities in the project vicinity and surrounding communities. As discussed in Impact J.1, the project would not be considered growth inducing. However, the project would result in an increase in the residential population living at the project site over that anticipated by the existing approved Master Plan. This could result in an incremental increase in the use of local existing and planned neighborhood and regional parks, and other recreational facilities. However, any such increase would be widely spread throughout the local community.

The breadth of on-site public open space and recreational facilities under the project are designed to accommodate the projected increase in student population. These include swimming pools, gymnasium, football, baseball, softball and soccer/lacrosse and track fields, residential courtyards, bicycle and pedestrian paths, lakes, botanical garden and the Copeland Creek corridor. Under the project, much of the existing open space would be maintained or enhanced, and a number of new on-site recreational facilities would be improved, including the University's network of bicycle and pedestrian circulation paths, and the proposed soccer stadium. Therefore, the project would not result in a significant physical deterioration of public open space and recreational facilities.

Mitigation: None required.

Impact J.6: The project could add to local public elementary and secondary school enrollment. This would be a less than significant impact.

As discussed in Impact J.1, the project would not be considered growth inducing. However, the Master Plan revision would result in a greater on-site residential population than under the existing approved Master Plan, including students and or faculty. Children of this increase in on-site population would add to public elementary and secondary school enrollment within the local area. However, this demand is not expected to significantly affect school district capacities.

As discussed in the Setting, the Cotati-Rohnert Park School District will begin operating the Technology High School at the University in Fall 1999, which will initially carry an enrollment of 60 students, and ultimately accommodate up to 400 high school students. Under the Master Plan revision, the University will continue to coordinate with the Cotati-Rohnert Park School District for the Technology High School and development of other potential inter-school district programs.

Mitigation: None required.

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K. UTILITIES AND SERVICE SYSTEMS

SETTING

WATER SYSTEMS

Existing Domestic (Potable) Water System

Sonoma State University is a State licensed water purveyor, providing domestic water for the University using on-site ground water wells. Raw water from the wells is disinfected and pumped to storage in two 200,000-gallon tanks and distribution throughout the campus for potable water, including some of the building fire sprinkler systems. The University's current potable water delivery system includes two 75 horsepower (HP) booster pumps (one of which contains a variable frequency drive), a 25 HP pump (with a variable frequency drive), and a 10,000 gallon (hydropneumatic) pressure tank. The normally available well water source capacity provided by two wells at the University is 475 gpm.[1] The existing average daily water demand at the University is estimated to be approximately 120,000 gallons per day (gpd) [83 gallons per minute (gpm)], the maximum daily demand 210,000 gpd (146 gpm), and peak-hour water demand 333 gpm.[2]

The portion of the project site north of Copeland Creek (the northern expansion area) currently has no domestic water infrastructure.

Existing Non-Potable Water System

A separate non-potable campus water distribution system connected to the Rohnert Park Pipeline Extension of the City of Santa Rosa Subregional Reclaimed Water System provides water for the campus irrigation and fire-hydrant systems. Approximately 100 acres on the existing campus are currently under irrigation, requiring approximately 270,000 gpd of non-potable water. The reclaimed water quality is in conformance with Title 22 CCR standards.

The back-up source for fire protection water are two lakes on campus with a storage volume of about 3 acre-feet (1 million gallons). The University has an existing fire pump system connected to the lakes which is activated if the pressure in the non-potable system supplied by the Subregional system drops too low. The lakes are kept supplied by well water from the University's wells.

The northern acquisition area currently has no fire protection or irrigation water infrastructure.

1 The University has a third well, rated at 90 gpm, increasing the potential total water source capacity to 565 gpm. However, since this well experiences regular maintenance problems, it is not normally used.

2 Existing average daily potable water demands from the University's 1995 *Utility System Master Plan*. Maximum daily demands were estimated by applying a peaking factor of 1.75 to the average demand, and peak-hour demands were applied by applying a factor of 4 to the average demand, as recommended by the American Water Works Association.

WASTEWATER SYSTEMS

Wastewater Collection

The University's wastewater collection system is connected to the City of Rohnert Park wastewater collection system via an 18-inch sewer line that extends west from the University, adjacent to the south bank of Copeland Creek. The City of Rohnert Park wastewater collection system ultimately discharges to the Santa Rosa Subregional Wastewater Treatment Plant. The northern acquisition area portion of the project site currently contains no wastewater collection infrastructure.

Based on the University's 1995 Utility System Master Plan, the University's wastewater collection infrastructure on campus has ample capacity to accommodate the University's existing wastewater flows. Furthermore, the City of Rohnert Park's wastewater infrastructure currently has sufficient capacity to convey current wastewater discharge from the University to the Subregional Plant (Gaffney, 1999).

Wastewater Treatment

The City of Santa Rosa Utilities Department operates a subregional wastewater treatment system serving the communities of Santa Rosa, Rohnert Park, Cotati, Sebastopol and part of unincorporated Sonoma County. Treatment occurs at the Subregional Wastewater Treatment Plant (Laguna WWTP) on Llano Road in Santa Rosa. The Laguna WWTP currently has a total capacity of 18 million gallons per day (mgd), all of which is allocated to the various member agencies. The University is included in the City of Rohnert Park's current allocation of 3.22 mgd average dry weather flows (ADWF) designated by the subregional treatment system. The City of Rohnert Park maintains an agreement with the University, allowing the University to use up to 0.10 mgd ADWF of the City of Rohnert Park's wastewater allocation.

The 0.10 mgd allocation reflected the needs of the University at the time this allocation was agreed upon (the University was at approximately half of it buildout population at the time), however, it does not accommodate either the current wastewater treatment demands of the University, nor would it accommodate additional treatment capacity required for development identified under the existing approved University Master Plan. In 1998, the University generated an annual average daily wastewater flows of 0.117 mgd, and a maximum month wastewater generation of 0.215 mgd. The month of September is the 30-day period for which the ADWF from the University is evaluated against its allocation. In September 1998, the University's average daily wastewater generation was 0.123 mgd, approximately 23 percent over its 0.10 mgd allocation. Over the last five years, the University has exceeded its allocation during this 30-day period by an average of approximately 13 percent.[3]

The current excess wastewater discharge from the University is currently accepted, treated and discharged by the Laguna Plant because of the availability of unused capacity allocated to other

[3] Derived from monthly-metered flow data obtained from the City of Santa Rosa.

agencies. This unused capacity is eligible to be "borrowed" on a temporary basis by other agencies, until additional capacity comes on-line.

IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

According to Appendix G of the *CEQA Guidelines*, a project may be deemed to have a significant impact on the environment if it will:

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level;
- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Have insufficient water supplies available to serve the project from existing entitlements and resources, or need new or expanded entitlements; or
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

WATER SYSTEMS

Potable Water

In order to estimate the individual design potable water demand associated with the proposed project, each building was evaluated for minimum required restroom, kitchen and laundry facilities based on type of occupancy. Basic fixtures that will be required in the buildings include toilets, urinals, lavatory sinks, drinking fountains; and in residential buildings, bathtubs/showers, kitchen sinks, and clothes washers (dishwashers are not assumed to be included). The International Association of Plumbing and Mechanical Officials' 1997 Uniform Plumbing Code (U.P.C.) defines a value related to the amount of water use for each type of fixture measured in fixture units (F.U.). The recommended number of each of the units multiplied by the fixture unit value of each unit results in the estimated minimum number of fixture units that will be installed. The number of fixture units and the characteristics of the facility use in combination with the estimated occupancy capacity are converted (following the guidelines recommended in Appendix A of the U.P.C.) into an estimated peak potable water demand in gallons per minute.

The estimated average daily potable water demand associated with proposed new facilities are presented in Table IV.K-1. As discussed in the Section III, Project Description, music festivals at the proposed Center for the Musical Arts are expected to occur during the summer months, when the majority of the University's academic facilities are not in session. However, in order to conservatively assess the projected impacts, the EIR assumes the operation of academic operations, as well as large musical events at the Center for the Musical Arts, and athletic events

TABLE IV.K-1
POTABLE WATER DEMAND OF NEW FACILITIES PROPOSED UNDER MASTER PLAN REVISION

Map Reference Number	Facility	Gross Square Footage (sq. ft.)	Estimated Fixture Units [c]	Estimated Peak-Hour Water Demand (gpm) [d]	Estimated Average Daily Water Demand (gal/day)
6	Ruben Salazar Bldg. Remodel	(Existing)	367	120	13,800
30	Instructional Expansion	100,000	274	100	10,400
31	Instructional Expansion	60,000	312	105	11,600
33	Instructional Expansion	105,000	333	110	12,500
35	University Center	217,000	91	65	20,000
37	Physical Education Addition	55,000	118	72	4,300
38	200-unit Residence Hall Addition	108,000	1851	310	18,400
39	Bleachers Addition	-	140	77	300
40	Art Building Addition	10,000	79	60	2,900
41	Soccer Stadium	-	258	100	1,500
50	Music Center	100,000	188	88	4,400
b	University Housing in Northwest Acquisition Area	e	6238[3]	754	67,680

Total Estimated Increase in Daily Potable Water Demand:
Increase over Existing Conditions **168,000 gpd [f]**
Increase over Buildout of Existing Approved Master Plan **112,000 gpd [f]**

a See Figure III-4 in Project Description for location of proposed facilities within proposed Master Plan.
b Since the University does not currently own the site, this proposed development is not illustrated on the University Master Plan.
c Per Tables 4-1 & 7-3, U.P.C., 1997. Does not include instructional facilities i.e. laboratory fixtures, etc.
d Per Chart A-2, U.P.C., 1997. Calculated for the purposes of sizing water systems to individual buildings.
e As a conservative approach, the housing scenario that yielded the highest water demand was assumed (mixed-use option; see Table III-6 in the Project Description).
f Rounded up to nearest thousand.

SOURCE: Brelje and Race, 1999

utilizing the proposed soccer stadium and bleacher addition, when determining the average daily potable water demands. Furthermore, for the proposed housing in the northwest acquisition area, the proposed housing scenario that yielded the highest potable water demand was assumed (the high-density option; see Table III-6 in the Project Description).

Impact K.1: The proposed project would increase potable water demands that would exceed the University's existing potable water storage capacity. This would be a significant impact.

Upon completion of development currently under construction by the University, the average daily water demand at the University is estimated to be approximately 150,000 gallons per day (gpd) [104 gallons per minute (gpm)], the maximum daily demand 262,500 gpd (182 gpm), and peak-hour water demand 417 gpm.[4]

As shown in Table IV.K-1, the new facilities proposed under the Master Plan Revision would increase the potable average daily water demand by approximately 168,000 gpd (117 gpm), a maximum daily demand of 294,000 gpd (204 gpm), and a peak-hour demand of 467 gpm over existing conditions. When added to the potable water demands of the University's existing facilities and facilities currently under construction, the University would generate a total average potable water demand for 318,000 gpd (221 gpm), a maximum daily demand of 556,500 gpd (386 gpm) and peak-hour demand of 884 gpm.

As identified in the Setting, the normally available well water source capacity provided by the University's two wells is 475 gpm; and are thus capable of accommodating the University's projected total maximum daily demand flows under the project. However, additional water storage capacity would be required to meet peak demands, as well as meeting water storage design criteria for maximum day plus fire flow, as specified by the American Water Works Association (AWWA). Using the AWWA design criteria, upon buildout, the University would need to provide a total of 705,800 gallons of water storage capacity, which amounts to an additional 305,800 gallons over the University's existing water storage facilities (the University currently maintains approximately 400,000 gallons in water storage).

Mitigation Measure K.1: Add additional potable water storage capacity of at least 305,800 gallons.

Since there are numerous potential design alternatives in providing the required additional potable water storage capacity, no specific option is recommended at this time. The timing and design for additional storage capacity should be consistent with the development of the proposed building program.

Significance After Mitigation: Less than Significant

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[4] Existing average daily water demand estimates presented in the University's 1995 *Utility System Master Plan*, and adjusted upward by 0.03 million gallons per day to account for the new development currently under construction.

Impact K.2: The proposed project would increase groundwater extraction rates at the project site. This would be a less than significant impact.

The Project would not substantially deplete groundwater supplies. As identified in Impact K.1, the project would increase the average domestic water use, and therefore well water extraction over existing conditions. However, the University recently reduced its groundwater use rate reduction by 270,000 gpd as a result of its switch to the use of reclaimed water from the Subregional Pipeline for irrigation purposes. Even after project buildout, a net decrease of 72,000 gpd in demand for groundwater supplies would be realized from conditions prior to the recent availability of reclaimed water for campus landscape irrigation.

The University's wells are located within the campus lands. The project site is located adjacent to the City of Rohnert Park, where all domestic water is supplied by City water infrastructure. There are no nearby wells that would experience a significant reduction in production due to the project.

The project would not interfere substantially with groundwater recharge. Locally, natural groundwater recharge occurs primarily from infiltration of stormwater runoff within Copeland Creek and to a lesser extent, migration of groundwater from higher elevations in the unincorporated area east of the University. The project is designed to preserve the Copeland Creek riparian corridor and avoid development within the creek setback line as defined by the Sonoma County Water Agency. The northern acquisition area has been identified as potential groundwater recharge areas through the use of reclaimed water. The areas of the Music Center designated as open space will facilitate and supplement natural groundwater recharge by the application of imported reclaimed water for irrigation of the surface landscaping during the dry periods of the year.

The University draws its well water from an aquifer that extends throughout the Santa Rosa Plain. Over the past 30 years, this aquifer has experienced increased depletion at its southern end, in the vicinity of the Cities of Rohnert Park and Cotati, both of which rely heavily on groundwater resources for municipal water resources. Under the project, the University would continue to contribute to this area-wide depression in the southern Santa Rosa Plain water table. However, as indicated above, with the University's recent switch to use of reclaimed water for irrigation purposes, with project features which would maintain groundwater recharge on the project site, and with implementation of water conservation fixtures in all proposed facilities (including low-flow toilets, sinks and showerheads) as required by state law, the project's contribution to cumulative effects on the groundwater basin would be less than significant.

Mitigation: None required.

Impact K.3: The proposed project would increase non-potable water demands, and require additional on-site potable and non-potable water infrastructure. This would be a less than significant impact.

The project would increase the demand for reclaimed water from the Subregional Reclaimed Water System at the project site for irrigation and fire hydrants. The portion of the project site located north of Copeland Creek (the northern acquisition area), would potentially increase the area requiring irrigation water by approximately 35 acres. The net increase in demand for reclaimed water related to the project would be adequately accommodated by the reclaimed water system, provided the necessary additional on-site reclaimed water distribution infrastructure were constructed. The main campus south of Copeland Creek would experience a small decrease in irrigated area, although the majority of the Master Plan building program occurs areas not currently provided with irrigation.

As discussed in the Setting, the northern acquisition area is not currently not served by either potable or non-potable water distribution infrastructure. The project would require additional on-site potable and non-potable water infrastructure to serve the facilities proposed in this area. Either an expansion of the existing non-potable infrastructure, or a system independently connected to the Subregional Reclaimed Water System, would be required for this portion of the project site. Either of these alternatives would depend on hydraulic and economic considerations to be determined along with final design of the northern expansion elements of the Master Plan. As identified in Mitigation Measure H.2b, all proposed utilities crossing Copeland Creek shall either be supported by bridge structures or constructed using directional bore methods to avoid disturbance of Copeland Creek.

As discussed in Section IV.J, Public Services, all proposed development identified under the Master Plan revision would be required by state regulations to include adequate fire protection systems, including fire hydrant systems, and subject to review and approval by the State Architect, State Fire Marshall and the University's Campus Planning Committee.

Mitigation: None required.

WASTEWATER SYSTEM

Project Wastewater Generation

The proposed project facilities would result in an increase in wastewater generation over existing conditions. The projected increase in wastewater flows were estimated based on the ultimate student capacity of the University, faculty and staff associated with the project, and, in the case of the proposed Center for the Musical Arts, University Center and soccer stadium, other factors, including occupant capacity, frequency and type of use. As was assumed in developing the potable water demand estimates, in order to conservatively assess the projected impacts, the EIR assumes the operation of academic operations, as well as large musical events at the Center for the Musical Arts, and athletic events utilizing the proposed soccer stadium and bleacher addition, when determining the average daily wastewater generation estimates. Furthermore, the proposed University housing scenario that yielded the highest potable water demand was assumed (the high-density option; see Table III-6 in the Project Description).

The estimated average daily wastewater generation associated with proposed new facilities are presented in Table IV.K-2.

TABLE IV.K-2
DOMESTIC WASTEWATER LOAD OF NEW FACILITIES PROPOSED UNDER MASTER PLAN REVISION

Map Reference Number[a]	Facility	Typical Water Use (gpd/FTE)[c]	Unmodified Water Use (gal/day)	Reduction (gal/day)[c]	Average Wastewater Flow (gal/day)
6	Ruben Salazar Building Remodel	11	14,200	400	13,800
30	Instructional Expansion	11	10,700	300	10,400
31	Instructional Expansion	11	11,900	300	11,600
33	Instructional Expansion	11	12,800	300	12,500
35	University Center	4	20,000	0	20,000
37	Physical Education Addition	21	4,500	200	4,300
38	200-unit Residence Hall Addition	54	21,600	3,200	18,400
39	Bleachers Addition	2	2,000	1,700	300
40	Art Building Addition	11	3,000	100	2,900
41	Soccer Stadium	2	10,000	8,500	1,500
50	Center for the Musical Arts	2	25,680	21,900	4,400
b	University Housing in Northwest Acquisition Area	54	76,680	9,000	67,680

Total Estimated Increase in Daily Domestic Wastewater Load

Increase over Existing Conditions	**168,000 gpd** [d]
Increase over Buildout of Existing Approved Master Plan	**112,000 gpd** [d]

a See Figure III-4 in Project Description for location of proposed facilities within proposed Master Plan.
b Since the University does not currently own the site, this proposed development is not illustrated on the University Master Plan.
c Water/wastewater load estimated by occupancy and building use per *Wastewater Engineering*, Metcalf & Eddy.
d Rounded up to nearest thousand.

SOURCE: Brelje and Race, 1999

Wastewater Treatment

Impact K.4: With the proposed project, the University would increase its exceedance of its current wastewater treatment allocation, and could exceed its future wastewater treatment allocation designated by the subregional wastewater treatment system, unless an increase in treatment capacity allocation is received. This would be a significant project and cumulative impact.

As discussed in the Setting, the City of Rohnert Park maintains an agreement with the University, allowing the University to use up to 0.10 mgd average dry weather flows (ADWF) of the City's allocation designated by the subregional treatment system. The 0.10 mgd allocation reflected the needs of the University at the time this allocation was agreed upon (the University was at approximately half of it buildout population at the time), however, it does not accommodate either the current wastewater treatment demands of the University, nor would it accommodate additional treatment capacity required for development identified under the existing approved University Master Plan.

The University is currently exceeding its 0.10 mgd allocation by approximately 23 percent in 1998, and by an average of 13 percent over the last five years. Additional development under the existing approved University master plan that are currently under construction are estimated to increase the average daily wastewater demand estimates by an additional approximate 0.03 mgd. The University is currently negotiating with the City of Rohnert Park to increase the University's portion of the City's wastewater treatment allocation designated from the subregional system from 0.10 mgd to 0.20 mgd, however this increase has not been approved by the City.

As shown in Table IV.K-3, buildout of the proposed project is projected to increase average wastewater flows generated at the University by approximately 0.168 mgd over existing conditions, and by approximately 0.112 mgd over buildout of the existing approved Master Plan. If the project wastewater flows are added to the University's most recently measured (1998) wastewater flows (0.123 mgd) and the projected additional flows from current projects at the University under construction (0.030 mgd), upon buildout, the University would generate a total wastewater generation of approximately 0.321 mgd.

There are two projects planned by the subregional treatment system to increase wastewater storage and discharge capacity within its system. The primary project is the Geysers Recharge project, scheduled to become operational in the Summer of 2002, which will redirect the majority of effluent that is currently discharged to the Laguna de Santa Rosa/Russian River to injection into The Geysers area instead. The amount of effluent that could be discharged from the Laguna WWTP to The Geysers area using this pipeline would not be influenced by seasonal fluctuations, as are current discharges to the Russian River. The Geysers Pipeline project is expected to increase treatment capacity of the subregional treatment system from 18 mgd to approximately 21.2 mgd, and increase reclaimed water storage and distribution capacity. The second project, the Brown Pond Expansion, is an interim project to meet wastewater needs throughout the county. The Brown Pond Expansion, scheduled to be on-line in October 1999, will increase the total treatment capacity of the Laguna WWTP by approximately 1.5 mgd. The specific increases in allocation that would be available to each member of the subregional system from either improvement treatment capacity improvement projects have not been determined at this time.

Since the University does not have an approved increase in allocation that would accommodate the University's projected wastewater flows under the project, the potential exists for the University to exceed its future wastewater treatment allocation under the project. It is unknown at this time as to the potential for the University to "borrow" reserve capacity in the future from other agencies participating in the subregional treatment system, therefore, the project's potential exceedance of future wastewater treatment allocation would be considered a significant impact of the project, and cumulatively significant.

Mitigation Measure K.4a: The University shall arrange with the City of Rohnert Park to be included in its application for its share of the increase in treatment capacity provided by the Brown Pond Expansion project and Geysers Pipeline projects.

Mitigation Measure K.4b: The University shall arrange with other members of the subregional system to temporarily borrow capacity equivalent to the projected Average Dry Weather Flows in excess of its designated allocation until such time as an increase in allocation directly to the University becomes available.

Significance After Mitigation: Significant.

Wastewater Collection

Impact K.5: The proposed project would increase wastewater flows to on- and off-site wastewater collection infrastructure, and require additional on-site wastewater infrastructure. This would be a less than significant impact.

The University's on-site wastewater collection infrastructure has ample capacity to convey project and total wastewater discharges from the campus. In addition, the City of Rohnert Park has stated there is sufficient capacity within the City's wastewater collection system to convey project and total wastewater flows downstream of the University to the Laguna WWTP (Gaffney, 1999). The City of Rohnert Park is also planning construction of a new wastewater trunk line to serve the southeast area of its proposed future City limits. This proposed trunk line would be routed along an easement reserved for this purpose along the west property boundary of the University south of Copeland Creek, and would provide a potential second point of connection to serve the project site, if needed. Therefore, there are no apparent capacity deficiencies in conveying the project wastewater flows to the point of treatment.

On-site wastewater collection infrastructure would be required to serve the proposed facilities in the northern acquisition area, which are not currently served by wastewater utilities. Existing sanitary sewer manholes on the University main campus are at depths that would accommodate gravity flow from the northern acquisition area without exposing pipe where it would cross Copeland Creek. As identified in Mitigation Measure H.2b, all proposed utilities crossing Copeland Creek shall either be supported by bridge structures or constructed using directional bore methods to avoid disturbance of Copeland Creek.

The proposed Center for the Musical Arts may not provide permanent wastewater facilities in sufficient number to accommodate wastewater demands during large festivals. However, the University would provide temporary portable sanitary facilities within the parameters recommended by the Sonoma County Department of Health Services. These facilities would be proportional in number to the expected attendance at any given event that is expected to draw attendance greater than the building design occupancy used for establishing the Center for the Musical Arts permanent restroom facilities.

Mitigation: None required.

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L. ENERGY

This section describes the amounts of energy that would be consumed due to construction and operation of facilities under the project. Energy-related impacts and mitigation measures are presented and discussed.

SOURCES OF ENERGY

Petroleum and natural gas supply most of the energy consumed in California. Petroleum provides approximately 50 percent of the State's energy need, and natural gas provides approximately 29 percent (California Energy Commission, 1994). The remaining 21 percent of the State's energy need is provided by a variety of energy resources, including coal, nuclear, geothermal, wind, solar, and hydropower. Transportation is the major end use of energy and accounts for approximately 50 percent of the total energy consumed in California.

EXISTING ENERGY USE

Energy consumption associated with the University includes electricity, natural gas, and gasoline/diesel fuel. Electricity and natural gas are consumed by such uses as lighting and space and water heating. Gasoline/diesel fuel is consumed for maintenance purposes and truck deliveries as well as for motor vehicle trips generated by students, faculty, and staff.

BUILDING ENERGY

Pacific Gas and Electric Company (PG&E) provides the University with 3-phase electric power at 12 kilovolts (Winzler & Kelly, 1995). Electricity is supplied by a PG&E distribution line located on East Cotati Avenue, which feeds into three pairs of underground cables (the service conductors). These service conductors have a capacity of 11,850 kilowatts and terminate in the main switchgear located in the Boiler Plant Building. From the switchgear, the power is distributed to the University by three 12-kilovolt feeders. One feeder services the boiler plant itself, and the other two serve the rest of the University. The two feeders that serve the rest of the University run through underground conduit banks. Approximately half of the University is served from each feeder. Each building can be supplied from either feeder by operation of switches located in the unit substation switchgear located at each building.

Peak electrical load demand in 1999 is approximately 4,000 kilowatts but is expected to increase to approximately 6,400 kilowatts with the operation of the Residence Halls addition (Sauvignon Village), the Jean and Charles Schulz Information Center, and the Environmental Technology Center, all currently under construction. Existing annual electricity consumption is estimated to be approximately 10 million kilowatt- hours (kWh), which is equivalent to approximately

106 billion British thermal units (Btu).[1] PG&E provides natural gas service to the University via a high-pressure gas line along East Cotati Avenue to the Boiler Plant Building (Winzler & Kelly, 1995). At the Boiler Plant Building, the pressure is reduced for distribution throughout the University. The University's natural gas distribution system consists of approximately 8,300 feet of buried wrapped and coated steel pipe.

Peak heat load demand in 1999 is approximately 20 million Btu per hour (equivalent to approximately 19,000 cubic feet of natural gas) but is expected to increase to approximately 30 million Btu per hour with operation of Sauvignon Village, the Jean and Charles Schulz Information Center, and the Environmental Technology Center. Existing annual natural gas consumption is estimated to be approximately 46 million cubic feet, which is equivalent to approximately 48 billion Btu. Combining both electricity and natural gas consumption, total building energy consumption is approximately 154 billion Btu on an annual basis.

TRANSPORTATION ENERGY

Gasoline/diesel fuel is consumed by off-road maintenance equipment, delivery trucks, and on-road motor vehicles associated with students, faculty, and staff. Annual gasoline/diesel consumption has been estimated at approximately 2 million gallons, which is equivalent to approximately 257 billion Btu.

REGULATORY BACKGROUND

STATE OF CALIFORNIA ENERGY PLAN

The California Energy Commission prepares a State Energy Plan, which identifies the emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The current plan is the 1997 California Energy Plan (California Energy Commission, 1997). State agencies are listed specifically as entities that should improve the efficiency of the buildings they construct and occupy as one of the strategies for improving energy conservation.

STATE OF CALIFORNIA BUILDING ENERGY STANDARDS

Building energy consumption is regulated under Title 24, *California Code of Regulations*, Part 6, which is referred to as the California Energy Code. Title 24 energy efficiency standards apply to new construction of both residential and non-residential buildings, and regulate energy consumed

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[1] The units of energy used in this report are British Thermal Units (Btu), kilowatt-hours (kWh), cubic feet, and gallons. A Btu is the quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit at sea level. Since the other units of energy can all be converted into equivalent Btu units, the Btu is used as the basis for comparing total energy consumption between different scenarios. A kWh is a unit of electrical energy, and one kWh is equivalent to approximately 10,200 Btu, taking into account initial conversion losses (i.e., from one type of energy, e.g., chemical, to another type of energy, e.g., mechanical) and transmission losses. Cubic feet is used to refer to natural gas, and one cubic foot of natural gas is equivalent to approximately 1,050 Btu. One gallon of gasoline/diesel is equivalent to approximately 140,000 Btu.

for heating, cooling, ventilation, water heating, and lighting. Compliance with Title 24 can be achieved through either a "performance" or a "prescriptive" approach. Under the performance compliance approach, a building must be designed to consume no more energy than specified in the appropriate energy "budget." The energy budget is based on building occupancy and the climatic zone in which the building is located. Under the prescriptive approach, a building design must include specific features that have been determined to achieve an acceptable level of energy efficiency (e.g., minimum insulation values for walls, floors, and ceilings, energy efficient heating, ventilation and air conditioning (HVAC) systems, lighting systems, and water heating systems).

CALIFORNIA STATE UNIVERSITY SYSTEM POLICIES AND STANDARDS

California State University (CSU) has established energy and utility system requirements that are to be incorporated into the design of new buildings at the various campuses of the CSU system. These are referred to as CSU Design Standards. From an energy efficiency standpoint, the intention of CSU Design Standards is to construct facilities that achieve a much higher level of efficiency than that set forth in Title 24, discussed above, while maintaining desired levels of function and comfort for facility occupants.

CSU Design Standards include various methods for reducing energy consumption by new buildings. Such methods include facility orientation to take advantage of solar angles and prevailing winds; shading of southerly and westerly building exposures; shading of hardscapes (e.g., parking lots); maximization of use of natural light; selection of glazing systems that minimize heat loss and reflected glare; discouragement of flat roofs; and use of high-albedo (i.e., highly reflective) roofing surfaces.

IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

CEQA defines a significant effect on the environment as a substantial, or potentially substantial, adverse change in the physical conditions within the area affected by the project. Generally, a project may be considered to have significant energy-related impacts if it would result in the wasteful use of non-renewable resources.

Impact L.1: Development under the project would increase energy consumption, most of which would be derived from non-renewable resources. This would be a less than-significant impact.

Development under the project would consume energy mostly from non-renewable materials due to construction, increased building space, and increased motor vehicle trips. As much as one million square feet of additional building space would be constructed under the project to accommodate a buildout student population of 10,000 full-time-equivalents (FTE).

Table IV.L-1 summarizes annual energy consumption estimates under two scenarios: existing (1999), and buildout under the Master Plan revision. As shown in Table IV.L-1, overall energy consumption associated with the University is expected to increase under buildout of the project by approximately 110 percent over existing conditions (1999).

TABLE IV.L-1
ANNUAL ENERGY CONSUMPTION ESTIMATES UNDER EXISTING CONDITIONS (1999) AND BUILDOUT UNDER MASTER PLAN REVISION

Energy Resource or Use	Units	Existing 1999	Buildout Master Plan Revision
ANNUAL CONSUMPTION IN TERMS OF ENERGY RESOURCE UNITS:			
Electricity	million kWh	10	29
Natural Gas	million cubic feet	46	119
Gasoline/Diesel	million gallons	2	3
Construction /a/	billion Btu	0	58
ANNUAL CONSUMPTION IN TERMS OF EQUIVALENT BTU:			
Electricity	billion Btu	106	292
Natural Gas	billion Btu	48	125
Gasoline/Diesel	billion Btu	257	386
Construction[a]	billion Btu	0	58
Total	billion Btu	411	861
Increase relative to Existing (percent):		NA	110%

[a] Construction estimates have been "annualized" by dividing total construction energy estimates by an assumed 30-year lifetime.

NA = Not Applicable.

Source: Environmental Science Associates, 1999.

Based on the estimates shown in Table IV.L-1, energy consumption for building construction purposes would account for approximately seven percent of overall annual energy consumption under buildout of the project. The construction energy estimates shown in Table IV.L-1 take into account both the direct and indirect expenditures of energy. Direct energy is directly consumed by an activity. For example, combustion of the refined petroleum products needed to operate construction equipment would be a direct energy expenditure. Indirect energy is consumed through sectors that provide inputs to an activity, rather than energy consumed by the activity itself. For example, the use of a steal beam in construction indirectly represents energy consumed in all of the industries that contributed to the production of the beam (e.g., energy consumed through mining and extraction of raw materials, manufacturing, and transportation). Indirect energy typically represents approximately three-quarters of total construction energy, while direct energy represents approximately one-quarter of total energy construction (Hannon, 1978). A standard construction practice, described below as a mitigation measure, would avoid wasteful energy consumption due to construction activities.

Based on the estimates shown in Table IV.L-1, building energy consumption (i.e., electricity and natural gas) would account for approximately 50 percent of overall annual energy consumption under buildout of the project. Such energy consumption would not be wasteful assuming that CSU Design Standards are implemented in the development of new buildings at the University. As discussed previously, CSU Design Standards are intended to achieve a level of energy efficiency that surpasses the requirements in Title 24 (i.e., California Energy Code). As such, new buildings developed as part of the Master Plan Revision would further the strategy included in the State Energy Plan that calls for state agencies to take the lead in improving building energy efficiency.

Based on the estimates shown in Table IV.L-1, energy consumption for transportation (i.e., gasoline/diesel fuel) would account for approximately 45 percent of overall annual energy consumption under buildout of the Master Plan Revision. The project itself would avoid wasteful consumption of energy for transportation-related uses (i.e., gasoline/diesel fuel) by providing more on-campus student housing and by revising the pedestrian and bicycle circulation component of the Master Plan to better facilitate pedestrian and bicycle modes and to integrate proposed facilities north of Copeland Creek with existing Campus facilities south of the creek.

Mitigation: No mitigation is required for the less-than-significant energy consumption effects discussed above. However, the implementation of Mitigation Measure E.2b in Section IV.E, Air Quality would reduce the expected increase in energy consumption of non-renewable resources under the project, ensuring the project's impact on energy would be less than significant.:

Impact L.2: Development under the project would increase peak demands on the electricity and natural gas infrastructure. This would be a significant effect of the project.

Development under the project would increase peak demands on the electricity and natural gas infrastructure. A study of the utility systems serving the University concluded that planned growth exceeded the capacity of the campus distribution lines but was well within the capacity of the service connection with PG&E (Winzler & Kelly, 1995). However, the "planned growth" evaluated in that study did not include several major buildings proposed as part of the project, including the University Center, the Center for the Musical Arts, and future housing. When these additional facilities are included, peak electrical demand at the University could reach as high as 14,000 kilowatts at buildout under the project, which would exceed the capacity of the service conductors (11,850 kilowatts) connecting the PG&E distribution line to the University. This would be a significant effect of the project. With respect to natural gas, no major infrastructure improvements would be necessary but boiler capacity may need to be increased to meet future peak heat load requirements.

Mitigation Measure L.2: The University shall coordinate with PG&E for all required infrastructure improvements.

Significance After Mitigation: Less than Significant.

REFERENCES – Energy

California Energy Commission, *Energy and the Economy*, 1994.

California Energy Commission, *The California Energy Plan*, 1997.

Hannon, B., et al, "Energy and Labor in the Construction Sector," *Science*, Volume 202, 1978.

Winzler & Kelly, *Utility System Master Plan, California State University, Sonoma*, January 1995.

M. CULTURAL RESOURCES

METHODOLOGY

The preparation of this analysis was based on available cultural resource studies conducted on the project site and immediate vicinity; which included archival research at the Northwest Information Center and the Anthropological Studies Center at Sonoma State University, and site surveys.

SETTING

REGIONAL SETTING

Archaeological evidence indicates that human occupation of California probably began at least 10,000 years ago. Early occupants appear to have had an economy based largely on hunting, with limited exchange, and social structures based on extended family units. Later, milling technology and an inferred acorn economy were introduced. This diversification of economy appears contemporaneous with the development of sedentism, population growth and expansion. Sociopolitical complexity and status distinctions based on wealth are also observable in the archaeological record, as evidenced by an increased range and distribution of trade goods (e.g. shell beads, obsidian tool stone), which are possible indicators of both status and increasingly complex exchange systems.

The occupants within the study area at the time of Euro-American contact were within the territory of the Coast Miwok speakers, near their boundary with the Southern Pomo. At the time of historic contact, it is estimated that the Coast Miwok population consisted of about 2,000 people living in 57 villages. Coast Miwok settlements focused on bays and estuaries, or along perennial interior watercourses. The Coast Miwok economy was based on fishing, hunting and gathering. Their culture was significantly disrupted as a result of missionization and Euro-American settlement of the general area.

The nearest known Miwok village was located west of the project area, named Kotati. Native American archaeological sites in this portion of Sonoma County tend to be situated on alluvial flats between the historic marsh margins, that at one time filled much of the Santa Rosa Valley, and the surrounding mountains. Sites have also been observed in the foothills of the surrounding mountains.

LOCAL AND HISTORICAL SETTING

The project site is located within the Cotate Rancho, a grant of four leagues on the eastern edge of the Santa Rosa Plain, in the area between what is now Petaluma and Santa Rosa. Cotate Rancho was granted to Juan Castenada in 1844, and patented to Thomas Page in 1858. Rancho Cotate remained the last of the ranchos in Sonoma County to be fully subdivided and sold. Though much of the region was developed during the early 20th century, the project vicinity remained undeveloped and was used primarily for agricultural and cattle grazing until the early 1960's, when the construction of the University campus (then a college campus) and surrounding housing and commerce rapidly altered the area.

KNOWN RESOURCES ON THE PROJECT SITE

Within the project site, there are four recorded sites [Sites CA-SON-1061, CA-SON-1574, P-49-1863, and P-49-2382 (formerly CA-SON-1923)] where investigation occurred for Native American cultural resources; and one recorded site (Site P-49-00-2600) where investigation occurred for historical resources.

The four recorded sites where investigation occurred for Native American cultural resources are located within the main campus. Of these sites, Site P-49-2382 (recorded 1998), consisting of a lithic scatter, was determined to be the result of fill soils that were imported during the original construction of the campus. Site CA-SON-1574 (recorded 1987) was determined to consist of redeposited materials resulting from the Anthropological Studies Center's (ASE) processing of archaeological collections. The records report for Site P-49-1863 (recorded 1996) indicates the materials encountered at this site, consisting of shell and lithics, may be the also result of redeposited cultural materials from the ASE, however, this was never confirmed. The records report for Site CA-SON-1061 (recorded 1977) indicates the materials found at this site, consisting of lithics, may have come from imported earth fill. None of these sites were judged to be eligible for listing on the California Register of Historical Resources pursuant to the California Register's criteria for significant resources.[1] None of these recorded sites are located on the site of any proposed building development under the Master Plan revision. Historical maps indicate that a barn was also once located within the main campus as early as 1877.

In March 1999, a cultural resources study was conducted for the mostly undeveloped portion of the project site located north of Copeland Creek. A farmhouse estimated to be built in the 1920's (the Henderson House, named after the most recent owner), and a number of structures of recent construction located on the site were recorded (P-49-00-2600), but judged not to be eligible for listing on the California Register of Historical Resources, and have since been demolished. Historical maps indicate that three other buildings were once located in the portion of the project site north of Copeland Creek. However, a surface survey and review of previous archaeological and/or cultural resource studies conducted in this portion of the site identified no other archaeological and/or cultural resources.

IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

In accordance with Appendix G of the *CEQA Guidelines*, a significant effect will normally occur if a project would: cause a substantial adverse change in the significance of an archaeological resource pursuant to *CEQA Guidelines* Section 15064.5; directly or indirectly destroy a unique

[1] The California Register's criteria for historical significance is presented under Significance Criteria, below.

paleontological resource or site or unique geologic feature; or disturb any human remains, including those interred outside formal cemeteries.

Section 15064.5 of the *CEQA Guidelines* defines a resource as historically significant if it meets the criteria for listing on the California Register of Historical Resources. A resource is considered eligible for inclusion on the California Register if it "is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage; is associated with the lives of persons important in 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; or has yielded, or may be likely to yield, information important in prehistory or history.

Impact M.1: Project construction could affect previously undiscovered historic or archaeological resources. This would be a significant impact.

The northern acquisition area historically contained at least four buildings, and the main campus historically contained a barn; buried artifacts associated with these historic resources may still exist. In addition, other potential undiscovered historic resources located elsewhere within the project site and could be encountered during project construction. Historic materials might include stone or adobe footings or walls; building or other remains with square nails, filled privies or wells; or deposits of metal, glass, and/or ceramic refuse.

None of the proposed construction is located on the site of any recorded Native American cultural resources. However, project construction could result in impacts to other possible buried archaeological deposits contained on the project site. Prehistoric archaeological sites within the region tend to be located along intermittent and perennial water courses. The project site contains Copeland Creek, which would be considered a depositional environment that would lead to the burying of archaeological sites. Prehistoric materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scraping implements) or tool-making debris; culturally darkened soil (midden) containing heat-altered rock or shellfish remains; or stone milling equipment (e.g., mortars, pestles, handstones, and milling stones).

Mitigation Measure M.1a: ***For any project construction on the project site either 1) within 300 feet of Copeland Creek, or 2) on the site of the four buildings in the northern acquisition area or the building on the main campus indicated in historical maps:*** **A qualified archaeologist will be on-site during earthwork activities (i.e., grading, excavating and trenching). In the event that any undiscovered historic or prehistoric materials are encountered during monitoring, the archaeologist will be authorized to direct construction to other areas, away from the find, until an assessment of the situation is made. If it is determined to be significant by the qualified archaeologist, then representatives of the University and the qualified archaeologist shall meet to determine the appropriate course of action.**

Mitigation Measure M.1b: ***For any project construction outside of the area identified in Mitigation Measure M.1a:*** **During construction, should any undiscovered evidence of historic or prehistoric materials be encountered, construction in the vicinity of the find be**

halted, and the University shall consult a qualified archaeologist to assess the significance of the find. If it is determined to be significant by the qualified archaeologist, then representatives of the University and the qualified archaeologist shall meet to determine the appropriate course of action.

Mitigation Measure M.1c: *For any project construction on project site:* **If human remains are encountered during project construction, the Sonoma County Coroner will be notified immediately. The coroner will determine if the remains are those of a Native American, and if they are, will notify the Native American Heritage Commission. The Native American Heritage Commission will make a determination regarding the individual's "most likely descendant" who will then make recommendations for the disposal of the remains.**

Significance After Mitigation: Less than significant.

Cumulative Impacts

The project would have no cumulative effects on cultural resources.

REFERENCES – Cultural Resources

Anthropological Studies Center, Sonoma State University Academic Foundation, Inc., *An Archaelogical Study for the Student Housing II-A Project, Sonoma State University Campus, Rohnert Park, California*, March 1999.

Anthropological Studies Center, Sonoma State University Academic Foundation, Inc., *A Cultural Resources Study for the Sonoma State University Campus Addition, Rohnert Park, Calfornia*, March 1999.

Northwest Information Center, *Cultural Resources Records Search for Central Campus*, August 5, 1999.

CHAPTER V

ALTERNATIVES

A. INTRODUCTION

CEQA requires an evaluation of the comparative effects of a range of reasonable alternatives to the project that would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project (*CEQA Guidelines* Section 15126.6(a)). The range of alternatives is governed by the "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice (Section 15126.6(f)). Evaluation of a No Project Alternative, and identification of an environmentally superior alternative are required. The significant effects of the alternatives shall be discussed, but in less detail than the significant effects of the proposed project (Section 15126.6(d)).

This chapter discusses the following alternatives to the proposed project: 1) a No Project Alternative, 2) a No Development in Northwest Acquisition Area Alternative, and 3) a No Development in Northwest Acquisition Area, and Increase Housing Density on Main Campus Alternative. The components of these alternatives are described below, including a discussion of their impacts and how they would differ from those under the proposed project. Impact levels discussed are those that would occur prior to implementation of any mitigation measures.

The *CEQA Guidelines* require that an EIR briefly describe the rationale for selecting the alternatives to be discussed (Section 15126.6(a)), and suggest that an EIR also identify any alternatives that were considered by the lead agency but were rejected as infeasible (Section 15126.6(c)). This chapter of the EIR also addresses these issues.

Of the three alternatives assessed in this EIR, the alternative with the least environmental impact is the No Project Alternative.

B. FACTORS IN SELECTION OF ALTERNATIVES

The alternatives addressed in this EIR were selected in consideration of one or more of the following factors:

- the extent to which the alternative would accomplish most of the basic objectives of the project (see "Project Sponsor's Objectives" in Chapter III);
- the extent to which the alternative would avoid or lessen any of the identified significant adverse environmental effects of the project;

- the feasibility of the alternative, taking into account site suitability, economic viability, availability of infrastructure, consistency with regulatory limitations, and the reasonability of the project sponsor's acquiring or controlling the site;
- the appropriateness of the alternative in contributing to a "reasonable range" of alternatives necessary to permit a reasoned choice; and
- the requirement of *CEQA Guidelines* to consider a "no project" alternative as well as an "environmentally superior" alternative (*CEQA Guidelines*, Section 15126.6).

In consideration of the above factors, three alternatives were selected to be addressed in this EIR. Each of these alternatives is described below.

C. DESCRIPTIONS OF ALTERNATIVES AND BASES FOR THEIR SELECTION

ALTERNATIVE 1: NO PROJECT ALTERNATIVE

CEQA requires an evaluation of a "no project" alternative in order to provide a comparison of the impacts of approving the proposed project with the impacts of not approving the proposed project (*CEQA Guidelines* Section 15126.6(e)(1). When the project is the revision of an existing land use plan or regulatory plan, policy or on-going operation, the no project alternative will be the continuation of the existing plan, policy or operation into the future (*CEQA Guidelines* Section 15126.6(e)(3)(A)).

Under the No Project Alternative, the Master Plan revision would not occur, but rather the project site would be developed under the existing approved Master Plan. As under the project, the total ultimate student capacity of the University would be 10,000 full-time equivalents. The University would only develop those areas of their existing campus property identified for development under the existing approved Master Plan (see approved Master Plan in Figure III-1 in Project Description). Proposed development under the No Project Alternative includes the remodeling of the Ruben Salazar Building, the physical education expansion, the instructional expansion, the Art Building addition, a bookstore, additional administrative offices, the stadium bleacher addition, and the construction of the north entrance road and vehicular bridge over Copeland Creek. Although the total size of instructional expansion would be the same under the No Project Alternative as under the proposed project, the individual building locations and footprints would be different.

Facilities that would not be developed under the No Project Alternative that were anticipated by the Master Plan revision include the Center for the Musical Arts, the University Center, the residence halls addition (on main campus in location of existing parking lot D), additional University housing in the northwest acquisition parcel (if that property were to be acquired by the University), and the soccer stadium. The vehicular, bicycle and pedestrian improvements proposed throughout the campus under the project would not occur under this alternative, including the relocation of Cypress Drive, and the pedestrian-only crossings of Copeland Creek.

In addition, the No Project Alternative would not provide for the designation of the Copeland Creek Preservation and Buffer Zones, or preparation of the Copeland Creek Ecological Resource Protection Plan that are proposed under the project. In addition, no improvements to on-site drainage or extension of utilities would occur in northern acquisition area, other than to serve the northern access road.

The master planning for the University under the No Project Alternative would be a continuing process that would not end with the existing master plan. Under the No Project Alternative, as under the project, a review of potential modifications to the existing approved Master Plan would be required every three years to meet new conditions. Thus, the No Project Alternative would not preclude the potential for future minor and major revisions to the Master Plan (including the addition of individual project developments proposed under the project, or other developments); however, any such subsequent revisions would require their own environmental review.

BASES FOR SELECTION OF NO PROJECT ALTERNATIVE

The No Project Alternative is included in this EIR because *CEQA Guidelines*, Section 15126.6(e), requires that an EIR evaluate a "no project" alternative along with its impact in order to provide a comparison of the impacts of approving the proposed project with the impacts of not approving the proposed project.

ALTERNATIVE 2: NO DEVELOPMENT IN NORTHWEST ACQUISITION AREA ALTERNATIVE

Under this alternative, the University would not acquire the northwest acquisition area, and would not develop housing or any other University use within the northwest acquisition area. As under the proposed project, the total ultimate planned student capacity of the University would be 10,000 full-time equivalents.

All other proposed University facilities elsewhere on the project site would be developed as proposed under the Master Plan revision, including the Center for the Musical Arts, instructional expansion, University Center, physical education addition, the Art Building addition, the remodel of the Ruben Salazar Building, the residence halls addition (on main campus in location of existing parking lot D), the soccer stadium, and the bleacher addition. In addition, the majority of vehicular, bicycle, and pedestrian improvements proposed throughout the campus under the project would still occur under this alternative, including the north access road, relocation of Cypress Drive, and three of the four pedestrian crossings of Copeland Creek. However the pedestrian crossing proposed between the main campus and the northwest acquisition area, and the pedestrian/bicycle path proposed within the northwest acquisition area, would not be built under this alternative. As under the proposed project, the Creek Preservation and Buffer Zones would be created, and the Copeland Creek Ecological Resource Protection Plan would be prepared, except for the portion of the creek within the northwest acquisition area. In addition, no improvements to on-site drainage or extension of utilities would occur in northwest acquisition area.

BASES FOR SELECTION OF NO DEVELOPMENT IN NORTHWEST ACQUISITION AREA ALTERNATIVE

The basis for selection of this alternative is to provide an alternative that would utilize only the property currently in University ownership and that would minimize potential environmental impacts related to development within the northwest acquisition area.

ALTERNATIVE 3: NO DEVELOPMENT IN NORTHWEST ACQUISITION AREA, AND INCREASE HOUSING DENSITY ON MAIN CAMPUS ALTERNATIVE

As with Alternative 2, this alternative assumes the University would not acquire the northwest acquisition area, and would not develop housing or other University use within the northwest acquisition area. Unlike Alternative 2, however, this alternative assumes the University would, to the extent possible, accommodate the University housing population that otherwise would have occurred in the northwest acquisition under the proposed project, on the main campus instead. As under the proposed project, the total ultimate planned student capacity of the University would be 10,000 full-time equivalents.

It is assumed that to accommodate to the extent feasible the University housing population that would have occurred in the northwest acquisition area, the proposed residence halls addition on the main campus (see Site No. 38 in Figure III-4 in the Project Description) would be reconfigured and expanded. This building, which would have consisted of a three-story structure housing 400 students under the proposed project, would consist of a seven-story building accommodating a total of 900 students and/or faculty (an increase at this site of 500 over the proposed project) under this alternative. Thus, this alternative would accommodate almost all of the students and/or faculty anticipated in the northwest acquisition area under the low-density scenario, or roughly one-third of the students and/or faculty anticipated in the northwest acquisition under the high-density scenario (see Table III-6 in Project Description). In order to accommodate this increase in on-site residential population on the main campus, it is assumed that Parking Lot J, which would have consisted of a surface parking lot under the proposed project containing approximately 480 parking stalls, would be expanded to consist of a two-story parking structure containing at least 780 parking stalls under this alternative.

All other proposed University facilities elsewhere on the project site would be developed as proposed under the Master Plan revision, including the Center for the Musical Arts, instructional expansion, University Center, physical education addition, the Art Building addition, the remodel of the Ruben Salazar Building, the soccer stadium, and the bleacher addition. In addition, the majority of vehicular, bicycle, and pedestrian improvements proposed throughout the campus under the project would still occur under this alternative, including the northern access road, the relocation of Cypress Drive, and three of the four pedestrian crossings of Copeland Creek. However, as under Alternative 2, the pedestrian crossing proposed between the main campus and the northwest acquisition area, and the pedestrian/bicycle path proposed within the northwest acquisition area, would not be built under this alternative. As under Alternative 2, the Creek Preservation and Buffer Zones would be created, and the Copeland Creek Ecological Resource Protection Plan would be prepared, except for the portion of the creek within the northwest acquisition area. In addition, as with Alternative 2, no improvements to on-site drainage or extension of utilities would occur in the northwest acquisition area.

BASES FOR SELECTION OF NO DEVELOPMENT IN NORTHWEST ACQUISITION AREA, AND INCREASE HOUSING DENSITY ON MAIN CAMPUS ALTERNATIVE

The basis for selection of this alternative is to provide an alternative that would utilize only property currently in University ownership and that would minimize potential environmental impacts related to development within the northwest acquisition area, while balancing the campus housing to student ratio at the University to the extent feasible.

D. ALTERNATIVES CONSIDERED BUT REJECTED AS INFEASIBLE

Other alternatives were considered for inclusion in this EIR, but were rejected because none would meet most of the sponsor's basic objectives and/or avoid or substantially lessen the potential impacts of the proposed project while not also creating new potentially significant effects.

ALTERNATIVE ON-CAMPUS LOCATIONS FOR THE CENTER FOR THE MUSICAL ARTS

As part of planning for the proposed Center for the Musical Arts, a number of alternative sites within the main campus were assessed for potential development of the Center for the Musical Arts, but rejected as described below:

- Botanical Garden Site. This site is located on the main campus, east of the commencement lakes and north of the Physical Education complex. The site includes the University's native botanical garden and Parking Lot G. The approximately four-acre botanical garden, originally developed by the University in the early 1970's, provides up to up 15 plant communities and an interpretive trail. This site was rejected because of size constraints of the site and loss of biological resources that would occur on the site as a result of development.

- Commencement Lawn Site. This site is located on the main campus, between the commencement lakes and north of the Student Union and Art Building. The site is currently landscaped. This site was rejected because of the size constraints of the site, and potential impacts to biological resources associated with the adjacent lakes that would result from development.

- Softball Field Site. This site is located on the main campus, south of the Physical Education complex and east of Ives Hall. The site currently consists of athletic fields, including the softball field. This site was rejected because the development of a music center on this site would not provide enough space for the instructional expansion proposed in this area under the Master Plan revision. In addition, the available land for proposed parking that would be required to serve the facility could not be located within a reasonable walking distance to the proposed development. Also, given the proximity of this site to existing and proposed instructional buildings and athletic fields, development of a music center with outdoor facilities would have the potential to result in noise impacts to these facilities.

ALTERNATIVE OFF-SITE LOCATIONS

OFF-SITE PROPERTIES ADJACENT TO THE PROJECT SITE

The following potential adjacent off-site alternative sites for potential development of the University housing, Center for the Musical Arts, and/or other proposed facilities, were considered but rejected, as described below:

- East of the Project Site. Across Petaluma Hill Road to the east of the project site is agricultural land, containing some single-family ranchettes and produce stands. As discussed in Section IV.H, Biological Resources, the Sonoma County Water Agency (SCWA), as part of their Fisheries Enhancement Program, recently began construction of the Copeland Creek Restoration Project on this site (between Petaluma Hill Road and Roberts/Pressley Road) to improve habitat improvements for fish, amphibians and reptile species.

  Potential development of University facilities proposed under the University Master Plan revision (including the University housing, Center for the Musical Arts, and/or other proposed facilities) on this property could result in new significant hydrological and biological impacts to this alternative site and could affect the feasibility of the SCWA's restoration project on this site. Moreover, portions of this property are designated a scenic landscape unit area of Sonoma County (considered of special visual importance to the County); therefore, development of this alternative could be more visually incompatible than the proposed project. Other potential significant impacts related to transportation, air quality, and public utilities that would occur under the project would similarly occur under this alternative.

- North of the Project Site. Across Rohnert Park Expressway to the north of the project site is agricultural land. Although this property is adjacent to the project site, it is not adjacent to the main campus, and therefore would not meet many of the project sponsor's objectives, including reinforcing the campus identity, using the existing campus resources to the full extent, and improving pedestrian and bicycle circulation. Potential development of facilities proposed under the University Master Plan revision on this property could result in new significant hydrological and biological impacts to this alternative site. Other potential significant impacts related to transportation, air quality, and public utilities that would similarly occur under this alternative.

- West and South of the Project Site. Lands adjacent to the project site to the west, and across East Cotati Avenue to the south, are already developed with existing residential, commercial, and institutional uses, and therefore are not considered feasible for development of the proposed project facilities.

OTHER POTENTIAL OFF-SITE PROPERTIES

The following potential off-site alternative sites for potential development of the University housing, Center for the Musical Arts, and/or other proposed facilities, were considered but rejected, as described below:

The only off-site properties currently owned by the University are the Fairfield Osborne Preserve (recently granted to the University by the Nature Conservatory), located approximately five miles east of the project site; and the Los Guillicos Ecological Preserve (owned by the University since 1964), located approximately 15 miles northeast of the project site (off State Route 12). Development of these alternative sites would not meet the project sponsor's objectives for the Master Plan revision related to expanding the existing campus nor maintaining those off-site properties as preserves. Furthermore, given the remote location, environmental sensitivity, and potential legal restrictions associated for developing these properties, this alternative is not considered feasible for development of the proposed facilities.

Development of the project at other potential unidentified off-site locations would also fail to meet many of the project sponsor's objectives for the Master Plan revision. Given the failure to meet project objectives, uncertainty of environmental conditions, and the speculative nature of potential impacts associated with development of the project at an unidentified off-site location, these locations were not considered in detail.

E. DISTINCTIVE ENVIRONMENTAL CHARACTERISTICS OF ALTERNATIVES

This section consists of descriptions of the possible environmental impacts of each alternative. As required by *CEQA Guidelines*, Section 15126.6(e)(2), the alternatives include an environmentally superior alternative (the No Project Alternative).

Based on the Initial Study (see Appendix C), a number of potential environmental effects of the project were found to be less than significant. Under the alternatives described in this section, these effects would also be less than significant assuming mitigation measures similar to those identified in the Initial Study were implemented.

ALTERNATIVE 1: NO PROJECT ALTERNATIVE

LAND USE AND PLANNING

The northern acquisition area would not be developed under this alternative; therefore, it would largely avoid the impact (albeit less than significant) from conversion of approximately 89.3 acres of agricultural land to a non-agricultural use that would occur under the project. Since the additional University student and/or faculty housing proposed under the project would not be developed under this alternative, no increase in the on-site residential population would occur, and the corresponding increase in the demand for additional off-site student and/or faculty housing would be created in the local community and elsewhere within Sonoma County. As under the proposed project, the total ultimate planned student capacity of the University would be 10,000 full-time equivalents. As under the proposed project, the impacts to adjacent land uses under this alternative would still be less than significant.

GEOLOGY, SOILS AND SEISMICITY

Although the existing approved Master Plan would maintain a maximum student population of 10,000 FTE similar to the project, it would involve a smaller on-site residential population. Therefore, the potential on-site residential population on the project site that could be affected by seismic groundshaking would be less than the project. The No Project Alternative would also involve less overall new on-site construction than the proposed project; therefore, the potential impacts from geologic and seismic hazards on new construction would be less than the project. As under the project, all potential seismic and geologic hazards under this alternative would be mitigated to a less than significant level.

HYDROLOGY AND WATER QUALITY

Since this alternative would not result in a change in drainage patterns from the northern acquisition area, it would result in a smaller increase in stormflows to Copeland Creek during a 100-year event compared to the proposed project. However, since the No Project alternative would continue to contribute stormwater flows from the northern acquisition area to Hinebaugh Creek, which is not within the Sonoma County Water Agency's designated watershed for this area, it would continue to negatively impact the theoretical capacity of that drainage, as under existing conditions. This alternative would not introduce new development, including housing, within a designated 100-year flood zone, and therefore, would avoid this significant (although mitigable) impact that would occur under the project.

Potentially significant impacts to University's on-site drainage system on the main campus under the No Project alternative would be similar to that which would occur under the proposed project, and could be mitigated to a less than significant level. Since less overall new development would occur under the No Project Alternative than under the proposed project, construction and operation of this alternative would result in smaller increases in nonpoint source pollution and an associated smaller potential for degradation of water quality; as under the proposed project, potentially significant impacts to water quality could be mitigated to a less than significant level.

TRANSPORTATION, CIRCULATION AND PARKING

Since the No Project Alternative does not propose any additional on-campus housing, this alternative would generate more off-site weekday traffic volumes, particularly during a.m. and p.m. peak hours, during which the majority of those students not housed on-site would be making the "home to school" and "school to home" trips. University vehicle distribution patterns under the No Project Alternative would be different from the project, as parking facilities proposed in the area north of Copeland Creek under the project would instead be built on the main campus. Therefore, the significant impacts to weekday peak-hour levels of service at the study intersections (particularly along East Cotati Avenue) would be greater than that which would occur under the proposed project. However, since the Center for the Musical Arts would not be developed under this alternative, the temporary, but significant traffic impacts, and the significant but mitigable parking impacts associated with large special events at the Center would not occur. The No Project Alternative would also involve less overall new on-site construction than the proposed project; therefore, the potential construction traffic impacts would be less than the project, and remain less than significant.

Since the proposed bicycle and pedestrian network under the No Project Alternative would not be as refined as under the project, it could pose the potential for more safety pedestrian/bicycle conflicts with vehicles than the proposed project. Adequate on-site parking would occur under the No Project Alternative, therefore, impacts to on-site parking supply would continue to be less than significant. As under the project, the safety concerns related to off-site parked vehicles along Petaluma Hill Road and East Cotati Avenue would occur.

AIR QUALITY

The No Project Alternative would involve less overall new on-site construction than the proposed project; therefore, the significant, albeit temporary and localized, impacts from construction activities would be less than the project, and (as with the project) could be mitigated to a less than significant level.

Over the long-term, and on a day-to-day basis during the school year, motor vehicle emissions associated with the University would be higher under this alternative than under the project because, although the same enrollment and employment levels would occur, the No Project alternative would not provide any additional on-campus student housing. The higher number of students living off-campus under this alternative would lead to increased vehicle trips and related emissions. Due to the greater number of vehicle trips and vehicle-miles-traveled, the increase in PM-10 emissions under this alternative would likely be significant on a day-to-day basis during the school year, whereas the corresponding increase under the project would not be significant (see emissions scenario 2 in Table IV.E-2). However, the No Project alternative would avoid the significant increase in vehicular emissions during the summer when large summertime festivals would be held at the Center for the Musical Arts.

NOISE

The No Project Alternative would involve less overall new on-site construction than the proposed project; therefore, the significant, albeit temporary and localized, impacts from construction activities would be less than the project, and (as with the project) could be mitigated to a less than significant level with mitigation.

As with the proposed project, the No Project Alternative would affect the ambient noise environment through operating additional building mechanical devices (e.g., building heating, ventilation, and air conditioning systems) with new on-site development, and from additional motor vehicle traffic from increased enrollment and employment. The No Project Alternative would result in less new development than the proposed project, therefore, significant but mitigable noise impacts from new on-site mechanical equipment would be less than the proposed project. On a day-to-day basis during the school year, traffic volumes associated with the University would be higher under the No Project alternative than under the project; therefore, overall project traffic noise effects would be greater than the project (although the greater shift in University traffic to East Cotati Avenue could result in less noise impacts along Rohnert Park Expressway than experienced under the project). Since the No Project Alternative would not develop the soccer stadium and proposed Center for the Musical Arts, the project would avoid the significant project and/or cumulative noise impacts resulting from outdoor sound amplification systems associated those facilities.

Since the No Project Alternative would not develop housing in an area where noise levels currently exceed 60 DNL (on Rohnert Park Expressway), this alternative would avoid this potentially significant (but mitigable) impact.

VISUAL QUALITY

The No Project Alternative would involve less overall new construction and development than the proposed project, therefore, the impacts to alteration of the visual character of project site, change to scenic vistas, and increase in production of light and glare would be less than the project, and continue to be less than significant.

BIOLOGICAL RESOURCES

Since the No Project alternative would not result in development in the northern acquisition area (other than the northern access road), and result in only one vehicular/pedestrian crossing of Copeland Creek, it would avoid or result in less filling of on-site jurisdictional wetlands, and result in less potential alteration to Copeland Creek. Furthermore, the No Project Alternative would result in less potential loss of riparian forest and marsh habitat, as well as potential habitat for sensitive animal species, than the proposed project. However, the No Project Alternative would not provide for designation of Creek Preservation and Buffer Zones or preparation of the Copeland Creek Ecological Resource Protection Plan that are proposed under the project, and therefore would not receive the benefits from these programs.

HAZARDOUS MATERIALS

Since the No Project alternative would much less overall development in the northern acquisition area, it would result in less disturbance of petroleum impacted soils in this area, and accordingly would have less potential to inadvertently expose construction workers or the environment to residual hazardous waste or health and safety concerns. However, as under the project, all soils impacted by new construction would be removed, and on-site groundwater wells would be decommissioned pursuant to state health and safety regulations, and therefore mitigated to a less than significant level.

This alternative would involve less overall academic development on the campus than the project. Therefore, the quantities of hazardous chemicals used, stored and disposed by University facility operations under this alternative would be expected to be less than that which would occur under the project. Since the student population would be10,000 FTE, the potential population on the project site that could be exposed to hazards related to the inadvertent release, upset, or improper use of hazardous materials would be similar to the project. As under the project, all storage, handling and disposal of hazardous materials would continue to be managed by the University Department of Environmental Health and Safety and subject to applicable state regulations, mitigating this impact to a less than significant level.

PUBLIC SERVICES

This alternative would establish a maximum student population of 10,000 FTE similar to the project. However, the No Project Alternative would accommodate a smaller on-site residential population than the proposed project, and therefore would be expected to result in smaller demand for public services serving the project site, including fire and police protection services, solid waste collection and disposal, and demand for public open space and schools. As under the project, the demand for these public services would be less than significant.

It should be noted that since the off-site residential housing demand would be greater than the proposed project, the No Project Alternative would result in the potential for greater indirect demand for public services than the proposed project. However, since this impact would be dispersed throughout a number of communities, this impact would be expected to be less than significant.

UTILITIES AND SERVICE SYSTEMS

Subtracting utility demands of facilities that would not be built under the No Project Alternative from the proposed project utility demand estimates presented in Section III.K, Utilities and Service Systems, the No Project alternative would generate an increase in on-site demand for approximately 56,000 gpd of potable water over existing conditions (roughly one-third that of the proposed project's worst-case scenario), and would exceed the University's existing water storage capacity by approximately 109,000 gallons (compared to 305,800 gallons needed under the proposed project's worst-case scenario). As with the proposed project, this water storage capacity deficiency could be mitigated through the provision for additional water storage facilities. Since the No Project alternative would generate an on-site potable water demand for roughly one-third that of the proposed project's worst-case scenario, the impact to increases in well water extraction rates over existing conditions would be less than the project, and continue to be less than significant. As under the proposed project, this alternative would create a demand for non-potable water for irrigation and fire hydrants, and require additional on-site non-potable water infrastructure, although these requirements would be less than the proposed project and would remain less than significant.

The No Project alternative would generate an increase of approximately 56,000 gpd of wastewater over existing conditions (roughly one-third that of the proposed project's worst-case scenario). Although this alternative would require less wastewater treatment capacity than the proposed project, it would still result in the potential for the University to exceed its future wastewater treatment allocation. Since this alternative would generate less on-site wastewater than the project, it would continue to have a less than significant effect on the University and City of Rohnert Park wastewater collection systems. This alternative would require on-site wastewater collection infrastructure, however, this requirement would be less than the proposed project and remain less than significant.

It should be noted that since the off-site residential housing demand would be greater than the proposed project, the No Project Alternative would result in the potential for greater indirect impacts to water and wastewater utilities than the proposed project. However, the extent of this impact would depend on the distribution of this segment of off-site population utilizing these or other utility systems.

ENERGY

As with the proposed project, construction of the No Project alternative would result in a less than significant increase in energy consumption from non-renewable resources. Operation of the No Project alternative would involve less overall on-site development than that proposed under the project, and thus, would result in smaller increases in peak demands on the electricity and natural gas infrastructure compared to the proposed project. The No Project alternative would avoid exceeding the capacity of the service conductors connecting to the PG&E distribution line to the University, and thus would avoid this significant (although mitigable) impact.

It should be noted that since the off-site residential housing demand would be greater than the proposed project, the No Project Alternative would result in the potential for greater indirect demand for energy services than the proposed project. However, since this impact would be dispersed throughout a number of communities, this impact would be expected to be less than significant.

CULTURAL RESOURCES

Since the No Project alternative would involve less grading and new construction compared to the proposed project, the potential disturbance of unknown buried archaeological or historic resources at the project site would be less likely to occur than under the proposed project, and all potential impacts could similarly be mitigated to a less than significant level.

ALTERNATIVE 2: NO DEVELOPMENT IN NORTHWEST ACQUISITION AREA ALTERNATIVE

LAND USE AND PLANNING

The northwest acquisition area would not be developed under this alternative; therefore, it would avoid the impact (albeit less than significant) from conversion of approximately 35 acres agricultural land to a non-agricultural use that would occur under the project. Since the additional University student and/or faculty housing proposed in the northwest acquisition area under the project would not be developed under this alternative, there would be a smaller increase in the on-site residential population, and a corresponding larger increase in the demand for additional off-site student and/or faculty housing would be created in the local community and elsewhere within Sonoma County. As with the project, this alternative would establish a maximum student population of 10,000 FTE similar to the project. As under the proposed project, the impacts to adjacent land uses under this alternative would be less than significant.

GEOLOGY, SOILS AND SEISMICITY

Although this alternative would maintain a maximum student population of 10,000 FTE similar to the project, it would involve a smaller on-site residential population. Therefore, the potential on-site residential population on the project site that could be affected by seismic groundshaking would be less than the project. This alternative would also involve less overall new on-site construction than the proposed project; therefore, the potential impacts from geologic and seismic hazards on new construction would be less than the project. As under the project, all potential seismic and geologic hazards under this alternative would be mitigated to a less than significant level.

HYDROLOGY AND WATER QUALITY

Since the change in drainage patterns from the northern acquisition area under this alternative would not include the northwest portion, it would result in a smaller increase in stormflows to Copeland Creek during a 100-year event compared to the proposed project. As under the project, this alternative would change drainage patterns so stormwater discharge from the site for the Center for the Musical Arts would go Copeland Creek instead of Hinebaugh Creek, which would be beneficial. However, since the this alternative would continue to contribute stormwater flows from the northwest acquisition area to Hinebaugh Creek, which is not within the Sonoma County Water Agency's designated watershed for this area, it would continue to negatively impact the theoretical capacity of that drainage. This alternative would not introduce new development, including housing, within a designated 100-year flood zone, and therefore, would avoid this significant (although mitigable) impact that would occur under the project.

Potentially significant impacts to University's on-site drainage system on the main campus under this alternative would be similar to that which would occur under the proposed project, and could be mitigated to a less than significant level. Since less overall new development would occur this alternative than under the proposed project, construction and operation of this alternative would result in smaller increases in nonpoint source pollution and an associated smaller potential for degradation of water quality; as under the proposed project, potentially significant impacts to water quality could be mitigated to a less than significant level.

TRANSPORTATION, CIRCULATION AND PARKING

Since this alternative would accommodate a smaller on-site residential population than the project, it would generate more off-site weekday traffic volumes, particularly during a.m. and p.m. peak hours, during which the majority of those students not housed on-site would be making the "home to school" and "school to home" trips. Therefore, the significant impacts to weekday peak-hour levels of service at the study intersections would be greater than that which would occur under the proposed project. Since the Center for the Musical Arts would be developed under this alternative, the temporary, but significant traffic impacts, and the significant but mitigable parking impacts associated with large special events at the Center would be similar to the project. This alternative would involve less overall new on-site construction than the proposed project; therefore, the potential construction traffic impacts would be less than the project, and remain less than significant.

Since the proposed bicycle and pedestrian network under this alternative would similar to the proposed project (other than those bicycle/pedestrian improvements identified in the northwest acquisition area), the potential for pedestrian/bicycle conflicts with vehicles would be similar to the proposed project, and could be mitigated to a less than significant level. Adequate on-site parking would occur under the this alternative, therefore, impacts to on-site parking supply would continue to be less than significant. The potential exacerbation of existing safety concerns related to off-site parked vehicles along Petaluma Hill Road and East Cotati Avenue would occur, as under the project.

AIR QUALITY

This alternative would involve less overall new on-site construction than the proposed project; therefore, the significant, albeit temporary and localized, impacts from construction activities would be less than the project, and (as with the project) could be mitigated to a less than significant level.

Over the long-term, and on a day-to-day basis during the school year, motor vehicle emissions associated with the University would be higher under this alternative than under the project because, although the same enrollment and employment levels would occur, this alternative would provide less on-campus student housing. The higher number of students living off-campus under this alternative would lead to increased vehicle trips and related emissions. Due to the greater number of vehicle trips and vehicle-miles-traveled, the increase in PM-10 emissions under this alternative would likely be significant on a day-to-day basis during the school year whereas the corresponding increase under the Master Plan Revision would not be significant (see emissions scenario 2 in Table IV.E-2 in Section IV.E, Air Quality). Like the project, this alternative would result in significant increases in vehicular emissions during the summer when large summertime festivals would be held at the Center for the Musical Arts.

NOISE

This alternative would involve less overall new on-site construction than the proposed project; therefore, the significant, albeit temporary and localized, impacts from construction activities would be less than the project, and (as with the project) could be mitigated to a less than significant level with mitigation.

As with the proposed project, this alternative would affect the ambient noise environment through operating additional building mechanical devices (e.g., building heating, ventilation, and air conditioning systems) with new on-site development, and from additional motor vehicle traffic from increased enrollment and employment. Since the academic building development under this alternative project would be similar to the proposed project, the significant but mitigable noise impacts from new on-site mechanical equipment would be similar to the proposed project. On a day-to-day basis during the school year, traffic volumes associated with the University would be higher under the this alternative than under the project; therefore, overall project and cumulative traffic noise effects would be greater than the project. The significant project and/or cumulative noise impacts resulting from outdoor sound amplification systems associated the soccer stadium and proposed Center for the Musical Arts would be similar to the project.

Since this alternative would not develop housing in an area where noise levels currently exceed 60 DNL (on Rohnert Park Expressway), this alternative would avoid this potentially significant (but mitigable) impact.

VISUAL QUALITY

This alternative would involve less overall new construction and development than the proposed project, therefore, the impacts to alteration of the visual character of project site, change to scenic vistas, and increase in production of light and glare would be less than the project, and continue to be less than significant.

BIOLOGICAL RESOURCES

Since this alternative would not result in development in the northwest acquisition area, and would result in one less pedestrian crossing of Copeland Creek, it would avoid or result in less potential filling of on-site jurisdictional wetlands, and result in less potential alteration to Copeland Creek. Furthermore, this alternative would result in less potential loss of riparian forest and marsh habitat, as well as potential habitat for sensitive animal species, than the proposed project. This alternative would provide for designation of Creek Preservation and Buffer Zones or preparation of the Copeland Creek Ecological Resource Protection Plan that are proposed under the project, however, these programs would not include the area of the creek within the northwest acquisition area.

HAZARDOUS MATERIALS

This alternative would involve less overall development in the northern acquisition area than the proposed project, and therefore would potentially result in less disturbance of petroleum impacted soils in this area, and accordingly would have less potential to inadvertently expose construction workers or the environment to residual hazardous waste or health and safety concerns. However, as under the project, all soils impacted by new construction would be removed, and on-site groundwater wells would be decommissioned pursuant to state health and safety regulations, and therefore mitigated to a less than significant level.

Although less faculty and/or student housing is proposed than under the project, this alternative would result in the same level of academic and maintenance facilities on the campus as the project. Therefore, the quantities of hazardous chemicals used, stored and disposed by University facility operations under this alternative would be expected to be similar to that which would occur under the project. In addition, since the student population would be10,000 FTE similar to the project, the potential population on the project site that could be exposed to hazards related to the inadvertent release, upset, or improper use of hazardous materials on the campus would be similar to the project. As under the project, all storage, handling and disposal of hazardous materials would continue to be managed by the University Department of Environmental Health and Safety and subject to applicable state regulations, mitigating this impact to a less than significant level.

PUBLIC SERVICES

This alternative would establish a maximum student population of 10,000 FTE similar to the project. However, this alternative would accommodate a smaller on-site residential population than the proposed project, and therefore would be expected to result in smaller demand for public services serving the project site, including fire and police protection services, solid waste collection and disposal, and demand for public open space and schools. As under the project, the demand for these public services would be less than significant.

It should be noted that since the off-site residential housing demand would be greater than the proposed project, the No Project Alternative would result in the potential for greater indirect demand for public services than the proposed project. However, since this impact would be dispersed throughout a number of communities, this impact would be expected to be less than significant.

UTILITIES AND SERVICE SYSTEMS

This alternative would generate an increase in on-site demand for approximately 100,000 gpd of potable water over existing conditions (approximately 60 percent of the proposed project's worst-case scenario), and would exceed the University's existing water storage capacity by approximately 186,000 gallons (compared to 305,800 gallons needed under the proposed project's worst-case scenario). As with the proposed project, this water storage capacity deficiency could be mitigated through the provision for additional water storage facilities. Since this alternative would generate an on-site potable water demand for 60 percent of the proposed project's worst-case scenario, the impact to increases in well water extraction rates over existing conditions would be less than the project, and continue to be less than significant. As under the proposed project, this alternative would create a demand for non-potable water for irrigation and fire hydrants, and require additional on-site non-potable water infrastructure, although these requirements would be less than the proposed project and would remain less than significant.

This alternative would generate an increase of approximately 100,000 gpd of wastewater over existing conditions (roughly 60 percent of the proposed project's worst-case scenario). Although this alternative would require less wastewater treatment capacity than the proposed project, it would still result in the potential for the University to exceed its future wastewater treatment allocation. Since this alternative would generate less on-site wastewater than the project, it would continue to have a less than significant effect on the University and City of Rohnert Park wastewater collection systems. This alternative would require additional on-site wastewater collection infrastructure, however, this requirement would be less than the proposed project and remain less than significant.

It should be noted that since the off-site residential housing demand would be greater than the proposed project, it would result in the potential for greater indirect impacts to water and wastewater utilities than the proposed project. However, the extent of this impact would depend on the distribution of this segment of off-site population utilizing these or other utility systems.

ENERGY

As with the proposed project, construction of this alternative would result in a less than significant increase in energy consumption from non-renewable resources. Operation would result in smaller increases in peak demands on the electricity and natural gas infrastructure compared to the proposed project, and avoid exceeding the capacity of the service conductors connecting to the PG&E distribution line to the University, and thus would avoid this significant (although mitigable) effect.

It should be noted that since the off-site residential housing demand would be greater than the proposed project, the No Project Alternative would result in the potential for greater indirect demand for energy services than the proposed project. However, since this impact would be dispersed throughout a number of communities, this impact would be expected to be less than significant.

CULTURAL RESOURCES

Since this alternative would involve less grading and new construction compared to the proposed project, the potential disturbance of unknown buried archaeological or historic resources at the project site would be less likely to occur than under the proposed project, and all potential impacts could similarly be mitigated to a less than significant level.

ALTERNATIVE 3: NO DEVELOPMENT IN NORTHWEST ACQUISITION AREA, AND INCREASE HOUSING DENSITY ON MAIN CAMPUS ALTERNATIVE

LAND USE AND PLANNING

The northwest acquisition area would not be developed under this alternative; therefore, it would avoid the impact (albeit less than significant) from conversion of approximately 35 acres agricultural land to a non-agricultural use that would occur under the project. Since less students and/or faculty would be accommodated (compared to the medium and high-density scenarios of the project), there would be a smaller increase in the on-site residential population, and a corresponding larger increase in the demand for additional off-site student and/or faculty housing in the local community and elsewhere within Sonoma County. As with the project, this alternative would establish a maximum student population of 10,000 FTE similar to the project. The proposed seven-story residential building that would be developed under the project would be considered more incompatible with adjacent land uses, including off-site private residences (see visual quality below), than the three-story structure proposed under the project.

GEOLOGY, SOILS AND SEISMICITY

Although this alternative would maintain a maximum student population of 10,000 FTE as the proposed project does, it would involve a smaller on-site residential population (when compared to the medium- and high-density residential scenarios of the project). Therefore, the potential on-site residential population on the project site that could be affected by seismic groundshaking would be less than the project. This alternative would only involve incrementally less overall new on-site construction than the proposed project; therefore, the potential impacts from geologic and seismic hazards on new construction would be incrementally less than the project. As under the project, all potential seismic and geologic hazards under this alternative would be mitigated to a less than significant level.

HYDROLOGY AND WATER QUALITY

Since the change in drainage patterns from the northern acquisition area under this alternative would not include the northwest portion, it would result in a smaller increase in stormflows to Copeland Creek during a 100-year event compared to the proposed project. As under the project, this alternative would change drainage patterns so stormwater discharge from the site for the Center for the Musical Arts would go Copeland Creek instead of Hinebaugh Creek, which would be beneficial. However, since the this alternative would continue to contribute stormwater flows from the northwest acquisition area to Hinebaugh Creek, which is not within the Sonoma County Water Agency's designated watershed for this area, it would continue to negatively impact the theoretical capacity of that drainage. This alternative would not introduce new development, including housing, within a designated 100-year flood zone, and therefore, would avoid this significant (although mitigable) impact that would occur under the project.

Potentially significant impacts to University's on-site drainage system on the main campus under this alternative would be similar to that which would occur under the proposed project, and could be mitigated to a less than significant level. Since this development would involve overall less new impervious surfaces than under the proposed project, construction and operation of this alternative would result in smaller increases in nonpoint source pollution and an associated smaller potential for degradation of water quality; as under the proposed project, potentially significant impacts to water quality could be mitigated to a less than significant level.

TRANSPORTATION, CIRCULATION AND PARKING

Since this alternative would accommodate a smaller on-site residential population than the project (compared to the medium- and high-density scenarios of the project), it would generate more off-site weekday traffic volumes, particularly during a.m. and p.m. peak hours, during which the majority of those students not housed on-site would be making the "home to school" and "school to home" trips. Therefore, the significant impacts to weekday peak-hour levels of service at the study intersections would be greater than that which would occur under the proposed project. Since the Center for the Musical Arts would be developed under this alternative, the temporary, but significant traffic impacts, and the significant but mitigable parking impacts associated with large special events at the Center would be similar to the project. This alternative could involve incrementally less new on-site construction than the proposed project; therefore, the potential construction traffic impacts would be incrementally less than the project, and remain less than significant.

Since the proposed bicycle and pedestrian network under this alternative would similar to the proposed project (other than those bicycle/pedestrian improvements identified in the northwest acquisition area), the potential for pedestrian/bicycle conflicts with vehicles would be similar to the proposed project, and could be mitigated to a less than significant level. Adequate on-site parking would occur under the this alternative, therefore, impacts to on-site parking supply would continue to be less than significant. The potential exacerbation of existing safety concerns related to off-site parked vehicles along Petaluma Hill Road and East Cotati Avenue would occur, as under the project.

AIR QUALITY

This alternative would involve less overall new on-site construction than the proposed project; therefore, the significant, albeit temporary and localized, impacts from construction activities would be less than the project, and (as with the project) could be mitigated to a less than significant level.

Over the long-term, and on a day-to-day basis during the school year, motor vehicle emissions associated with the University would be higher under this alternative than under the project because, although the same enrollment and employment levels would occur, this alternative would provide less on-campus student housing (compared to the medium- and high-density scenarios of the project). The higher number of students living off-campus under this alternative would lead to increased vehicle trips and related emissions. Due to the greater number of vehicle trips and vehicle-miles-traveled, the increase in PM-10 emissions under this alternative would likely be significant on a day-to-day basis during the school year whereas the corresponding increase under the Master Plan Revision would not be significant (see emissions scenario 2 in Table IV.E-2). Like the project, this alternative would result in significant increases in vehicular emissions during the summer when large summertime festivals would be held at the Center for the Musical Arts

NOISE

This alternative would involve incrementally less overall new on-site construction than the proposed project; therefore, the significant, albeit temporary and localized, impacts from construction activities would be incrementally less than the project, and (as with the project) could be mitigated to a less than significant level with mitigation.

As with the proposed project, this alternative would affect the ambient noise environment through operating additional building mechanical devices (e.g., building heating, ventilation, and air conditioning systems) with new on-site development, and from additional motor vehicle traffic from increased enrollment and employment. Since the academic building development under this alternative project would be similar to the proposed project, the significant but mitigable noise impacts from new on-site mechanical equipment would be similar to the proposed project. On a day-to-day basis during the school year, traffic volumes associated with the University would be higher under this alternative than under the project (compared to the medium and high-density housing scenarios of the project); therefore, overall project and cumulative traffic noise effects would be greater than the project. The significant project and/or cumulative noise impacts resulting from outdoor sound amplification systems associated the soccer stadium and proposed Center for the Musical Arts would be similar to the project.

Since this alternative would not develop housing in an area where noise levels currently exceed 60 DNL (on Rohnert Park Expressway), this alternative would avoid this potentially significant (but mitigable) impact.

VISUAL QUALITY

This alternative would replace the three-story residential housing building with a seven-story residential housing building on Site No. 38 on the main campus. This building would be the sole academic building on the campus greater than three stories in height. Although the building would set back over 500 feet from the west campus boundary, due to its size and relationship to surrounding uses, it would be visually prominent from on and off-site vantage points. It would also have a greater potential to block short range and long range views (including scenic views) compared to the proposed project. Furthermore, this building would have the potential to be a more prominent source of light and glare than the building proposed under the project. The addition of two-story parking structure in Parking lot J along East Cotati Avenue would be considered more visually incompatible to adjacent land uses than the surface parking lot that would be developed under the proposed project.

Since no development would occur in the northwest acquisition area, it would result preserve existing views of this undeveloped portion of the site and the adjacent Copeland Creek corridor from Rohnert Park Expressway and residences adjacent to this area.

BIOLOGICAL RESOURCES

Since this alternative would not result in development in the northwest acquisition area, and would result in one less pedestrian crossing of Copeland Creek, it would avoid or result in less potential filling of on-site jurisdictional wetlands, and result in less potential alteration to Copeland Creek. Furthermore, this alternative would result in less potential loss of riparian forest and marsh habitat, as well as potential habitat for sensitive animal species, than the proposed project. This alternative would provide for designation of Creek Preservation and Buffer Zones or preparation of the Copeland Creek Ecological Resource Protection Plan that are proposed under the project, however, these programs would not include the area of the creek within the northwest acquisition area.

HAZARDOUS MATERIALS

This alternative would involve less overall development in the northern acquisition area than the proposed project, and therefore would potentially result in less disturbance of petroleum impacted soils in this area, and accordingly would have less potential to inadvertently expose construction workers or the environment to residual hazardous waste or health and safety concerns. However, as under the project, all soils impacted by new construction would be removed, and on-site groundwater wells would be decommissioned pursuant to state health and safety regulations, and therefore mitigated to a less than significant level.

Although less faculty and/or student housing is proposed than under the project (when compared to the medium- and high-density scenarios of the project), this alternative would result in the same level of academic and maintenance facilities on the campus as the project. Therefore, the quantities of hazardous chemicals used, stored and disposed by University facility operations under this alternative would be expected to be similar to that which would occur under the project. In addition, since the student population would be 10,000 FTE, the potential population on the project site that could be exposed to hazards related to the inadvertent release, upset, or improper use of hazardous materials on the campus would be similar to the project. As under the project, all storage, handling and disposal of hazardous materials would continue to be managed by the University Department of Environmental Health and Safety and subject to applicable state regulations, mitigating this impact to a less than significant level.

PUBLIC SERVICES

This alternative would establish a maximum student population of 10,000 FTE similar to the project. However, this alternative would accommodate a smaller on-site residential population (compared to the medium- and high-density scenarios of the project), and therefore would be expected to result in incrementally smaller demand for public services serving the project site, including fire and police protection services, solid waste collection and disposal, and demand for public open space and schools. As under the project, the demand for these public services would be less than significant.

It should be noted that since the off-site residential housing demand would be greater than the proposed project, the No Project Alternative would result in the potential for greater indirect demand for public services than the proposed project. However, since this impact would be dispersed throughout a number of communities, this impact would be expected to be less than significant.

UTILITIES AND SERVICE SYSTEMS

This alternative would generate an increase in on-site demand for approximately 142,000 gpd of potable water over existing conditions (approximately 85 percent of the proposed project's worst-case scenario), and the University would need to provide a total of approximately 660,000 gallons of water storage capacity. This estimated water storage capacity requirement would exceed the University's existing water storage capacity by approximately 260,000 gallons (compared to 305,800 gallons needed under the proposed project's worst-case scenario). As with the proposed project, this water storage capacity deficiency could be mitigated through the provision for additional water storage facilities. Since this alternative would generate an on-site potable water demand for 85 percent of the proposed project's worst-case scenario, the impact to increases in well water extraction rates over existing conditions would be less than the project, and continue to be less than significant. As under the proposed project, this alternative would create a demand for non-potable water for irrigation and fire hydrants, and require additional on-site non-potable water infrastructure, although these requirements would be less than the proposed project and would remain less than significant.

This alternative would generate an increase of approximately 142,000 gpd of wastewater over existing conditions (approximately 85 percent of the proposed project's worst-case scenario). Although this alternative would require less wastewater treatment capacity than the proposed project, it would still have the potential to exceed its future wastewater treatment allocation. Since this alternative would generate less on-site wastewater than the project, it would continue to have a less than significant effect on the University and City of Rohnert Park wastewater collection systems. In addition, this alternative would require additional on-site wastewater collection infrastructure, however, this requirement would be incrementally less than the proposed project and remain less than significant.

It should be noted that since the off-site residential housing demand would be greater than the proposed project, it would result in the potential for greater indirect impacts to water and wastewater utilities than the proposed project. However, the extent of this impact would depend on the distribution of this segment of off-site population utilizing these or other utility systems.

ENERGY

As with the proposed project, construction of this alternative would result in a less than-significant increase in energy consumption from non-renewable resources. Operation of this alternative would result in smaller increases in peak demands on the electricity and natural gas infrastructure compared to the proposed project. However, as under the project, this alternative would not avoid exceeding the capacity of the service conductors connecting to the PG&E distribution line to the University. Therefore, this impact would still be significant, however, as under the project, could be mitigated to a less than significant level.

It should be noted that since the off-site residential housing demand would be greater than the proposed project, the No Project Alternative would result in the potential for greater indirect demand for energy services than the proposed project. However, since this impact would be dispersed throughout a number of communities, this impact would be expected to be less than significant.

CULTURAL RESOURCES

Since this alternative would involve less grading and new construction compared to the proposed project, the potential disturbance of unknown buried archaeological or historic resources at the project site would be less likely to occur than under the proposed project, and all potential impacts could similarly be mitigated to a less than significant level.

TABLE V-1
COMPARISON OF IMPACTS AND IMPACT SIGNIFICANCE LEVELS OF THE PROPOSED PROJECT AND THE ALTERNATIVES[a]

Impact	Proposed Project	ALTERNATIVES: 1. No Project	ALTERNATIVES: 2. No Development in NW Acquisition Area	ALTERNATIVES: 3. No Development in NW Acquisition Area, Increase Housing Density on Main Campus
A. Land Use and Planning				
1. The project would result in the conversion of existing agricultural land to non-agricultural use.	LS	-LS	-LS	-LS
2. The project would increase the residential population on the project site and the local community.	LS	*	-LS	-LS
3. The project could be incompatible with existing or approved development in the project vicinity.	LS	-LS	-LS	+PS
B. Geology, Soils and Seismicity				
1. In the event of a major earthquake in the region, seismic groundshaking could potentially injure persons at the project site due to resulting structural damage, structural collapse or falling of the existing facility structures. Groundshaking could potentially expose persons and property to seismic-related hazards, including localized liquefaction, related ground failure and seismically-induced settlement.	LS	-LS	-LS	-/=LS
2. Proposed construction under the project could be subjected to the geologic hazards related to expansive soils, differential settlement and corrosivity.	LS	-LS	-LS	-LS
C. Hydrology and Water Quality				
1. The proposed project would increase stormflows to Copeland Creek, increasing the potential for flooding of the natural channel portion of Copeland Creek during a 100-year event.	LS	-LS	-LS	-LS
2. The project would introduce new development, including proposed University housing, within a designated 100-year flood zone.	LS	*	*	*
3. The project would increase the load on the existing drainage systems on the main campus.	LS	=LS	=LS	=LS
4. Operation of the project could result in increased nonpoint source pollution entering the stormwater runoff to Copeland Creek and the regional stormwater drainage system, creating the potential for degradation of water quality.	LS	-LS	-LS	-LS

(Continued)

TABLE V-1 (Continued)
COMPARISON OF IMPACTS AND IMPACT SIGNIFICANCE LEVELS OF THE PROPOSED PROJECT AND THE ALTERNATIVES[a]

Impact	Proposed Project	ALTERNATIVES: 1. No Project	2. No Development in NW Acquisition Area	3. No Development in NW Acquisition Area, Increase Housing Density on Main Campus
5. Construction of the proposed project buildings and parking areas could result in increased erosion and sedimentation, with subsequent impacts to water quality during construction. Additionally, release of fuels or other hazardous materials associated with construction equipment could reduce water quality.	LS	-LS	-LS	-LS
6. The proposed project would contribute to cumulative changes in runoff characteristics and water quality.	LS	-LS	-LS	-LS
D. Transportation, Parking and Circulation				
1. Project-generated vehicle trips would contribute to delays at study intersections during the a.m. and p.m. peak hours under Cumulative (Future With Project) conditions.	S	+S	+S	=/+S
2. The project would create a demand for additional on-campus parking facilities.	LS	=LS	=LS	=LS
3. The project could exacerbate existing safety concerns related to off-site parked vehicles on Petaluma Hill Road and East Cotati Avenue adjacent to the campus.	S	=S	=S	=S
4. Special events at the proposed Center for the Musical Arts would generate surges of traffic prior to and/or following the events, resulting in traffic delays at one or more campus entrance intersections before and/or following the event. For events of between 400 and 1,300 attendees, an average delay of five to 15 minutes would occur for vehicles exiting the campus at the intersection of Rohnert Park Expressway/proposed University north entrance following the event. For the occasional events of between 1,300 and 3,000 attendees, an average delay of ten to 20 minutes would occur for vehicles exiting the campus at the intersection of Rohnert Park Expressway/proposed University north entrance following the event. For the occasional summer festivals of between 3,000 and 10,000 attendees, instances of delays over 20 minutes could occur for vehicles exiting the campus at the intersections of Rohnert Park Expressway/proposed University north entrance, East Cotati Avenue/Sequoia Way, and East Cotati Avenue/Cypress Drive.	S	*	=S	=S

(Continued)

TABLE V-1 (Continued)
COMPARISON OF IMPACTS AND IMPACT SIGNIFICANCE LEVELS OF THE PROPOSED PROJECT AND THE ALTERNATIVES[a]

Impact	Proposed Project	ALTERNATIVES 1. No Project	2. No Development in NW Acquisition Area	3. No Development in NW Acquisition Area, Increase Housing Density on Main Campus
5. Parking demand for special events of greater than 7,400 attendees at the proposed Center for the Musical Arts may exceed the University's interim on-site parking supply (until the planned University parking Lot F expansion is completed), thereby creating an off-site parking demand, and causing potential traffic safety impacts in the surrounding area.	LS	*	=LS	=LS
6. Construction activity associated with the proposed project would temporarily increase traffic volumes on roadways in the project vicinity.	LS	-LS	-LS	-LS
7. The project would accommodate an increase in vehicular traffic, bicyclists and pedestrians within the campus roadways over existing conditions, which would increase the potential for conflicts between these travel modes.	LS	+LS	=LS	=LS
8. The project would generate an increase in demand for transit service over existing conditions.	LS	-LS	-LS	-/=LS
E. Air Quality				
1. Construction activities under the project would generate substantial amounts of dust, which would result in potential health and visibility impacts in the immediate vicinity of construction sites.	LS	-LS	-LS	-LS
2. Development under the project would increase criteria air pollutant emissions associated with the University relative to existing conditions.	S	+/-S	+S	+/=S
3. Motor vehicle emissions generated by project traffic would increase carbon monoxide concentrations at intersections in the project vicinity.	LS	+LS	+LS	+LS
4. The project would contribute to cumulative increases in regional emissions of criteria air pollutants.	S	+/-S	+S	+/=S
F. Noise				
1. Development under the project would result in temporary and localized noise impacts during individual construction projects.	LS	-LS	-LS	-LS
2. Growth and development under the project would result in a long-term increase in noise levels.	LS	+/-LS	+LS	-/=LS

(Continued)

TABLE V-1 (Continued)
COMPARISON OF IMPACTS AND IMPACT SIGNIFICANCE LEVELS OF THE PROPOSED PROJECT AND THE ALTERNATIVES[a]

Impact	Proposed Project	ALTERNATIVES 1. No Project	2. No Development in NW Acquisition Area	3. No Development in NW Acquisition Area, Increase Housing Density on Main Campus
3. The project would introduce new noise-sensitive uses into an area where noise levels exceed 60 DNL.	LS	*	*	*
4. Outdoor sound amplification systems at the Center for the Musical Arts could result in nuisance-type impacts if residential uses were to be developed north of Rohnert Park.	LS	*	=LS	=LS
5. The increase in traffic due to University and area-wide growth and development would result in cumulative increases in roadside noise levels.	S	-/=S	=S	=S
G. <u>Visual Quality</u>				
1. The project would alter the existing visual character of the site and result in a change to the scenic vistas of which the proposed project site is a part.	LS	-LS	-LS	+PS
2. The proposed project would result in an increase in the production of light and glare at the project site.	LS	-LS	-LS	=LS
H. <u>Biological Resources</u>				
1. Development of the project could result in impacts to potentially jurisdictional wetlands/waters of the U.S. and streambeds under the jurisdiction of the Corps of Engineers and the California Department of Fish and Game.	LS	-LS	-LS	-LS
2. Development of facilities under the project could result in the loss of natural communities, such as riparian forest and wetland/marsh habitat.	LS	-LS	-LS	-LS
3. Development of project facilities could adversely impact habitat for sensitive animal species.	LS	-LS	-LS	-LS
4. Construction within the project area may reduce potential upland refugia for adult and breeding pools for tadpoles of foothill yellow-legged frog (FHYLF), a state and federal species of concern.	LS	-LS	-LS	-LS
5. The proposed project may result in the removal of, or root damage to significant trees (i.e., trees greater than 12-inch diameter at breast height).	LS	-LS	-LS	-LS

(Continued)

TABLE V-1 (Continued)
COMPARISON OF IMPACTS AND IMPACT SIGNIFICANCE LEVELS OF THE PROPOSED PROJECT AND THE ALTERNATIVES[a]

Impact	Proposed Project	ALTERNATIVES 1. No Project	2. No Development in NW Acquisition Area	3. No Development in NW Acquisition Area, Increase Housing Density on Main Campus
I. Hazardous Materials				
1. Disturbance of any remaining contaminated areas during building demolition, site grading and construction on the undeveloped University property north of the campus could inadvertently expose construction workers or the environment to residual hazardous waste or health and safety concerns.	LS	*	-LS	-LS
2. Under the Master Plan revision, development and expansion of on-campus facilities will necessitate an increase in the quantities of hazardous chemicals used, stored and disposed by University facility operations. Additionally, the student population proposed under the revision will increase the number of persons potentially exposed to hazards related to the inadvertent release, upset, or improper use of hazardous materials.	LS	-LS	=LS	=LS
J. Public Services				
1. The project would increase demand for fire protection services.	LS	-LS	-LS	-/=LS
2. The project would increase demand for police protection services.	LS	-LS	-LS	-/=LS
3. During construction, the project would generate construction and demolition debris.	LS	-LS	-LS	-LS
4. Operation of the proposed project would increase the amount of non-hazardous solid waste generated at the project site.	LS	-LS	-LS	-/=LS
5. The proposed project could increase demand for public open space and recreational facilities in the local area.	LS	-LS	-LS	-/=LS
6. The project could add to local public elementary and secondary school enrollment.	LS	-LS	-LS	-/=LS
K. Utilities and Service Systems				
1. The proposed project would increase potable water demands that would exceed the University's existing potable water storage capacity.	LS	-LS	-LS	-/=LS
2. The proposed project would increase groundwater extraction rates at the project site.	LS	-LS	-LS	-/=LS

(Continued)

TABLE V-1 (Continued)
COMPARISON OF IMPACTS AND IMPACT SIGNIFICANCE LEVELS OF THE PROPOSED PROJECT AND THE ALTERNATIVES[a]

Impact	Proposed Project	ALTERNATIVES 1. No Project	2. No Development in NW Acquisition Area	3. No Development in NW Acquisition Area, Increase Housing Density on Main Campus
3. The proposed project would increase non-potable water demands, and require additional on-site potable and non-potable water infrastructure.	LS	-LS	-LS	-LS
4. With the proposed project, the University would increase its exceedance of its current wastewater treatment allocation, and could exceed its future wastewater treatment allocation designated by the subregional wastewater treatment system unless an increase in treatment capacity is received.	S	-S	-S	-S
5. The proposed project would increase wastewater flows to on- and off-site wastewater collection infrastructure, and require additional on-site wastewater infrastructure.	LS	-LS	-LS	-/=LS
L. <u>Energy</u>				
1. Development under the project would increase energy consumption, most of which would be derived from non-renewable resources.	LS	-LS	-LS	-LS
2. Development under the project would increase peak demands on the electricity and natural gas infrastructure.	LS	-LS	-LS	-/=LS
M. <u>Cultural Resources</u>				
1. Project construction could affect previously undiscovered historic or archaeological resources.	LS	-LS	-LS	-LS

Comparisons to Setting
- LS Less than significant adverse impact after mitigation
- S Significant adverse impact after mitigation
- PS Potentially Significant adverse impact after mitigation
- N No impact or negligible impact
- * Not applicable

Comparisons to Project
- + Greater impact than that of the proposed project
- − Lesser impact than that of the proposed project
- = Same (or similar) impact as that of the proposed project
- +/= Approximately the same impact as or potentially greater impact than that of the proposed project
- −/= Approximately the same impact as or potentially lesser impact than that of the proposed project

[a] Significance levels for the project and the alternatives reflect the levels of significance after mitigation. Symbols indicate maximum impact during buildout and operation, unless otherwise specified.

(Continued)

CHAPTER VI

IMPACT OVERVIEW

A. SIGNIFICANT ENVIRONMENTAL IMPACTS

The Master Plan revision, if implemented, could result in significant adverse environmental impacts. Mitigation measures proposed as part of the project, as well as measures identified by this EIR, would avoid or reduce most of the impacts to a less-than-significant level. As listed below, however, certain impacts in the categories of utilities, traffic, air quality and noise would remain significant after mitigation. Since the proposed Master Plan revision would maintain a maximum student population of 10,000 full-time equivalents (FTE), and would not involve an increase in the rate of student enrollment above that anticipated by the existing approved Master Plan, similar significant impacts would occur with these utilities, air quality, traffic peak-hour level of service and potential safety impacts, and noise impacts, either with or without the project (see Alternatives, Chapter V, for a detailed comparison of environmental impacts of the existing approved Master Plan to the proposed Master Plan revision).

It should be noted that, since the proposed Master Plan proposes more on-campus housing than the existing approved Master Plan, it would generate less off-site weekday traffic volumes compared to the existing approved Master Plan, particularly during a.m. and p.m. peak hours, during which the majority of additional students housed on-site would not be making the "home to school" and "school to home" trips. Therefore, the significant impacts to weekday peak-hour levels of service at the study intersections (particularly along East Cotati Avenue) would be less than that which would occur under the existing approved Master Plan.

As discussed in Section IV.D, Traffic, Circulation and Parking, the primary traffic impacts associated with special events would be limited to the campus entrance intersections, would be infrequent, of limited duration and would occur during off-peak traffic periods. Many of the mitigation measures for the local roadway system to improve levels of service that are identified in this EIR are also identified as recommended improvements in the Draft City of Rohnert Park General Plan Update. The impacts that would remain significant after mitigation are as follows:

> **Impact D.1 (Traffic):** Project-generated vehicle trips would contribute to delays at study intersections during the a.m. and p.m. peak hours under Cumulative (Future With Project) conditions.
>
> **Impact D.3 (Traffic):** The project could exacerbate existing safety concerns related to off-site parked vehicles on Petaluma Hill Road and East Cotati Avenue adjacent to campus.

Impact D.4 (Traffic): Special events at the proposed Center for the Musical Arts would generate surges of traffic prior to and/or following the events, resulting in traffic delays at one or more campus entrance intersections before and/or following the event. For events of between 400 and 1,300 attendees, an average delay of five to 15 minutes would occur for vehicles exiting the campus at the intersection of Rohnert Park Expressway/proposed University north entrance following the event. For the occasional events of between 1,300 and 3,000 attendees, an average delay of ten to 20 minutes would occur for vehicles exiting the campus at the intersection of Rohnert Park Expressway/proposed University north entrance following the event. For the occasional summer festivals of between 3,000 and 10,000 attendees, instances of delays over 20 minutes could occur for vehicles exiting the campus at the intersections of Rohnert Park Expressway/proposed University north entrance, East Cotati Avenue/Sequoia Way, and East Cotati Avenue/Cypress Drive.

Impact E.2 (Air Quality): Development under the project would increase criteria air pollutant emissions associated with the University relative to existing conditions.

Impact E.4 (Air Quality): The project would contribute to cumulative increases in regional emissions of criteria air pollutants.

Impact F.5 (Noise): The increase in traffic due to University and area-wide growth and development would result in cumulative increases in roadside noise levels.

Impact K.4 (Utilities): With the proposed project, the University would increase its exceedance of its current wastewater treatment allocation, and could exceed its future wastewater treatment allocation designated by the subregional wastewater treatment system, unless an increase in treatment capacity allocation is received. This would be a significant project and cumulative impact.

B. CUMULATIVE IMPACTS

CEQA defines cumulative impacts as two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The cumulative analysis is intended to describe the "incremental impact of the project when added to other, closely related past, present, or reasonably foreseeable probable future projects" and can result from "individually minor but collectively significant projects taking place over a period of time (*Guidelines* Sec. 15355). Each topical analysis presented in Chapter IV, Environmental Setting, Impacts, and Mitigation Measures, of this report considers possible cumulative impacts related to the discussion and identifies circumstances in which the project would contribute to significant cumulative impacts.

In summary, cumulative effects to which the project would contribute include: changes in runoff characteristics and water quality (Impact C.6), increases in traffic (Impact D.1), increases in regional emissions of criteria air pollutant (Impact E.3); noise impacts from outdoor sound amplification system to potential cumulative residential development north of Rohnert Park Expressway (Impact F.4); cumulative increases in public roadside noise levels (Impact F.5), and potential exceedance of future wastewater treatment allocation designated by the subregional wastewater treatment system (Impact K.4).

C. GROWTH INDUCING IMPACTS

The Master Plan revision would accommodate an increase in the number of students living on-site, and may introduce some faculty living on-site (under one of the University housing options; see Chapter III, Project Description). However, as discussed in the Project Description, the Master Plan revision would not involve a change in the University's ultimate planned student capacity of 10,000 full-time equivalents (originally established by the University in 1976), and would not involve an increase in the rate of student enrollment above that anticipated by the existing approved Master Plan. Therefore, although the buildout of the project could increase the number of students, faculty and staff living off-site within the local community (Rohnert Park/Cotati), nearby cities (Petaluma, Santa Rosa and Sebastopol) and elsewhere within and outside the County when compared to existing conditions, such increases would not exceed those that were envisioned by the existing approved Master Plan. In fact, the additional on-site housing proposed under the project would house a portion of the student and/or faculty population, thereby reducing the off-site project-associated housing demand compared to the existing approved Master Plan.

The project would also create new temporary construction employment opportunities at the project site, and would create new permanent on-site full-time and part-time employment positions for new University faculty and staff. A number of new on-site student employment opportunities would also be created.

D. EFFECTS FOUND NOT TO BE SIGNIFICANT

The environmental effects of the proposed project are identified and discussed in detail in Chapter IV, and are summarized in the Summary. Based on the Initial Study (see Appendix C), potential environmental impacts in the area of Mineral Resources were found to be less than significant, and not require further review. Topics from the Initial Study that were assessed in Chapter IV and determined to be less than significant, and therefore, not require mitigation are as follows:

- Aesthetics
- Agriculture Resources
- Land Use and Planning
- Population and Housing
- Public Services
- Recreation

CHAPTER VII

REPORT PREPARATION

A. EIR PREPARERS

REPORT AUTHORS

Sonoma State University
1801 East Cotati Avenue
Rohnert Park, CA 94928
EIR Manager: Deborah DuVall

EIR CONSULTANTS

Environmental Science Associates
225 Bush Street, Suite 1700
Oakland, California 94104

Project Manager:	Marty Abell, AICP	
Deputy Project Manager:	Paul Mitchell	
Staff:	Laurie Glass	Mike Podlech
	Peter Hudson	Tom Roberts
	Jack Hutchison	Chris Sanchez
	Perry Jung	Trish Tatarian
	Barbara Leitner	Jeff Wehling
	Yolanda Molette	

Brelje & Race (Hydrology and Water Quality; Utilities and Service Systems)
5570 Skylane Boulevard
Santa Rosa, California 95403
Principal: Tom Jones

Whitlock & Weinberger Transportation, Inc. (Transportation, Circulation and Parking)
2200 Range Avenue, Suite 102
Santa Rosa, California 95403
Principal: Stephen J. Weinberger, P.E.

Golden Bear Biostudies
536 B St., 2nd floor
Santa Rosa, California 95401
Principal: Marco Waaland

PROJECT ARCHITECT

TLCD Architecture
111 Santa Rosa Avenue, Suite 300
Santa Rosa, California 95404
Alan Butler

PROJECT ARCHITECT

Quadriga Landscape Architecture and Planning
536 B Street, 2nd Floor,
Santa Rosa, California 95401
Philip Frankl

B. PERSONS AND ORGANIZATIONS CONSULTED

Anthropological Studies Center, Sonoma State University Academic Foundation, Inc., *A Cultural Resources Study for the Sonoma State University Campus Addition, Rohnert Park, California*, March 1999.

Brashears, Pamela, City of Rohnert Park Building and Engineering Department, telephone conversation, August 3, 1999.

Brauner, Ed, Assistant City Manager, City of Santa Rosa, telephone conversation with Tom Yokoi, P.E., Principal Engineer, Brelje & Race Consulting Civil Engineers, August 19, 1999.

Carlson, Dan, Utilities Capital Project Coordinator, City of Santa Rosa, telephone conversation with Tom Yokoi, P.E., Principal Engineer, Brelje & Race Consulting Civil Engineers, Week of August 16-20, 1999.

D'Ambrogie, Mark, Chief, North Bay Fire Authority, telephone conversation, August 4, 1999.

Dawson, Craig, Director of Environmental Health and Safety, Sonoma State University, personal communication, July 1999.

Gaffney, Joseph, City Engineer, City of Rohnert Park, Brelje & Race interview with City Engineering Staff, July 22, 1999.

Gaffney, Joseph, City Engineer, City of Rohnert Park, telephone conversation with Tom Yokoi, P.E., Principal Engineer, Brelje & Race Consulting Civil Engineers, Week of August 16-20, 1999.

Gaiser, Robert, Planner, Sonoma County Permit and Resources Management Department, Environmental and Comprehensive Planning Division, telephone conversation, July 29, 1999.

Littlefield, Adam, Technology High School Coordinator, Cotati-Rohnert Park Unified School District, telephone conversation, August 10, 1999.

McConnell, Maria, Planning Assistant, Rohnert Park Planning Department, telephone conversation, August 3, 1999.

Northwest Information Center, *Cultural Resources Records Search for Central Campus*, August 5, 1999.

Wells, Ken, Integrated Waste Division Manager, Sonoma County Department of Transportation and Public Works, telephone conversation, August 9, 1999.

APPENDICES

APPENDIX A

NOTICE OF PREPARATION

This notice was posted on JUL 2 6 1999 and will remain posted for a period of thirty days until Aug 25, 1999.

EEVE T. LEWIS, Co. Clerk

BY [signature] DEPUTY CLERK

NOTICE OF PREPARATION

send back to:

TO: Sonoma County Clerk

Santa Rosa, California

(Address)

FROM: Facilities Services

Sonoma State University

1801 E. Cotati Avenue, Rohnert Park, CA 94928

(Address)

SUBJECT: **Notice of Preparation of a Draft Environmental Impact Report**

Sonoma State University will be the Lead Agency and will prepare an environmental impact report for the project identified below. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the project.

The project description, location, and the probable environmental effects are contained in the attached materials. A copy of the Initial Study ____ is, X is not, attached.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but not later than 30 days after receipt of this notice.

Please send your response to Deborah Gannon-DuVall at the address shown above. We will need the name for a contact person in your agency.

Project Title: Sonoma State University Master Plan Revision 1999

Project Applicant, if any:

DATE: 7-26-99 Signature [signature]

Title: Director of Planning

Telephone: (707) 664-2337

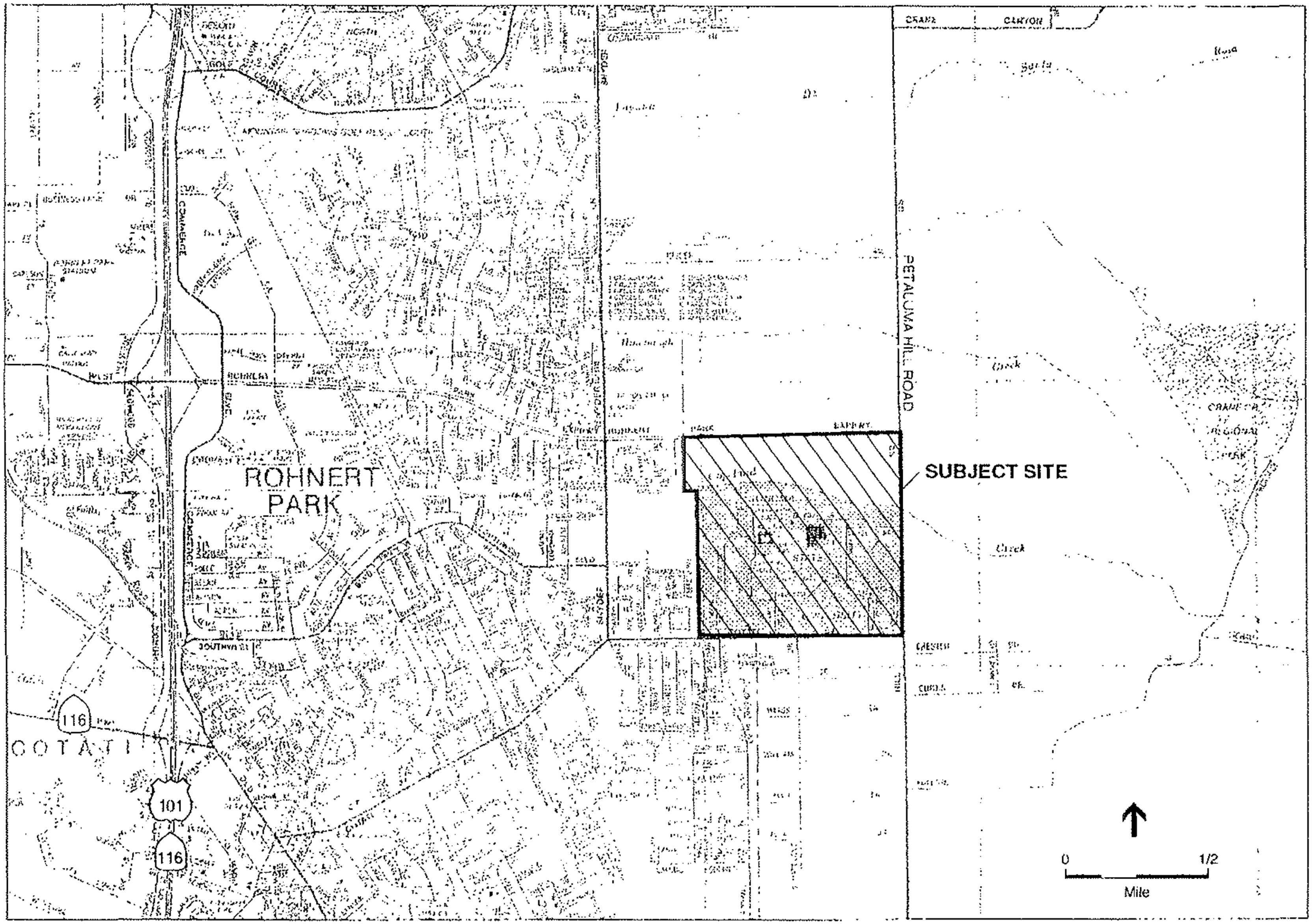
Reference: California Administrative Code, Title 14, Sections 15082(a), 15103, 15375.

Project Description:
The proposed project consists of a revision to the existing Sonoma State University Master Plan. On the central campus, this revision includes location changes for several future academic buildings which will accommodate the University's development from the existing student capacity of approximately 5,400 FTE to the ultimate permitted student capacity of 10,000 FTE; site location for a 400-bed addition to the student housing complex and relocation of a student services/retail building known as the University Center. The revision also includes the addition of 89 acres north of the central campus of which 54.7 acres are newly acquired and planned for a Center for the Musical Arts, and 34.6 acres, anticipated for acquisition, planned as university housing. None of these master plan revisions increase the previously approved maximum student population ceiling of 10,000 full-time equivalent students.

This EIR also serves as the review process for construction of the Center for Musical Arts on the 54 acre addition north of the central campus. This facility will consist of a new 100,000 gross square foot music performance containing a 1,400-seat concert hall, a smaller scale recital room, performance related space and audience support space. Surrounding the main building would be various outdoor public spaces, access roads, and supporting parking.

Project Location:
Sonoma State University is located immediately east and outside of the Rohnert Park city limits, seven miles south of Santa Rosa and ten miles north of Petaluma. The project site is bounded by the Rohnert Park Expressway to the north, Petaluma Hill Road to the east, East Cotati Avenue to the south and the city limits of the City of Rohnert Park to the west.

Probable Environmental Effects:
Increases in traffic, parking and circulation; air quality and noise impacts during construction; increased demand public services and utilities; effects on land use and policy conformity; effects on population and employment; increases in housing resources; impacts on visual quality; impacts on biological resources; impacts on water resources.



SOURCE: Environmental Science Associates, California Automobile Association

Figure III-2

P , i Lc, n

REGIONAL LOCATION MAP

SOURCE: CSAA 1992

91170

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APPENDIX B

WRITTEN RESPONSES TO THE NOTICE OF PREPARATION

City of Cotati

Sonoma County, California

CITY of COTATI

August 11, 1999

Ms. Deborah Gannon-Duvall
Facilities Services
Sonoma State University
1801 East Cotati Avenue
Rohnert Park, CA 94928

Re: Sonoma State University Master Plan Revision 1999

Dear Ms. Duvall,

We are in receipt of the Notice of Preparation of a Draft Environmental Impact Report (DEIR) regarding the 1999 Master Plan Revision. The main concerns of the City of Cotati are in regards to the project's traffic impacts and regional water/sewer capacity. It is our understanding that the University already has exceeded its wastewater allotment.

The City of Cotati recently has engaged in long range planning efforts to provide pedestrian-friendly streets. This may mean the narrowing of some local arterials and other traffic calming measures. The City of Rohnert Park is planning substantial residential development along Petaluma Hill Road and Railroad Avenue. It could be a concern if it is determined that the projects at Sonoma State University and development in Rohnert Park will compromise our planning efforts here in Cotati.

We request that cumulative traffic impacts and water/sewer capacity issues be analyzed in detail in the Draft Environmental Impact Report. The opportunity to comment is appreciated.

Very truly yours,

Dennis A. Dorch

Dennis A. Dorch
Director of Planning

201 West Sierra Avenue, Cotati, CA 94931-4217 • TELEPHONE 707•792•4600 • FAX 707•795•7067

QUAKER HILL DEVELOPMENT CORPORATION
POST OFFICE BOX 2240 • HEALDSBURG, CALIFORNIA 95448
TELEPHONE: (707) 431-1780 • FAX: (707) 431-9577

August 19, 1999

Deborah Gannon-DuVall
SONOMA STATE UNIVERSITY
1801 East Cotati Avenue
Rohnert Park, CA 94928

RE: Response to request for information
Environmental Impact Report SSU Master Plan Revision 1999

Dear Deborah,

As you know the City of Rohnert Park is currently updating its General Plan and will establish a voter-approved Urban Growth Boundary (UGB) as part of that process. The draft circulation element of that General Plan calls for substantial roadway improvements to Petaluma Hill Road, Rohnert Park Expressway and Snyder Lane. The University's new Music Center with a seating capacity of over 8,000 people, and related uses south of the Expressway will have significant traffic impacts on these roads.

Your EIR should thoroughly evaluate these impacts and the University's responsibility to pay their fair share of improvement costs to mitigate them. Close coordination with the City of Rohnert Park is essential. Infrastructure requirements for development both north and south of the Expressway should be evaluated together as integrated design plans and not in a vacuum.

SSU's proposed development will also have significant impacts on infrastructure for sewer, water and drainage facilities. Again the University's proposed plan should take into consideration Rohnert Park's future development so that sewer, water and drainage transmission facilities are adequately sized and designed in anticipation of both the University's Master Plan Revision and the City of Rohnert Park's General Plan. SSU's need for additional sewer capacity from the Subregional Treatment Facility should be determined in partnership with the City of Rohnert Park.

As always, we look forward to working closely with the University in developing our respective development plans. Please call me if you have any further questions.

Sincerely,

Craig R. Harrington
President

CRH/pj

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Sonoma County Bicycle & Pedestrian Advisory Committee

Martha Barton (Chair)	*1st District (alt.)*
Lisa Irwin	*2nd District*
Jamal Munshi	*2nd District (alt.)*
Vincent Hoagland	*3rd District*
Connie Cloak	*3rd District (alt.)*
Lou Salz	*4th District*
Lynn Woznicki	*4th District (alt.)*
Tim Gonzales	*5th District*
Joel Woodhull	*5th District (alt.)*

August 23, 1999

Sonoma State University - Facilities Services
Att: Debra Gannon-DuVall
1801 East Cotati Avenue
Rohnert Park, CA 94928

Re: Notice of Preparation of Draft Environmental Impact Report

Dear Debra,

On behalf of the members of the Sonoma County Bicycle and Pedestrian Advisory Committee, thank you for the opportunity to comment on the scope and content of the Environmental Impact Report (EIR) to be prepared for the SSU Master Plan Revision 1999. I have reviewed the SSU Notice of Preparation of an EIR and would like to submit the following comments.

The Sonoma County Bikeways Plan includes future bicycle lanes adjacent to SSU along Rohnert Park Expressway and Petaluma Hill Road. In the future, bicycle lanes may also be proposed along East Cotati Avenue, extending the existing Class II bicycle lanes within Rohnert Park along East Cotati Avenue to Petaluma Hill Road. On-street parking is currently permitted to a certain extent along Petaluma Hill Road and East Cotati Avenune adjacent to the university. Please consider the effect that on-street parking may have on the future provision of Class II bicycle lanes along these roadways and along Rohnert Park Expressway. The provision of bicycle and pedestrian facilities appears to be adequately addressed on the SSU campus. Please consider giving due attention to the provision of adequate bicycle and pedestrian facilities to and from the campus as well.

On the draft SSU Master Plan, a secondary pedestrian/bicycle path is proposed along Rohnert Park Expressway adjacent to the proposed Center for Musical Arts. Please note that the Sonoma County Bikeways Plan also proposes a future Class II bicycle lane along this section of Rohnert Park Expressway. Also, there is an existing substandard pedestrian path parallel to East Cotati Avenue along the southern boundaries of the campus. It appears that this path is to be deleted in the Master Plan Revision. Please give consideration to the effect that this will have on pedestrian travel along East Cotati Avenue.

Once again, thank you for the opportunity to comment on the Notice of Preparation for a Draft EIR for the SSU Master Plan Revision 1999. Should you have any questions regarding these comments, please feel free to contact me at (707) 585-7516.

Sincerely,

Steven Schmitz, Staff
Sonoma County Bicycle and Pedestrian Advisory Committee

SONOMA COUNTY WATER AGENCY

FILE:FDR/TENT/SONOMA STATE UNIV. MASTER PLAN REV. 1999

August 23, 1999

Deborah Gannon-DuVall
Director of Planning
Facilities Services
Sonoma State University
1801 E. Cotati Avenue
Rohnert Park, CA 94928

RE: SONOMA STATE UNIVERSITY MASTER PLAN REVISION 1999 - NOTICE OF PREPARATION

Dear Ms. Gannon:

The Sonoma County Water Agency (Agency) has reviewed the Notice of Preparation for the above mentioned project. In response, the Agency submits the following comments.

The Agency has a hydraulic maintenance easement along Copeland Creek between Petaluma Hill Road and the Rohnert Park city limits. Under the terms of this easement, the Agency is responsible for improving and maintaining the channel by removing vegetation and other impediments to channel flow. The Agency is concerned about any development that may effect our ability to maintain the hydraulic capacity of the Copeland Creek channel which crosscuts the campus. When site specific improvements have been identified, plans should be submitted to the Agency for our review and approval. Additionally, the Agency requests the opportunity to review and approve any storm drainage within the project area that may outfall into the Agency flood control channel. It is also advised that all facilities be designed in compliance with the Agency's *Flood Control Design Criteria*.

Additionally, as part of our Fisheries Enhancement Program, the Agency has begun construction of its Copeland Creek Restoration Project just upstream of the Sonoma State University (SSU) campus. The Agency is concerned about any development related impacts that may affect this project. Through projects such as the Copeland Creek Restoration Project, the Agency strives to improve habitat for fish and other aquatic species, and revive runs of salmonid species that have been negatively impacted by current and historic land use practices. The proposed Copeland Creek Restoration Project is bounded by Petaluma Hill Road to the west and Roberts/Pressley Road to the east. The project is a collaborative effort between the Agency and private property owners. Goals of the project are to improve aquatic habitat and water quality through decreasing sediment and nutrient load and water temperature. The project includes bank stabilization and channel adjustments to reduce erosion, and instream habitat improvements to increase the quality and quantity of pools available for juvenile salmonids and other fish, as well as for amphibian and reptile species. Because the Agency's project is located just upstream of the SSU campus, impacts that could result in loss of riparian habitat, increased erosion and sedimentation, or impediments to fish passage within and along Copeland Creek should be avoided.

Thank you for the opportunity to comment. For questions regarding operation and maintenance of the Agency's flood control channel please contact Jim Scriven at 521-1866. For questions regarding drainage in the project area please contact Dave Grundman at 547-1946. For questions regarding the Agency's Copeland Creek Restoration Project please contact Jessica Martini at 547-1903.

Sincerely,

Peggy Shannon
Environmental Specialist

c Bob Oller

rs3/u/cl/thausman/ssu mastr pln 99

City of
ROHNERT
PARK

COMMUNITY
DEVELOPMENT/
PLANNING

August 26, 1999

Ms. Deborah DuVall
Facilities Services
Sonoma State University
1801 East Cotati Avenue
Rohnert Park, CA 94928

RE: Transmittal of Comments on the Notice of Preparation of a Draft Environmental Impact Report, Sonoma State University Master Plan Revision 1999

Dear Ms. DuVall:

The City of Rohnert Park appreciates the opportunity to comment on the Notice of Preparation of a Draft Environmental Impact Report for the Sonoma State University Master Plan Revision 1999. In accordance with California Environmental Quality Act (CEQA) Implementation Guidelines (California Code of Regulations) Section 15072, please accept this letter as our formal comments on the proposed project.

City staff and the community are very excited about the University's expansion plans and staff looks forward to working closely with SSU's staff on coordinating your master plan with our general plan.

The first area of our concern is the traffic that will be generated by the expanded facilities on the campus, especially the new music hall. We request that a thorough traffic analysis be performed, with special emphasis on the following locations:

- RPX from Petaluma Hill Rd to US 101
- Snyder Lane from E. Cotati Avenue to Golf Course Drive
- Golf Course Drive from Snyder Lane to US 101
- E. Cotati Avenue from Petaluma Hill Rd to Adrian Drive

We also suggest that the traffic analysis include a discussion of pedestrian connections between the University and the future Urban Growth areas identified in the City's Preferred Land Use Plan.

The results of the traffic analysis should be addressed in the Draft EIR, with mitigation measures clearly delineated in the report.

Another area of concern to the City that we ask to be thoroughly addressed in the Draft EIR is the provision of wastewater service to the expanded campus. As you know, SSU's current sewer allocation is 0.100 million gallons per day (MGD) average dry weather flow. With the planned expansion of the Subregional Sewer System, we have proposed expanding SSU's allocation to 0.200 MGD, based on a buildout of 10,000 FTE. The buildout assumption, however, did not include faculty

6750 Commerce Boulevard • Rohnert Park, CA 94928-2486 • (707) 588-2236 • Fax (707) 588-2238

housing or the music center. Please address the sewer flow requirements for the expanded development plan for the campus, and the timing of that development *vis a vis* the planned expansion of the Subregional Wastewater System.

A third area of concern to the City is the noise impacts from the new student and faculty residential units and the proposed music center on the existing residential area north of Copeland Creek and east of Snyder Lane. Please include the noise analysis in your Draft EIR. The noise analysis should also consider mitigation for construction-related noise.

Our Public Safety Department is concerned about the provision of emergency services, especially fire fighting services on your campus. They would like to see the following issues addressed in your Draft EIR:

- Existing code requirements that SSU is building under and future codes. The City of Rohnert Park has a much more stringent code system than the state code.
- Access for emergency equipment
- Inclusion of Rohnert Park personnel into the planning/design phase of buildings
- Self protection of new construction vs. minimum code compliance
- Phased incorporation and responsibility for protection and response
- Inspection and system maintenance enforcement
- How will future development impact the response capability and system of the city to provide that service and what effect will the city experience if the minimum code causes Rohnert Park to be negatively impacted related to ISO grading.

Lastly, considering the current and projected housing shortage in the Rohnert Park and Sonoma County, we suggest that the EIR also include an analysis on the impacts that may be created by the University's student and faculty housing needs. We would anticipate that the EIR and new Master Plan would include programs that would assist in mitigating this potential impact.

Again, the City appreciates the opportunity to comment on this and future projects, and we look forward to working closely with the University on our future planning processes. Should you have any questions or comments, please feel free to contact me at the (707) 588-2243.

Sincerely,

Wendie Schulenburg

Wendie Schulenburg
Planning and Community Development Director

cc: Rohnert Park City Council
Rohnert Park Planning Commission
Joseph D. Netter, City Manager
Joe Gaffney, City Engineer
Patrick Rooney, Public Safety Director
Bob Cassel, Commander, Fire Protection Services
Dennis Dorch, Planning Director City of Cotati

SONOMA COUNTY
PERMIT AND RESOURCE MANAGEMENT DEPARTMENT

2550 Ventura Avenue, Santa Rosa, CA 95403-2829 (707) 565-1900 FAX(707) 565-1103

August 27, 1999

Sonoma State University
Facilities and Services
1801 East Cotati Avenue
Rohnert Park, CA 94928

Att: Deborah Gannon-DuVall, Director of Planning

Re: Response to Notice of Preparation of EIR
for Sonoma State University Master Plan Revision 1999

Thank you for the opportunity to comment on the Notice of Preparation for the EIR for the University's Master Plan Revision. Due to the limited information on the project provided in the Notice of Preparation, our comments are general in nature and focus on planning concerns which should be reflected in the design of the project. The EIR and/or master plan should indicate how environmental concerns have influenced the development of the plan and what mitigation has been incorporated.

Conversion of Agricultural Land: The project appears to be inconsistent with the agricultural protection policies of the Sonoma County General Plan. Of the 89 acres proposed for expansion of university facilities, only 14 acres is designated as Public / Quasi-Public on the Land Use Plan Map in the General Plan. The remaining 75 acres is designated Diverse Agriculture / 20-acre density and has been used for pasture, hay and field crops. The proposed use of this area for a large public facility is contrary to the intent of the land use designation and inconsistent with numerous policies in the Land Use and Agricultural Resources Elements of the General Plan (see attached).

This inconsistency could be addressed by requesting and obtaining County approval of a General Plan amendment to change the land use designation of the entire expansion to Public / Quasi-Public. This approach would be direct and certainly appropriate for the size of site and public facility proposed, but it would require public hearings with the Planning Commission and Board of Supervisors and their approval would have to address policy issues on the conversion of agricultural land.

The other alternative is to request annexation by the City of Rohnert Park and obtain approval of that request by the City and by the Local Agency Formation Commission. If annexation of the expansion area occurred, development of the land would no longer be subject to the County General Plan and would be under the jurisdiction of the City and its plans and ordinances. The City's General Plan is currently undergoing a major revision; their "preferred" land use plan disseminated several months ago showed the University's proposed concert hall and institutional facilities on the easterly half of the proposed expansion area and a mix of urban uses on the westerly 35 acres. Since the proposed expansion area is within the Urban Service Boundary designated since 1989 by the County General Plan, annexation to the City and subsequent urban development would be consistent with that plan.

Other environmental concerns which should addressed in the master plan and EIR are stated below by CEQA checklist subjects:

Aesthetics: Petaluma Hill Road is designated as a Scenic Corridor on the Open Space Plan Map in the County's General Plan. The policies applicable to this designation require additional setbacks for structures and design criteria to provide visual protection and enhancement.
Agricultural Resources: For all parcels in the proposed expansion area and contiguous parcels, the EIR should describe the soil capabilities, agricultural uses, agricultural designations and zoning, and the State Farmland Mapping classifications.
Air Quality: The EIR should identify and mitigate air quality impacts related to peak traffic congestion and vehicle stopping, standing and starting. Biological Resources: Copeland Creek is designated as a Riparian Corridor by the County's Open Space Plan Map. Within 50 feet of the bank of the stream, applicable policies limit the allowed uses and prohibit structures, roads and parking areas which would disturb riparian habitat or stream banks. Assessment of the existing vegetation and habitat along the stream by a qualified biologist is necessary.
Cultural Resources: The EIR should evaluate the archaeological and historical resources which might be affected by the proposed facilities.
Geology and Soils: The EIR should evaluate the potential for seismic ground-shaking, liquefaction and shrink-swell behavior, all of which could be significant in this valley-floor setting.
Hazards and Hazardous Materials: All storage and use of fuels and other hazardous materials should be described in the EIR and shown to meet the applicable requirements enforced by the County Emergency Services Department. The University's emergency evacuation and response plan should also be evaluated and revised to address the facility changes proposed.
Hydrology and Water Quality: The FEMA-mapped 100-year floodplain for Copeland Creek is substantial in width, particularly in the westerly third of the expansion area where it widens all the way out to Rohnert Park Expressway. The EIR should indicate how this flood potential and the risks of damage will be handled. How will the drainage runoff be handled to limit the University's contribution to downstream flooding in the Laguna de Santa Rosa and Russian River?
Land Use and Planning: The EIR should assess the project's consistency with the Sonoma County General Plan, pursuant to the discussion above and the pertinent policies attached to this letter. We would be glad to meet with the EIR preparers to discuss this topic.
Noise: The standards and policies in the Noise Element of the General Plan should be used

in evaluating the significance of noise levels. The EIR should assess and mitigate the effects of traffic noise on proposed facilities and occupants and, in turn, the effects of operating those facilities on the future residents anticipated by County and City plans. Offsite noise from the concert hall and any outdoor concerts or events should be addressed.
Population and Housing: The EIR should assess how the proposed facilities, access and infrastructure might relate to projected numbers of students, faculty and support staff.
Public Services: The existing and proposed provisions for fire protection and police protection on campus should be described.
Recreation: The EIR should describe the recreational facilities which now exist on the campus and any changed or new facilities proposed. The master plan should maximize bicycle and pedestrian trails on campus and tie in where possible to off-site bicycle routes and walkways.
Transportation / Traffic: The EIR's assessment of traffic impacts should include the master plan's long-term contribution to future traffic loads on Petaluma Hill Road and Highway 101, the primary arterials serving regional traffic and inter-community trips. Data should include existing traffic levels, existing plus traffic generated by the new facilities, and finally, the cumulative traffic levels anticipated from other future development in the region. Traffic volume projections and level of service estimates should be developed for all road segments and intersections affected by project traffic, including the constrained intersection of Petaluma Hill Road, Adobe Road and Main Street. Use of the Sonoma County Transportation Authority's Trans Tech traffic model is recommended. Pursuant to policies in the Circulation and Transit Element, the EIR should consider signalizing intersections, adding travel lanes and turn lanes, maintaining appropriate levels of service, and reducing peak-hour vehicle use. Pursuant to County policies on designated "parallel arterials" which provide alternates to Highway 101 for long trips, the master plan should not create any additional access to the University from Petaluma Hill Road.
Utilities and Service Systems: The EIR should assess the water supply and wastewater treatment capacity which will be needed to serve the future development proposed. This assessment should include the water mains, service agreements, storage tanks and wells required to meet those needs and the wastewater treatment capacity available from the City of Rohnert Park.
Growth Inducement: The reasons for the campus expansion and facilities proposed should be stated clearly in the EIR and analyzed for their effect in attracting and serving additional students, faculty and support staff.
Cumulative Impacts: The cumulative effects of the master plan project and the City of Rohnert Park's General Plan project may be very significant, particularly in the areas of traffic and housing, and should therefore be described and addressed in the EIR.
Alternatives: The EIR should address any alternatives which might achieve project objectives with less impact on traffic and housing.

We appreciate the opportunity to provide comments and look forward to the completion of the draft master plan and EIR. If you have any questions about this letter or County policies, please feel free to call me at 527-1917.

Sincerely,

Robert Gaiser

Robert Gaiser
Planner III

Copies: City of Rohnert Park
Board of Supervisors
CAO
SCPRMD: Chris Arnold, Pete Parkinson, Greg Carr
SCTPW: John Kottage
LAFCO

SONOMA COUNTY GENERAL PLAN POLICIES PERTINENT to SONOMA STATE UNIVERSITY MASTER PLAN REVISION

LAND USE ELEMENT

Objective LU-4.3: Reduce congestion on the countywide highway system by maintaining a "C" level of service or better on all designated arterial and collector roadways unless a lower level of service is shown on Figures CT-2c and CT-2d on pages 291 - 293 of the Circulation and Transit Element, a lower level of service is determined to be acceptable due to environmental or community values existing in some portions of the County, or the project(s) which would cause the lower level of service has an overriding public benefit which outweighs the increased congestion which would result.

Objective LU-4.4: Correlate new development with roadway improvements necessary to maintain the countywide levels of service set forth in Objective LU-4.3 or better on arterial and collector roadways.

LU-4b: Use the levels of service shown on Figures CT-2c and CT-2d on pages 291 - 293 of the Circulation and Transit Element to determine whether or not congestion is exceeding the desired level of service on the countywide highway system. Use area and/or project traffic analyses to determine whether intersection impacts or other localized congestion may also affect these desired levels of service.

LU-4c: Assure that new development occurs only when a funding mechanism is available for improvements needed to achieve these levels of service. If the Board determines that a project will provide significant overriding public benefit, the project may be exempt from this requirement.

LU-4d: Assure that County-provided physical services and infrastructure will accommodate the projected amount of growth authorized by the land use plan. Prepare facility master plans based upon the holding capacity of the land use plan plus generally accepted engineering contingency factors. Periodically but no less than every 5 years assess the status of public services in relation to growth. Encourage public facilities planning and design beyond the 2005 horizon if the additional capacity does not induce increased pressure for population or employment growth in excess of that projected in the land use plan. Facility plans shall clearly delineate the portion of capacity allocated to growth after 2005. Work with the cities to assure that such services are adequate for existing and future residents. Use proposed annexations, redevelopment agreements, revenue sharing agreements, and the CEQA process as tools to ensure that incorporated development pay its fair share toward provision of these services.

LU-6e: Public schools in rural land use categories shall meet all of the following minimum criteria:

(1) a requirement that the school district must obtain a use permit for any proposed facility, even though by State law the district is exempt from zoning regulations.

(2) if in an agricultural category, the use shall not be located on lands currently used for agricultural production and shall not result in conflicts with agricultural production or related processing, support services, or visitor serving uses. If in a residential category, the use shall be compatible with residential category uses in the area.

3) conflicts with other resource production activities are avoided.

(4) adequate public services and infrastructure must be available for the use, without inducing growth in an area where it is not projected or planned.

(5) the district shall demonstrate that a need exists for the proposed facility based upon projected growth in the district and that no economically feasible alternative location for the school facility is available in an urban land use category.

(6) the site has frontage on a designated collector or arterial roadway.

GOAL LU-8: Protect lands currently in agricultural production and lands with soils and other characteristics which make them potentially suitable for agricultural use. Retain large parcel sizes and avoid incompatible non-agricultural uses.

Objective LU-8.1: Avoid conversion of lands currently used for agricultural production to non-

agricultural use.
Objective LU-8.3: Agricultural lands not currently used for farming but which have soils or other characteristics which make them suitable for farming shall not be developed in a way that would preclude future agricultural use.
Objective LU-8.4: Discourage uses in agricultural areas that are not compatible with long term agricultural production.

Objective LU-16.1: Avoid urban residential, commercial or industrial uses within the Rohnert Park and Cotati urban service areas until such lands are annexed.
Objective LU-16.2: Limit new commercial and industrial development to the cities and the urban service area of Penngrove, except as authorized by policies OS-1c and OS-2c on pages 174 and 177.
LU-16a: Avoid amendments of the urban service boundaries of Rohnert Park and Cotati unless:

1) Vacant lands within existing boundaries will accommodate no more than five years of planned growth.
2) The applicable service entities have sufficient unallocated capacities to accommodate the additional lands and development without adversely affecting the level of service to existing and future users.
3) Natural resources and agricultural production would not be significantly affected by the proposed urban development.

2.5 PUBLIC AND QUASI PUBLIC LAND USE POLICY

Purposes and Definition: This category provides sites which serve the community or public need and are owned or operated by government agencies, non profit entities, or public utilities.
Permitted Uses: Uses include schools, churches, libraries, governmental administration centers, fire stations, cemeteries, airports, hospitals, sewage treatment plants, waste disposal sites, etc. The land use map may show the specific type of public use. In these cases, other public uses shall not be allowed.
Permitted Development Intensities and Criteria: Designation of public/quasi public sites on the Land Use Plan shall be confined to the actual area of public/quasi public use. Amendments to add this designation must meet all of the following:

1. ownership or long term lease by a government agency, other non-profit entity or public utility.
2. adequate road access.
3. lands are not suitable for and will not adversely affect resource production activities.
4. any applicable planning area policies.

AGRICULTURAL RESOURCES ELEMENT

Objective AR-3.1: Avoid the conversion of agricultural lands to residential or nonagricultural commercial uses.
AR-4a: The primary use of any parcel within the three agricultural land use categories shall be agricultural production and related processing, support services, and visitor serving uses. Residential uses in these areas shall recognize that the primary use of the land may create agricultural "nuisance" situations, such as flies, noise, odors, and spraying of chemicals.

OPEN SPACE ELEMENT

Goal OS-3: Identify and preserve roadside landscapes which have a high visual quality as they contribute to the living environment of local residents and to the county's tourism economy.
Objective OS-3.1: Designate the scenic corridors on Figures OS-5a through OS-5i along roadways which cross highly scenic areas, provide visual links to major recreation areas, give access to historic areas, or serve as scenic entranceways to cities.
Objective OS-3.2: Provide guidelines so future land uses, development and roadway construction

are compatible with the preservation of scenic values along designated scenic highway corridors.
OS-3c: Establish a rural scenic corridor setback of 30 percent of the depth of the lot to a maximum of 200 feet from the centerline of the road unless a different setback is provided in the planning area policies of the Land Use Element. Prohibit development within the setback with the following exceptions:

1) New barns and similar agricultural support structures added to existing farm complexes provided that such structures proposed within a State Scenic Highway or where local design review exists by community choice in an adopted specific or area plan are subject to administrative design review.
2) New barns and similar agricultural support structures which do not require a use permit in the zoning ordinance provided that such structures proposed within a State Scenic Highway or where local design review exists by community choice in an adopted specific or area plan are subject to administrative design review.
3) Maintenance, restoration, reconstruction, or minor expansion of existing structures.
4) Other new structures if they are subject to design review and
    a) they are associated with existing structures,
    b) there is no other reasonable location for the structure,
    c) the location within the setback is necessary for the use, or
    d) existing vegetation and topography screen the use.
5) Compliance with the setback would render the parcel unbuildable.
6) Satellite dishes which are not visible from the roadway.

OS-3d: Establish a building setback of 20 feet along the Highway 101 Scenic Corridor in urban service areas to be reserved for landscaping. Where a sound barrier must be located along a scenic corridor, ensure that the landscaped area is visible from the highway. Cooperate with state agencies to achieve compatible goals with regard to visual quality along scenic corridors.
OS-3e: Incorporate design criteria for scenic corridors in urban areas.
OS-3g: Avoid freeway oriented billboards along designated scenic corridors. Establish Design criteria for consideration of new freestanding outdoor advertising structures or signs along designated scenic corridors to retain visual quality. Consider amortization of existing signs subject to the limitations of state law as a condition of approval for discretionary permits.

Goal OS-5 Provide protective measures for riparian corridors along selected streams which balance the need for agricultural production, urban development, timber and mining operations, and flood control with preservation of riparian values.
Objective OS-5.1: Classify important streams with native vegetation as "riparian corridors". Develop guidelines to protect and manage these areas as valuable resources.
OS-5a: Classify riparian corridors designated in the open space element as follows:

1) "Urban Riparian Corridors" include those portions of designated corridors within urban residential, commercial, industrial, or public/quasi-public land use categories.
2) "Russian River Riparian Corridor" includes the corridor adjacent to any part of the Russian River which is neither located within the above urban riparian corridor nor within the jurisdiction of a city.
3) "Flatland Riparian Corridors" include the corridors adjacent to any streams which flow through predominantly flat or very gently sloping land, generally with alluvial soil. This classification excludes areas covered by 1) and 2) above.
4) "Upland Riparian Corridors" include the corridors adjacent to streams not included in the above three categories.

OS-5c: Establish streamside conservation areas, measured from the top of the higher bank as determined by the SCWA, for designated riparian corridors as follows:

1) Urban Riparian Corridors: 50'
2) Russian River Riparian Corridor: 200'
3) Flatland Riparian Corridors: 100'
4) Upland Riparian Corridors: 50'

OS-5e: Allow or consider allowing the following uses within any streamside conservation area:
1) Timber operations conducted in accordance with an approved timber harvest plan.
2) Streamside maintenance.
3) Road crossings and street crossings, utility line crossings.
4) Mining operations conducted in accordance with the County Surface Mining and Reclamation Ordinance.
5) Permitted summer dams.
6) Grazing and similar agricultural production activities not involving structures or cultivation, except as defined by 7) below.
7) Agricultural cultivation:
   a) located no closer than 100' from the top of the bank in the "Russian River Riparian Corridor".
   b) located no closer than 50' from the top of the bank in "flatland riparian corridors".
   c) located no closer than 25' from the top of the bank in "upland riparian corridors".
   d) The setbacks of 7 a), b), and c) above may be reduced through the discretionary approval process or through a plan approved by the Planning Director provided the owner includes appropriate mitigations for potential erosion, bank stabilization and biotic impacts.
8) Vegetation removal as part of an integrated pest management program administered by the Agricultural Commissioner.
9) Creekside bikeways, trails and parks within urban riparian corridors.
0) Development authorized by waiver under OS-5f.

OS-5f: Prohibit, except as allowed by OS-5e, structures, roads and utility lines and parking lots within any streamside conservation area. Consider waiver of this prohibition if:
1) it makes a lot unbuildable and vegetation removal is minimized,
2) no significant disturbance of riparian habitat would occur, or
3) the use involves only the maintenance, restoration or minor expansion of an existing structure.

A biotic resource assessment may be required prior to issuance of a waiver.

OS-5h: Use the following criteria to determine whether or not public projects are consistent with this element:
1) Non-emergency Water Agency projects which include significant streambank modification are not consistent. Refer plans for vegetation removal for maintenance purposes to the Department of Fish and Game (DFG) for review.
2) Roadway and utility construction should seek to minimize and mitigate, where feasible, damage to riparian areas. Minimize vegetation removal for necessary stream crossings.
3) All criteria established in policy OS-5f.
4) Grading, filling or construction shall not substantially diminish or divert any stream flow or result in any substantial increase in bank instability or erosion.

In the event that the above criteria cannot be met, a public project may be found consistent with this element if there is an overriding net public benefit.

OS-5i: Refer discretionary permits along undesignated streams to the SCWA and the DFG as part of the environmental review process.

CIRCULATION AND TRANSIT ELEMENT

CT-1c: Work with local governments and other responsible agencies to evaluate and propose solutions to regional circulation and transit problems in the North Bay area.

CT-1i: Encourage circulation and transit system improvements identified on Figures CT-6a through CT-6i which improve access to jobs within the county.

CT-1j: Encourage measures which will reduce the number of vehicle miles traveled during peak periods in order to reduce automobile emissions. These measures include:
1) incentives for carpooling and vanpooling
2) HOV and transit vehicle lanes along Highway 101 from Windsor to the Marin County line
3) incentives to increase transit ridership, including employee transportation allowances,

convenient bus turnouts and shelters, and shuttle buses from job centers to express bus stops
4) flex-time and modified work schedules
5) facilities for bicycle use
6) encouraging pedestrian traffic

Objective CT-2.1: Reduce congestion on the countywide highway system by maintaining a "C" level of service or better on designated arterial and collector roadways unless a lower level of service is shown on Figures CT-2c and CT-2d on pages 291 - 293, a lower level of service is determined to be acceptable due to environmental or community values existing in some portions of the County, or the project(s) which would cause the lower level of service has an overriding public benefit which outweighs the increased congestion that would result.
Objective CT-2.2: Correlate new development with roadway improvements necessary to maintain the countywide levels of service set forth in Objective CT-2.1 or better on arterial and collector roadways as is more fully explained in policy CT-2b.
CT-2a: Use the levels of service shown on Figures CT-2c and CT-2d on pages 291-293 to determine whether or not congestion is exceeding the desired level of service on the countywide highway system. Use area and/or project traffic analyses to determine whether intersection impacts or other localized congestion may also affect the desired levels of service.

CT-2b: Assure that new development occurs only when a funding mechanism is available for improvements needed to achieve these levels of service specified in CT-2a above. If the Board determines that a project will provide significant overriding public benefit, the project may be exempt from this requirement.
CT-2c: Tables CT-1 and CT-2 on pages 299 and 300 define levels of service "C" and "D" on a peak hour and average daily basis and should be used as a guideline for measurement of roadway congestion.
CT-2d: Divide the countywide highway system improvements shown on Figures CT-6a through CT-6i into two categories for funding purposes: 1) those which primarily serve countywide traffic demand and 2) those which primarily serve local area demand. Assign primary responsibility for funding of countywide improvements to the state or federal governments and/or all city and county residents and businesses. Assign funding responsibility for local area improvements to city and county residents and businesses in that defined area. This policy is not intended to express a priority of one category over the other.
CT-2e: Primary responsibility for funding intersection, right-of-way, and other needed localized improvements not identified as part of the countywide highway system belongs to individual projects.
CT-2j: Adopt ordinances or specific or area plans to establish plan lines for arterial and collector highways based upon distance from road center lines. Use the guidelines in Table CT-3 on page 301 for right-of-way acquisition. Where allowed by law, prohibit new structures within the plan line. Measure required setbacks from the plan line boundary.

CT-2t: Develop the parallel arterials in the 101 corridor as alternative routes which could attract a significant share of commuters during peak travel periods.
CT-2u: To the extent allowed by law, reserve right-of-way necessary to accommodate four travel lanes to allow for future expansion after the year 2005.
CT-2v: Apply the following standards and those included in Table CT-3 on page 301 to parallel arterials:
1) The needed number of through travel lanes is shown on Figures CT-6c, 6e, 6g, and 6h .
2) Discourage access from abutting parcels and prohibit it if reasonable access is available elsewhere. Encourage driveway consolidations. Avoid parking during peak travel periods.
3) Provide turning lanes and deceleration/acceleration lanes at intersections. Signalization shall favor the parallel arterial.
4) Avoid future plan amendments to add new commercial uses, including travel related services, on parcels abutting a parallel arterial unless the use is within a designated urban service area.
CT-2w: The Public Works Department shall set and enforce access standards for new driveways

and other encroachments to arterial highways. These standards may include functional layout, location, and spacing requirements to minimize side frictions.

CT-2x: Primary arterials are highway routes which carry large volumes of intercity or local traffic within urban areas and which place priority on the flow of traffic rather than on access to property. The following standards and those included in Table CT-3 on page 301 apply to "primary arterials":

1) The needed number of travel lanes is indicated on Figures CT-6a through 6i.
2) Allow access from abutting parcels if it does not interfere with traffic function. Encourage

Objective CT-4.1: Use TSM to achieve a five percent reduction in the projected number of single occupant vehicles traveling during peak commute periods by 2005.

Objective CT-4.2: Share responsibility for implementation of TSM actions with cities and the private sector, including developers of new projects and existing employers.

CT-4b: Encourage TSM and traffic mitigation measures which divert automobile commute trips to transit whenever it is reasonably convenient. Encourage the following private sector and local agency programs:

1) Programs for new projects may include: site design to allow for transit access, bus turnouts and passenger shelters, sidewalks between transit stops and buildings, secure bicycle parking, complementary street layouts and geometrics which accommodate buses and bicycles, exclusive bus lanes, land dedication for transit, and "transportation stores" for tenants of business and industrial parks.
2) Employer programs to encourage transit use to existing job centers may include: transit information centers, on-site sale of transit tickets and passes, shuttles to transit stations or stops, transit ticket subsidies for employees, private or subscription transit service, parking fees and transportation allowances.
3) Local government programs may include: street and highway design and geometrics to accommodate transit vehicles and bicycles, bus turnouts and passenger shelters, sidewalk access to transit stops, park-and-ride lots, HOV lanes on major highways, signal pre-emption for buses, and "transit centers" at major focal points in the bus route network.

TABLE CT-1
APPROXIMATE DAILY VEHICLE CAPACITIES
AT LEVELS OF SERVICE "C" AND "D"

(Total for all lanes, both directions)

Type Facility	Level of Service C"	"D"
Rural Road - 2 L, good geometrics*	5,000	5,600
- 1 L,	1,200	1,400
Residential Street - 2 L	1,200	2,000
Collector - 2 L Major	7,000	8,000
- 4 L Major	15,000	17,000
- 2 L Minor	5,000	5,600
- 3 L w/2-way left turn lane	10,000	11,000
Secondary Arterials - 2 L	10,000	11,300
- 4 L	20,000	23,000
- 3 L w/2-way left turn lane	14,000	15,700
Major Arterials - 2 L	12,000	13,500
- 4 L	22,000	5,000
Divided Expressway - 4 L(no parking)	30,000	35,000
Freeway - 4 L	50,000	58,000
- 6 L	76,000	88,000

TABLE CT-2
APPROXIMATE PEAK HOUR (60 MINUTES) MAXIMUM VEHICLE
CAPACITIES AT LEVELS OF SERVICE "C" AND "D"
(Vehicles per Hour in Heavier Direction)

Type Facility	Level of Service "C"	"D"
Rural Road - 2 L, good geometrics*	1,000	1,200
- 1 L,	100	120
Residential Street, 2 L	80	140
Collector, - 2 L Major	500	560
- 4 L Major	1,100	1,230
- 2 L Minor	400	450
Secondary Arterial - 2 L	700	780
- 4 L	1,500	1,680
Major Arterial - 2 L	900	1,010
- 4 L	2,000	2,240
Divided Expressway - 4 L	2,400	2,700
Freeway - 4 L	3,000	3,240
- 6 L	4,500	4,860

* As per the current text of "A Policy on Geometric Design of Highways and Streets" by the American Association of State Highway and Transportation Officials.

CT-4c: Encourage TSM and traffic mitigation measures which increase the average occupancy of vehicles as follows:

1) Employer and developer programs may include vanpools or carpools, ridesharing programs for employees, preferential parking, parking subsidies for rideshare vehicles, and transportation coordinator positions.
2) Local government or agency programs may include preferential paring space and fees for rideshare vehicles, flexibility in parking requirements, HOV lanes on major highway facilities and residential parking restriction around major traffic generators.

CT-4d: Encourage measures to modify the timing of peak commute trips to reduce congestion, including flexible, variable or staggered work hours.

CT-4e: If voluntary TSM measures do not effectively reduce peak period congestion, impose mandatory TSM measures by ordinance. These regulations, which may apply to existing employers as well as to new development, may require transportation management programs that reduce peak-period commute trips by a specified amount. Require that the program have a transportation coordinator, provide information, select and carry out TSM measures and monitor and report on program effects.

APPENDIX C

INITIAL STUDY

ENVIRONMENTAL CHECKLIST FORM

1. Project Title:	Sonoma State University Master Plan Revision
2. Lead Agency Name and Address:	Sonoma State University 1801 East Cotati Avenue Rohnert Park, CA 94928
3. Contact Person and Phone Number:	Deborah DuVall (707) 664-2337
4. Project Location:	South of Rohnert Park Expressway; west of Petaluma Hill Road; north of East Cotati Avenue, east of Rohnert Park city limit.
5. Project Sponsor's Name and Address:	Sonoma State University 1801 East Cotati Avenue Rohnert Park, CA 94928
6. General Plan Designation:	APN Nos. 047-131-08, -11 and –18 are designated Public/Quasi Public Facility. APN Nos. 047-131-20, -23, -26 and –27 are designated Diverse Agricultural (20 acres/dwelling unit density).
7. Zoning:	APN Nos. 047-131-08 and -11 are zoned Public Facility District. APN Nos. 047-131-18, -20, -23, -26 and –27 are designated Diverse Agricultural District. APN Nos. 047-131-27 and the majority of 047-131-are also in a Floodplain Combining District (F2); the Copeland Creek corridor is also within a Biotic Resources Combining District (BR) and Floodplain Combining District (F2).

8. Description of Project:

The proposed project consists of a revision to the existing Sonoma State University Master Plan. Like the existing approved Master Plan, the proposed Master Plan revision would maintain a maximum student population of 10,000 full-time equivalents (FTE). The Master Plan revision would not involve an increase in the rate of student enrollment above that anticipated by the existing approved Master Plan. The Master Plan revision identifies the facilities and actions required to accommodate the University's development from the existing student capacity of approximately 5,400 FTE to the ultimate student capacity of 10,000 FTE. In addition to new facilities proposed on its main campus, this revision proposes new development on 89.3 acres of property north of the main campus across Copeland Creek, including the proposed Center for the Musical Arts (to be located on 54.7 acres of existing campus property) and university housing (to be located on 34.6 acres on property to be acquired by the University). This project level approval is for the total campus Master Plan, including the Schematic Project Plan approval for the Center for the Musical Arts. In concert with these proposed changes to the physical Master Plan, associated revisions to the pedestrian/bicycle circulation, parking, vehicular circulation, and open space components are incorporated.

9. **Surrounding Land Uses and Setting.** (Briefly describe the project's surroundings.)

Rohnert Park Expressway forms the north border of the project site. To the north across Rohnert Park Expressway is agricultural land. Petaluma Hill Road forms the east border of the site. Across Petaluma Hill Road to the east is also agricultural land. East Cotati Avenue forms the south border of the project site. To the south across East Cotati Avenue is a mix of commercial and residential uses. Uses within the City of Rohnert Park form the west border of the project site include single-family residences and the Rancho Cotati Senior High School.

10. **Other public agencies whose approval is required** (e.g., permits, financing approval, or participation agreement.)

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☒ Geology / Soils
☒ Hazards & Hazardous Materials	☒ Hydrology / Water Quality	☐ Land Use / Planning
☐ Mineral Resources	☐ Noise	☐ Population / Housing
☐ Public Services	☐ Recreation	☒ Transportation / Traffic
☒ Utilities / Service Systems	☒ Mandatory Findings of Significance	

DETERMINATION: (To be completed by Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☒ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Deborah Gannon-DuVall	10-29-99
Signature	Date
Deborah Cannon-DuVall	Sonoma State University
Printed Name	For

ENVIRONMENTAL IMPACTS:

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
I. AESTHETICS -- Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐
II. AGRICULTURE RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. **Would the project:**				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☒	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☒	☐
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☒	☐
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. **Would the project:**				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☒	☐	☐	☐

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
III. AIR QUALITY -- (cont.):				
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☒	☐	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☒	☐	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☒	☐	☐	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐
IV. BIOLOGICAL RESOURCES -- Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☒	☐	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☒	☐	☐	☐

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
IV. BIOLOGICAL RESOURCES -- (cont.):				
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☒	☐	☐	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒
V. CULTURAL RESOURCES -- Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☒	☐	☐	☐
b) Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to §15064.5?	☒	☐	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☒	☐	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☒	☐	☐	☐
VI. GEOLOGY AND SOILS -- Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☒	☐	☐	☐
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☒	☐	☐	☐
iii) Seismic-related ground failure, including liquefaction?	☒	☐	☐	☐
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
VI. GEOLOGY AND SOILS -- (cont.):				
c) Be located on geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☒	☐	☐	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☒	☐	☐	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
VII. HAZARDS AND HAZARDOUS MATERIALS -- Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☒	☐	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
VII. HAZARDS AND HAZARDOUS MATERIALS -- (cont.):				
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐
VIII. HYDROLOGY AND WATER QUALITY -- Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☒	☐	☐	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☒	☐	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion of siltation on- or off-site?	☒	☐	☐	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☒	☐	☐	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☒	☐	☐	☐

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
VIII. HYDROLOGY AND WATER QUALITY -- (cont.):				
f) Otherwise substantially degrade water quality?	☒	☐	☐	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☒	☐	☐	☐
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☒	☐	☐	☐
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☒	☐	☐	☐
j) Inundation of seiche, tsunami, or mudflow?	☐	☐	☐	☒
IX. LAND USE AND PLANNING -- Would the project:				
a) Physically divide an established community?	☐	☐	☒	☐
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒
X. MINERAL RESOURCES -- Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
XI. NOISE -- Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☒	☐	☐	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☒	☐	☐	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☒	☐	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
XII. POPULATION AND HOUSING -- Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
XIII. PUBLIC SERVICES --				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☒	☐
XIV. RECREATION --				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☒	☐
XV. TRANSPORTATION / TRAFFIC -- Would the project:				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)?	☒	☐	☐	☐
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☒	☐	☐	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
XV. TRANSPORTATION / TRAFFIC – (cont.):				
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐
e) Result in inadequate emergency access?	☐	☒	☐	☐
f) Result in inadequate parking capacity?	☒	☐	☐	☐
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☒	☐	☐
XVI. UTILITIES AND SERVICE SYSTEMS -- Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☒	☐	☐	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☒	☐	☐	☐
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☒	☐	☐	☐
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☒	☐	☐
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☒	☐	☐	☐
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
XVII. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐
b) Does the project have impacts that are individually limited, but cumulative considerable? ("Cumulative considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☒	☐	☐	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

I.a-d These less than significant aesthetic issues are assessed in the Visual Quality section of the EIR.

II.a-c These less than significant agricultural issues are assessed in the Land Use and Planning section of the EIR.

III.a-d These potentially significant air quality issues are assessed in the Air Quality section of the EIR.

III.e Given the type and nature of the proposed uses, the project would not be expected to generate objectionable odors.

IV.a-e These potentially significant biological resource issues are assessed in the Biological Resources section of the EIR.

IV.f There is no Habitat Conservation Plan, Natural Community Conservation Plan, or other local, regional, or state habitat conservation plan governing the project site.

V.a-d These potentially significant cultural resource issues are assessed in the Cultural Resources section of the EIR.

VI.a(i) The project site is not located within a designated Alquist-Priolo Fault Rupture Hazard Zone and the potential for fault rupture at the project site is considered very low.

VI.a(ii)-a(iii) These potentially significant seismic issues are assessed in the Geology, Soils and Seismicity section of the EIR..

VI.a(iv) The project site is an area of very low relief with no significant natural or manmade slope, thus no impacts related landslide hazards would be associated with the project.

VI.b Given the amount of proposed paved and landscaped areas, development of the project would not result in substantial soil erosion or loss of topsoil.

VI.c-d These potentially significant soil issues are assessed in the Geology, Soils and Seismicity section of the EIR.

VI.e No septic tanks or alternative subsurface wastewater disposal systems are proposed as part of the project; therefore, no project impact is associated with this issue.

VII.a-c, g Continued management of hazardous materials and necessary revisions to the existing emergency response contingency plans by the University DEHS will ensure that the increased use of hazardous materials will not result in additional risks to the campus population. This issue will be discussed in the EIR.

VII.d No project construction that is proposed is located on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5; therefore no project impact is associated with this issue.

VII.e-f The project site is not located within an airport land use plan, within two miles of a public airport or public use airport, or in the vicinity of a private airstrip. Therefore, no project impacts are related to these issues.

VII.h The project site is not located in an area with high potential for wildland fires (Sonoma County, 1994). Given the developed nature of the majority of the site, the availability of adequate fire protection services and access to the project site, proposed on-site fire prevention systems that would be included in all new facilities as required by state law, the potential for impacts associated with wildland fires is expected to be less than significant.

VIII.a,c-i These potentially significant hydrology and water quality issues are assessed in the Hydrology and Water Quality, and Utilities and Service Systems sections of the EIR.

VIII.b This less than significant issue is assessed in the Hydrology and Water Quality, and Utilities and Service Systems sections of the EIR.

VIII.j The project is not located in an area that would be affected by potential inundation of a seiche, tsunami, or mudflow; therefore no project impact is related to this issue.

IX.a-b These less than significant land use issues are assessed in the Land Use and Planning section of the EIR.

IX.c There is no habitat conservation plan or natural community conservation plan governing the project site. Therefore, no project impact is related to this issue.

X.a-b Aggregate products are the dominant commercial mineral in Sonoma County. The project is not located in an aggregate resource area (Sonoma County, 1994). Therefore, no project impacts would be associated with the loss of availability of known mineral resources that would be of local value, or value to the region and state.

XI.a,c,d These noise issues are assessed in the Noise section of the EIR.

XI.b The project would not result in any construction activities or operations that would result in excessive groundborne vibration or noise levels. Therefore, no project impacts are related to this issue.

XI.e-f The project site is not located within an airport land use plan, is not located within two miles of a public airport or public use airport, or in the vicinity of a private airstrip. Therefore, no project impacts are related to these issues.

XII.a This less than significant population issue are assessed in the Land Use and Planning section of the EIR.

XII.b-c The project site encompasses the existing campus property and an adjacent parcel of undeveloped land. The project would not displace any existing housing on the site, or displace any people necessitating the construction of replacement housing elsewhere. Therefore, no project impacts are related to these issues.

XIII.a The project would accommodate an increase in the University's own public-serving school facilities. Potential impacts to the public fire and police protection services which serve the project site, and parks and public schools in the project area, will be assessed in the Public Services section of the EIR. The project would not be expected to result in physical impacts to other governmental facilities.

XIV.a-b These less than significant recreational issues are assessed in the Public Services section of the EIR.

XV.a-b,f These potentially significant transportation issues are assessed in the Transportation, Circulation and Parking section of the EIR.

XV.d,e,g These less than significant transportation issues are assessed in the Transportation, Circulation and Parking section of the EIR.

XV.c The project would not involve airport facilities, or involve any new facilities affecting air traffic patterns. Therefore no project impacts would be associated with this issue.

XVI.a-c,e These utility issues are assessed in the Hydrology and Water Quality, Public Services, and Utility and Service sections of the EIR.

XVI.d,f,g This less than significant issues are assessed in the Utilities and Service Systems and Public Services sections of the EIR.

REFERENCES – Environmental Checklist

Sonoma County, *Sonoma County General Plan*, 1994.

APPENDIX D

BIOLOGICAL RESOURCES

APPENDIX D.1

TABLE D-1
SPECIAL STATUS SPECIES WITH LOW POTENTIAL FOR OCCURING WITHIN PROJECT AREA

Scientific Name Common Name	Status USFWS/CDFG/ CNPS	General Habitat	CNDDB and Other Reported Occurrence	Presence within the Project Area
		SPECIES LISTED OR PROPOSED FOR LISTING		
PLANTS				
Alopecurus aequalis var. sonomensis Sonoma alopecurus	FE/--/List 1B	Freshwater marshes and swamps with riparian scrub	Reported within ~4 mi of project site (CNDDB 1974)	**Low potential** - Rare plant surveys did not reveal any individuals (Golden Bear, 1997).
Blennosperma bakeri Sonoma sunshine	FE/SE/List 1B	Vernal pools and valley and foothill grassland	Reported within ~3 mi of project site (CNDDB 1990)	**Low Potential** - Rare plant surveys did not reveal any individuals (Golden Bear, 1997).
Lasthenia burkei *Burke's goldfields*	FE/SE/List 1B	Vernal pools, meadows and seeps	Reported within 4 mi of project site (CNDDB 1994)	**Low Potential** – Rare plant surveys did not reveal any individuals (Golden Bear, 1997).
Limnanthes vinculans Sebastopol meadowfoam	FE/SE/List 1B	Mesic meadows, vernal pools and valley and foothill grassland in valley oak savannah on poorly drained soils of clay and sandy loam	Reported ~3 mi of project site (CNDDB 1990)	**Low Potential** - Rare plant surveys did not reveal any individuals (Golden Bear, 1997).
ANIMALS				
Crustaceans				
Syncaris pacifica California freshwater shrimp	FE/SE	Freshwater streams and creeks with undercut banks and moderate to heavy riparian cover	Not Reported Within five mi of project site	**Low Potential** – outside species range
Fish				
Oncorhynchus mykiss Central California coast steelhead	FT/--	Cool, clear, well-oxygenated freshwater streams and rivers are used for spawning and rearing	Known to occur in Willow Brook, Lichau Creek, and Petaluma River. Reported to occur in Copeland Creek during the late 1800's, but not since (SCWA 1999)	**Low Potential** – species appears to no longer utilize Copeland Creek
Birds				
Coccyzus americanus occidentalis Yellow-billed cuckoo	--/SE	Riparian forest nester, along the broad, lower flood bottoms of larger river systems in willows, cottonwoods with understory of blackberry, nettles or wildgrape	Copeland Creek east of Lichau Road near Sonoma State College, ~1.5 mi (CNDDB 1975)	**Low Potential** – sighting more than 10 years old and habitat has degraded

TABLE D-1 (Continued)
SPECIAL STATUS SPECIES WITH LOW POTENTIAL FOR OCCURING WITHIN PROJECT AREA

Scientific Name Common Name	Status USFWS/CDFG/ CNPS	General Habitat	CNDDB and Other Reported Occurrence	Presence within the Project Area
SPECIES THAT ARE CANDIDATES FOR LISTING OR OF STATE OR FEDERAL CONCERN				
Plants				
Legenere limosa Legenere	FSC/--/List 1B	Vernal pools	Vernal pool ~2 mi NE of project site (CNDDB 1976)	**Low Potential** – sighting more than 10 years old; not observed during more recent surveys
Birds				
Agelaius tricolor Tricolored blackbird	FSC/SC	Nests in areas of ponded water that can support a colony of a minimum of 50 pairs	Observed in Copeland Creek (CNDDB 1976) within blackberries, willows and thistles.	**Low Potential** – no individuals were observed during the spring surveys
Mammals				
Antrozous pallidus Pallid bat	--/SC	Roost in small to large colonies (5 to 200) and co-habitate with *Tadarida brazilliensis*	No reported occurrences	**Low Potential** – no roosting habitat on site

STATUS CODES:

FEDERAL: (U.S. Fish and Wildlife Service)
FE = Listed as Endangered by the Federal Government
FT = Listed as Threatened by the Federal Government
FPE = Proposed for Listing as Endangered
FPT = Proposed for Listing as Threatened
FC = Candidate for Federal listing
FSC = Federal Species of Concern (former Category 2 Candidate)

CALIFORNIA NATIVE PLANT SOCIETY
List 1A = Plants presumed extinct in California
List 1B = Plants rare, threatened, or endangered in California
List 2 = Plants rare, threatened, or endangered in California
List 3 = Plants about which more information is needed
List 4 = Plants of limited distribution

STATE: (California Department of Fish and Game)
SE = Listed as Endangered by the State of California
ST = Listed as Threatened by the State of California
SR = Listed as Rare by the State of California (plants only)
SC = State Species of Special Concern
3503.5 = Protection for nesting species of Falconiformes (hawks) and Strigiformes (owls)
3511 = Fully protected bird species under Fish and Game Code.

Low Potential = Habitat does not meet species requirements as currently understood in the scientific community.
-- = No listing status

SOURCES: CDFG, 1999; Biosearch Wildlife Surveys 1998; USFWS 1999.

APPENDIX D.2

DESCRIPTIONS OF SENSITIVE SPECIES KNOWN OR POTENTIALLY OCCURRING IN THE PROJECT AREA

A brief descriptions of sensitive species known or with at least moderate potential to occur within the project area is included below.

Plants. As indicated in the previous section, there are no records for special status plants from the project area (CDFG, 1999; Golden Bear, 1997), and site surveys as part of this project showed that no suitable habitat was present for any of the special status plants known from the region.

Crustaceans. There are records for the Tomales isopod (*Caecidotea tomalensis*), a federal species of concern, from the headwaters of Copeland Creek on Sonoma Mountain. Suitable habitat is not present on the project site. Likewise, there is no suitable habitat in the project area for the California freshwater shrimp (*Syncaris pacifica*).

Invertebrates. Ricksecker's water scavenger beetle (*Hydrochara rickseckeri*), a federal species of concern, inhabits permanent or semi-permanent water sources in which to reproduce. This species has been found from January through July in areas capable of ponding water, including freshwater seeps, springs, farm ponds, and slow-moving streams. Larvae are usually found in relatively calm, shallow water of ponds, streams, marshes or lakes. Specific details of the life history of this species are not well known. One record, reported by CDFG (1999) is from Lichau Road near Penngrove. Because the July surveys indicated that there is little or no permanent water on the site, the occurrence of this species seems unlikely. However, the areas with low to moderate potential for this species would be the swale tributary to Copeland Creek, and any portions of Copeland Creek that sustain water permanently or semi-permanently.

Central California coast steelhead (*Oncorhynchus mykiss*), federally listed as a threatened species, exhibit one of the most complex life histories of any salmonid species. The resident rainbow trout form spends its entire life in freshwater environments while the anadromous steelhead form migrates between their natal streams and the ocean. Steelhead typically migrate to marine waters after spending one to four years in freshwater. They typically reside in marine waters 2-3 years prior to returning to their natal stream to spawn as 4- or 5- year olds between the months of December and May. Unlike salmon, steelhead are iteroparous, meaning they can spawn more than once before they die.

Central California coast steelhead are known to occur in Willow Brook, Lichau Creek, and the Petaluma River. The last reported occurrence of steelhead in Copeland Creek dates back to the late 1800's (SCWA, 1999). Although the species has not been observed within or adjacent to the project area since that time, a small run of steelhead may persist in Copeland Creek. Furthermore, the Sonoma County Water Agency is currently implementing a creek restoration project immediately upstream of the project site. This restoration is aimed at improving habitat conditions for salmonids and other aquatic species.

California tiger salamander (*Ambystoma californiense)* is a federal species of concern. The adults spend most of the year underground in the burrows of ground squirrels and other small animals feeding on insects (Stebbins, 1985). Following heavy winter rains (normally December-February) adults emerge briefly to lay their eggs in ponds, preferring rain pools, alkali sinks or cattle troughs that have muddy bottoms or contain some algal growth in the water for hiding in, but are devoid of fish. Although no studies have been conducted on the water quality requirements, it has been noted that turbid water is preferred (reduces predation), and water quality can prevent the transformation into the adult stage. Adults migrate as far as 3,300-5,000 ft (1,000-1,500 m) to reach breeding ponds. Adult salamanders are nocturnal and emerge for only a few weeks per year from their underground retreats. During the short breeding season, salamanders can be observed moving at night to temporary rain pools, ponds, streams, and lakes. Eggs are usually laid singly or in small clusters attached to vegetation in shallow water (Stebbins, 1985). Larvae transform after a growth period of about four months (Dunn, 1940) and may reach up to three inches before metamorphosing (Stebbins, 1985). Larvae live in ponds until May, when they metamorphose into adults.

The closest reported sighting of California tiger salamander is approximately three miles west of the project site. No California tiger salamanders have been reported east of U.S. 101 in this area, and none were observed during the amphibian surveys for Vast Oak West property (Biosearch, 1998). However, some potential habitat for this species is present along Copeland Creek and the tributary swale. As a result, the project area was considered to have moderate potential for this species.

Foothill yellow-legged frog (*Rana boylii*), a federal species of concern and a California species of concern, occurs in rocky stream habitat, usually in woodland, chaparral or forest with little to no pooling or bank vegetation cover (Stebbins, 1985). The range of this species occurs from the northern counties of California, west of the Cascade Ranges, and west of the Sierras along the foothills, and in several perennial streams in the Sonoma Mountains (Biosearch, 1998). Breeding occurs from mid-March to May, depending on rains, with tadpoles metamorphosing in June or July.

This species has been reported in Copeland Creek in the project vicinity. Biosearch (1998) found adult foothill yellow-legged frogs in Copeland Creek at Petaluma Hill Road and tadpoles in Copeland Creek just north of the artificial pond on the SSU campus. The presence of both adult and juvenile foothill yellow-legged frogs suggests that a permanent breeding population is present in Copeland Creek, within the project area.

California red-legged frog (*Rana aurora draytonii* - CRLF), federally listed as a threatened species, prefers riparian areas and semi-permanent ponds that typically dry by late fall (September or October), and fill up during the rainy season (beginning late November or early December). Although this species inhabits a wide variety of aquatic habitats, ponds with deep water (27-60 inches, or 68.5-150 cm), are preferred, with stands of overhanging willows (*Salix* sp.) and/or a fringe of emergent vegetation, such as cattails (*Typha latifolia*), tules (*Scirpus* sp.) or sedges (*Carex* sp.). This species has been observed in upland areas, using small mammal burrows, willow root wads, and underneath old boards and debris in the riparian zone.

Northern Marin County represents the dividing line between *R. a. draytonii* and *R. a. aurora*. The listing does not protect any CRLF in Sonoma County west of the Central Valley Hydrologic Basin, or Sonoma and Marin counties north and west of the Napa River, Sonoma Creek and Petaluma River drainages, which drain into San Francisco Bay and north of the Walker Creek Drainage, which drains in the Pacific Ocean. Since Copeland Creek flows into Laguna de Santa Rosa and ultimately to the Russian River, the project site is outside the protected range for California red-legged frog as defined by the USFWS. Previous reports record a single CRLF, collected in 1989, approximately four miles east of the project site along Copeland Creek (Biosearch, 1998). This specimen represents the closest known observation of this species to the project site.

There are no reported sightings of California red-legged frog within the USGS 7.5-minute Cotati quadrangle.

Northwestern Pond Turtle (*Clemmys marmorata marmorata*), a federal species of concern and a California species of concern, is found north of San Francisco. This species is a thoroughly aquatic turtle, found in permanent ponds, rivers, streams, and irrigation ditches that typically have rocky or muddy bottoms and are overgrown with vegetation. Basking areas are required by this species and include partially submerged logs, rocks, mats of vegetation or open mud banks. Eggs are laid in April–August in sandy soils.

Reptile surveys conducted in 1994-1996 reported eight western pond turtles in the east artificial pond on the main campus (Biosearch, 1998). No nearby sightings are reported by CNDDB (CDFG, 1999). Within the project area, Copeland Creek appears to be only moderate-quality habitat for the western pond turtle because there is little if any permanent water in the channel.

Raptors, birds of prey, may potentially nest in any tree over 15 feet in height within the project area. Such species include, but are not limited to, white-tailed kite (*Elanus leucurus*), red-shouldered hawk (*Buteo lineatus*), Cooper's hawk (*Accipiter cooperi*), and sharp-shinned hawk (*Accipiter striatus*). All these species are protected under the Migratory Bird Treaty Act (16 USC, Section 703, Supp.I, 1989), in which all birds except starlings, English (house) sparrows, and rock doves are protected. Further, Fish and Game Code 3503.5 prohibits the taking or destroying of any bird or nest in the order of Falconiformes (falcons, kites, and hawks) and Strigiformes (owls). The white-tailed kite is a California fully protected bird species, protected under Fish and Game Code 3511. The breeding season for most raptors occurs between the months of February and October, with peak from May to August.

The CNDDB does not have any reported occurrences for these raptor species in the vicinity of the project area. However, during one of ESA's site surveys, a red-tailed hawk was observed using the trees in the swale area north of Copeland Creek.

Several **passerines**, perching birds, have historically nested in within the project area. One species, the yellow-billed cuckoo (*Coccyzus americanus occidentalis*), a California endangered species, historically nested along rivers and streams from Mt. Shasta to Southern California, nesting in riparian vegetation and orchards. The California Natural Diversity Data Base reports the western yellow billed cuckoo occurring in Copeland Creek in 1975. The absence of more recent records in Sonoma County, the rarity of this species outside the Sacramento Valley, and the absence of any yellow-billed cuckoos during field surveys for the project in May, 1999 indicate that this species no longer breeds in the project area.

Loggerhead shrike (*Lanius ludovicianus*), a federal and state species of concern, occurs throughout California in the lowlands and the foothills in open habitats, such as grasslands or, occasionally, agricultural fields, perching on shrubs, trees, posts, fences, and utility lines. Nests are usually built in trees and shrubs; however, manmade structures are also used. The local nesting season spans March to July. Habitats with little to no human disturbance are preferred, such as open canopied hardwood forests and riparian habitats. Edges of denser habitats are sometimes used.

There are no CNDDB records for the loggerhead shrike on the Cotati quadrangle; however, the project area north of Copeland Creek contains both the perching and foraging habitat favored by this species. It is considered to have high potential to occur north of Copeland Creek.

Tricolored blackbird (*Agelaius tricolor*), a federal and California species of concern, is partly migratory within California (Grinnell, 1944). During the nesting season this species requires freshwater marshes with abundant tule (*Scirpus* sp.) to establish territories and to build nests. If tules are unavailable, however, they will also use sedges, or willows. Thistles and blackberries, large enough to provide cover from predators, are also used in upland areas. An area able to support a minimum colony of 50 pairs seems to be one requirement for choosing a breeding site.

The CDFG (1999) reports this species occurring in Copeland Creek in 1976. During site investigations in 1999, no nesting colonies were observed in the project area.

APPENDIX D.3

REGULATORY FRAMEWORK

FEDERAL ENDANGERED SPECIES ACT

Under the Federal Endangered Species Act (FESA), the Secretary of the Interior and the Secretary of Commerce jointly have the authority to list a species as threatened or endangered (16 USC 1533[c]). Pursuant to the requirements of FESA, a federal agency reviewing a proposed project within its jurisdiction must determine whether any federally listed threatened or endangered species may be present in the Project Area and determine whether the proposed project will have a potentially significant impact on such species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under FESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC 1536[3], [4]). Therefore, project-related impacts to these species or their habitats would be considered "significant" in this EIR.

The U.S. Fish and Wildlife Service (USFWS) also publishes a list of candidates and other species of concern which receive "special attention" from federal agencies during environmental review, although they are not protected otherwise under FESA. The candidate species are those for which the USFWS or the National Marine Fisheries Service (NMFS) has sufficient biological information to support a proposal to list as endangered or threatened. Project impacts to such species would be considered significant in this EIR.

CALIFORNIA ENDANGERED SPECIES ACT

Under the California Endangered Species Act (CESA), the California Department of Fish and Game (CDFG) has the responsibility for maintaining a list of threatened and endangered species (California Fish and Game Code 2070). The CDFG also maintains a list of "candidate species," which are species that the CDFG has formally noticed as being under review for addition to either the list of endangered species or the list of threatened species. The CDFG also maintains lists of "species of special concern" that serve as watch lists. Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the Project Area and determine whether the project will have a potentially significant impact on such species. In addition, the CDFG encourages informal consultation on any proposed project that may impact a candidate species. Project-related impacts to species on the CESA endangered and threatened lists would be considered significant in this EIR.

THE CLEAN WATER ACT/FISH AND GAME CODE 1600-1607

The regulations and policies of various federal agencies (e.g., the U.S. Army Corps of Engineers [Corps], U.S. Department of Agricultural Natural Resource Conservation Service [NRCS], U.S. Environmental Protection Agency [EPA], USFWS, and NMFS) mandate that the filling of wetlands be avoided unless it can be demonstrated that no practicable alternatives to filling such wetlands exist. The Corps has primary federal responsibility for administering regulations that concern waters and wetlands at the project site. In this regard, the Corps acts under one statutory authority, the Clean Water Act (Section 404), which governs specified activities in "waters of the United States," including wetlands. The Corps requires that a permit be obtained if a project would place structures within navigable waters and/or alteration of waters of the United States below the ordinary high-water mark in non-tidal waters.

The state's authority to regulate activities in wetlands and waters at the site resides primarily with the CDFG and the appropriate RWQCB. The CDFG provides comment on Corps permit actions under the Fish and Wildlife Coordination Act. CDFG is also authorized under the state Fish and Game Code, Sections 1600-1607 to develop mitigation measures and enter into a Streambed Alteration Agreement (SAA) with applicants that propose a project that would obstruct the flow or alter the bed, channel, or bank of a river or stream (including intermittent and ephemeral streams) in which there is a fish or wildlife resource. The appropriate RWQCB must certify that a Corps permit action meets state water quality objectives (Section 401, Clean Water Act).

In a jurisdictional sense, there are two definitions of a wetland, one definition adopted by federal agencies and a separate definition adopted by the State of California.

Federal Wetland Definition

Wetlands are a subset of "waters of the United States" and receive protection under Section 404 of the Clean Water Act. The term "waters of the United States" as defined in Code of Federal Regulations (33 CFR 328.3[a]; 40 CFR 230.3[s]) includes:

1. All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

2. All interstate waters including interstate wetlands. (Wetlands are defined by the federal government [CFR, Section 328.3(b), 1991] as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.);

3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters:

    - which are or could be used by interstate or foreign travelers for recreational or other purposes; or

    - from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

- which are used or could be used for industrial purposes by industries in interstate commerce;

4. All impoundments of waters otherwise defined as waters of the United States under the definition;

5. Tributaries of waters identified in paragraphs (1) through (4);

6. Territorial seas; and

7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (1) through (6).

8. Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with EPA [328.3(a)(8) added 58 FR 45035, Aug. 25, 1993].

California Wetland Definition

Unlike the federal government, the California Department of Fish and Game and Coastal Commission has adopted the Cowardin (1979) definition of wetlands.

> Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface of the land or is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes (at least 50 percent of the aerial vegetative cover); (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year (Cowardin et al., 1979).

Under normal circumstances, the federal definition of wetlands requires all three wetland identification parameters to be met, whereas the Cowardin definition requires the presence of at least one of these parameters. For this reason, identification of wetlands by CDFG consists of the union of all areas that are periodically inundated or saturated, or in which at least seasonal dominance by hydrophytes may be documented, or in which hydric soils are present. The CDFG does not normally have direct jurisdiction over wetlands unless they are subject to jurisdiction under Streambed Alteration Agreements or they support state listed endangered species.

OTHER STATUTES, CODES, AND POLICIES AFFORDING LIMITED SPECIES PROTECTION

The federal Migratory Bird Treaty Act (16 USC, Section 703, Supp. I, 1989) prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. Birds of prey are protected in California under the state Fish and Game Code, Section 3503.5, which states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "taking" by the CDFG. Any loss of fertile eggs, nesting raptors, or any activities resulting in nest abandonment would constitute a significant impact. This approach would apply to red-tailed hawks, American kestrels, owls, and other birds of prey.

The federal Bald Eagle Protection Act prohibits persons within the United States (or places subject to United States jurisdiction) from "possessing, selling, purchasing, offering to sell, transporting, exporting or importing any bald eagle or any golden eagle, alive or dead, or any part, nest, or egg thereof."

Vascular plants listed as rare or endangered by the California Native Plant Society (CNPS) (Skinner and Pavlik, 1994), but which have no designated status or protection under federal or state endangered species legislation, are defined as follows:

- List 1A — Plants believed extinct.
- List 1B — Plants rare, threatened, or endangered in California and elsewhere.
- List 2 — Plants rare, threatened, or endangered in California, but more numerous elsewhere.
- List 3 — Plants about which more information is needed - a review list.
- List 4 — Plants of limited distribution - a watch list.

In general, plants appearing on CNPS List 1 or 2 are considered to meet CEQA's Section 15380 criteria, and effects to these species are considered significant.

LOCAL PLANS AND POLICIES

Although the University is not subject to local plans and policies, the University has reviewed local policies and observes them wherever practical.

Article 66, Biotic Resource element of the Sonoma County Zoning Ordinance, has the purpose of protecting biotic resource communities, including critical habitat areas and riparian corridors for their habitat and environmental value. The element calls for protection of riparian corridors with a buffer of 50 feet in urban riparian corridors.

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APPENDIX E

TRAFFIC, CIRCULATION AND PARKING

APPENDIX E.1

DESCRIPTION OF THE EXISTING STUDY INTERSECTION GEOMETRIES

Rohnert Park Expressway/Snyder Lane

The signalized intersection of Rohnert Park Expressway/Snyder Lane has marked crosswalks on all four approaches. The northbound Snyder Lane approach has one left turn lane, one shared through/left turn lane, and a right turn lane. The southbound approach includes a left turn lane, a shared left/through lane, and a right turn lane. Rohnert Park Expressway widens to four lanes just east of Snyder Lane, and the eastbound and westbound approaches each have two through lanes, a left turn lane, and a right turn lane. Also, the northbound and southbound approaches have split phasing.

Rohnert Park Expressway/Petaluma Hill Road

Rohnert Park Expressway terminates at Petaluma Hill Road on the northeast corner of the campus. Crosswalks are marked across the north and west legs of the signalized intersection. The northbound Petaluma Hill Road approach includes a single through lane and a left turn lane, while the southbound approach includes a single shared through/right turn lane. The eastbound approach of Rohnert Park Expressway is a single lane approach. In addition, there is exclusive northbound left turn phasing.

Laurel Drive/Petaluma Hill Road

The Laurel Drive entrance to the University is located on Petaluma Hill Road approximately mid-way along the eastern perimeter of the campus. Movements at the intersection are currently restricted to inbound-only, with Laurel Drive one-way westbound. Petaluma Hill Road includes single through lanes in each direction of traffic, with a northbound left turn lane provided at Laurel Drive. The intersection is uncontrolled.

East Cotati Avenue/Petaluma Hill Road

East Cotati Avenue terminates at Petaluma Hill Road at the southeast corner of the University campus. The signalized intersection has marked crosswalks across all three approaches. The northbound approach of Petaluma Hill Road includes a single through lane and a left turn lane, and the southbound approach includes a single through lane and a right turn lane. The eastbound approach of East Cotati Avenue includes a single lane that is wide enough to accommodate right turn movements on red at times. Also, there is exclusive northbound left turn phasing.

East Cotati Avenue/Cypress Drive

Cypress Drive meets East Cotati Avenue at a tee intersection and is controlled by a stop sign and "Right Turn Only" sign on its approach. Both Cypress Drive and East Cotati Avenue contain single lane approaches to the intersection, with no turning lanes provided. The intersection is proposed to be relocated to the west of its current location, and will serve as a secondary access to the new parking areas planned along the southern perimeter of the campus.

East Cotati Avenue/Sequoia Way

Sequoia Way is currently the main entrance to the University. The two-lane street has a large landscaped median, providing small left and right turn bays in the southbound direction as it meets East Cotati Avenue at a "tee" intersection. The Sequoia Way approach is controlled by a stop sign. Both eastbound and westbound East Cotati Avenue have single through lanes and dedicated turn lanes for movements onto Sequoia Way.

East Cotati Avenue/Bodway Parkway-Sonoma State Drive

Prior to 1999, East Cotati Avenue/Bodway Parkway-Sonoma State Drive was a four-legged signalized intersection. However, since October 1998, the Sonoma State Drive entrance to the University has been closed to regular University traffic for the purposes of completing the Sauvignon Village student-housing complex, thereby creating a "T" intersection. The roadway will be reopened upon completion of Sauvignon Village with the prior configuration of a shared through/left-turn lane and a right turn lane. The eastbound direction of East Cotati Avenue contains two through lanes and one left turn lane, and the westbound direction contains a single through lane and one left turn lane. The northbound Bodway Parkway approach includes left turn, through, and right turn lanes. Also, there is exclusive left turn phasing in the eastbound and westbound directions.

East Cotati Avenue/Snyder Lane-Maurice Avenue

This intersection is signalized with crosswalks on all four approaches. The northbound approach of Maurice Avenue, which is a neighborhood collector street, has two through lanes and dedicated left turn lane. Snyder Lane forms the north leg, and has left turn, through, and right turn lanes. The eastbound approach of East Cotati Avenue has the same configuration. Westbound East Cotati Avenue has a left turn lane, two through lanes, and an exclusive right turn lane.

APPENDIX E.2

TABLE E-1
RESIDENCE LOCATION FOR SONOMA STATE UNIVERSITY STUDENTS[a]

Geographical Area of Residence	Percentage
Rohnert Park	23 %
Sonoma State University (on-campus)	23 %
Santa Rosa	21 %
Petaluma	7 %
Cotati	4 %
Napa	4 %
Sebastopol	4 %
Novato	3 %
Other	
North of Santa Rosa	4 %
Eastern Sonoma and Napa Counties	3 %
Marin County and South	2 %
Western Sonoma County	1 %
Penngrove Area	1 %
TOTAL	100 %

a Based on zip codes associated with students' local mailing addresses, obtained for the Fall 1998 school year from the University registrar.

SOURCE: Whitlock and Weinberger Transportation Inc., 1999

APPENDIX E.3

DESCRIPTION OF INTERSECTION CAPACITY ANALYSIS METHODOLOGIES

DESCRIPTION OF SIGNALIZED INTERSECTION CAPACITY ANALYSIS
1994 HCM OPERATIONS METHOD

Background

The operations method of intersection capacity analysis found in Chapter 9, "Signalized Intersections," of the *Highway Capacity Manual, Special Report No. 209*, Transportation Research Board, 1994, was used for this analysis. This method is used in most analyses of existing conditions or for future situations in which traffic, geometric, and control parameters are well established by projections and trial designs.

This method addresses the capacity and level of service of intersection approaches, and the level of service of the intersection as a whole. In this method, capacity and level of service are evaluated separately, and are not related to each other in a simple one-to-one fashion. Capacity is evaluated in terms of the ratio of demand flow rate to capacity (volume-to-capacity ratio), while level of service is evaluated on the basis of average stopped delay per vehicle (seconds/vehicle).

The capacity of the intersection as a whole is not addressed by this method; the design and signalization of intersections focuses on the accommodation of the major movements and approaches comprising the intersection. Capacity is, therefore, only meaningful as applied to these major movements and approaches. Capacity analysis results in the computation of volume-to-capacity ratios for individual movements and a composite volume-to-capacity ratio for the sum of critical movements or lane groups within the intersection. The volume-to-capacity ratio is the actual or projected rate of flow on an approach or designated group of lanes during a peak 15-minute interval divided by the capacity of the approach or designated group of lanes.

Input Data

The input data necessary to use this methodology includes lane geometrics, traffic volumes, signal timing, vehicle type distribution, percent grade, pedestrians, peak hour factors, parking activity, and arrival type per approach.

Level of Service

Level of service is based on the average stopped delay per vehicle for various movements within the intersection. While volume-to-capacity affects delay, there are other parameters that more strongly affect it, such as the quality of progression, length of green phases, cycle lengths, and others. Thus for any given volume-to-capacity ratio, a range of delay values may result, and vice-versa. See the table "Level of Service Criteria for Signalized Intersections" for the relationship between the level of service and stopped delay per vehicle.

Because delay is a complex measure, its relationship to capacity is also complex. It is possible, for example, to have delays in the range of Level of Service F while the volume-to-capacity ratio is below 1.00, perhaps as low as 0.75-0.85. Very high delays can occur at such volume-to-capacity ratios when some combination of the following conditions exists: the cycle length is long; the lane group in question has a long red time; and/or the signal progression for the subject movement is poor.

The reverse is also possible. A saturated approach or lane group with a volume-to-capacity equal to 1.00 may have low delays if the cycle length is short, and/or the signal progression is favorable for the subject movement. Acceptable delay levels do not automatically ensure that capacity is sufficient. The analyst must consider the results of the capacity analysis module and the level of service module to obtain a complete picture of existing or projected intersection operations.

Thus, the designation of Level of Service F *does not* automatically imply that the intersection, approach, or lane group is overloaded, nor does a level of service in the A to E range automatically imply that there is unused capacity available.

The procedures of this methodology require the analysis of both capacity and level of service conditions to fully evaluate the operation of a signalized intersection.

LEVEL OF SERVICE CRITERIA
FOR SIGNALIZED INTERSECTIONS

Level of Service	Average Total Delay (seconds/vehicle)
A	≤5.0
B	>5.0 and ≤ 15.0
C	>15.0 and ≤25.0
D	>25.0 and ≤40.0
E	>40.0 and ≤60.0
F	>60.0

Reference: *Highway Capacity Manual, Special Report No. 209*, Third Edition, Transportation Research Board, 1994

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DESCRIPTION OF INTERSECTION CAPACITY ANALYSIS
TWO-WAY STOP-CONTROLLED METHOD

Background

The method of unsignalized intersection capacity analysis used for two-way stop-controlled intersections is from Chapter 10, "Unsignalized Intersections," *Highway Capacity Manual, Special Report No. 209*, Third Edition, Transportation Research Board, 1994.

This method applies to two-way stop sign or yield sign controlled intersections (or one-way stop sign or yield sign controlled intersections at three-way intersections). At such intersections, drivers on the minor, or stop-controlled, street are forced to use judgment when selecting gaps in the major flow through which to execute crossing or turning maneuvers. If there is a queue, each driver must also use some measurable amount of time to move into position at the front of the queue and get ready to evaluate gaps in traffic on the major street. Thus, the capacity of the controlled legs of an intersection is based on three factors, as follows.

1. The distribution of gaps in the major street traffic stream.
2. Driver judgment in selecting gaps through which to execute their desired maneuvers.
3. The follow-up time required by each driver in a queue.

It is assumed that gaps in the traffic stream are randomly distributed. For this reason, the methodology will be less reliable in situations in which the conflicting flows are strongly platooned, as would be the case at many urban intersections where the major street is part of a signalized network. The impact of progression on the gap distribution in major street traffic can vary substantially, from creating large gaps and thereby increasing capacity to virtually eliminating gaps and creating considerable delays.

This method assumes that major street traffic is not affected by minor street flows. This assumption is generally good for periods when the operation is smooth and uncongested. (When congestion occurs, it is likely that major street traffic will experience some impedance due to minor street traffic.) Left turns from the major street are assumed to be affected by the opposing major street flow, and minor street traffic is affected by all conflicting movements.

Input Data

The general procedure to calculate the level of service is as follows:

1. Define existing geometric and volume conditions for the intersection under study.
2. Determine the conflicting traffic through which each minor street movement and the major street left-turn must cross.
3. Determine the size of the gap in the conflicting traffic stream needed by vehicles in each movement crossing the conflicting traffic stream.
4. Determine the capacity of the gaps in the major traffic stream to accommodate each of the subject movements that will utilize these gaps.
5. Adjust the capacities found to account for impedance and the use of shared lanes.
6. Estimate the average total delay for each of the subject movements and determine the level of service for each movement and for the intersection.

Gaps are utilized by vehicles in the following priority order:

1. Right turns from the minor street
2. Left turns from the major street
3. Through movements from the minor street

4. Left turns from the minor street

For example, if a left-turning vehicle on the major street and a through vehicle from the minor street are waiting to cross the major traffic stream, the first available gap of acceptable size would be taken by the left-turning vehicle. The minor street through vehicle must wait for the second available gap. In aggregate terms, a large number of such left-turning vehicles could use up so many of the available gaps that minor street through vehicles are severely impeded or unable to make safe crossing movements.

Level of Service

The level of service criteria is shown below. As used here, total delay is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position. Note that the level of service criteria for two-way stop-controlled intersections are different than for signalized intersections primarily because drivers expect different levels of performance from different kinds of transportation facilities. An unsignalized intersection is designed to carry less traffic and have shorter delays, hence the thresholds for a stop-controlled intersection are lower than for a signalized intersection.

**LEVEL OF SERVICE CRITERIA
FOR TWO-WAY STOP-CONTROLLED INTERSECTIONS**

Level of Service	Average Total Delay (seconds/vehicle)
A	≤5
B	>5 and ≤10
C	>10 and ≤20
D	>20 and ≤30
E	>30 and ≤45
F	>45

Reference: *Highway Capacity Manual, Special Report No. 209*, Third Edition, Transportation Research Board, 1994

Using this same criteria, the average approach delay for all vehicles on a particular approach or for the intersection as a whole can be computed as the weighted average of the total delay estimates for each individual movement on the specific approach or for all approaches, respectively.

Estimation of Queue Lengths

Theoretical studies and empirical observations have demonstrated that the probability distribution function for queue lengths for any minor movement at an unsignalized intersection is a function of the capacity of the movement and the movement's degree of saturation. An estimate of the 95th percentile queue length for minor movements is provided in the calculations.

APPENDIX E.4

EXISTING CONDITIONS LEVEL OF SERVICE CALCULATIONS

AM Peak Hour - Existing Conditions
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #1 R.P.X./Snyder Ln.

Cycle (sec): 100 — Critical Vol./Cap. (X): 0.633
Loss Time (sec): 0 (Y+R = 4 sec) — Average Delay (sec/veh): 20.6
Optimal Cycle: 62 — Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 1	0 0	1	1 1	0 0	1	1 0	2 0	1	1 0	2 0	1
Volume Module: >> Count Date: 16 Sep 1999 << 7:45 - 8:45 a.m.												
Base Vol:	134	257	39	160	276	210	215	307	186	45	183	63
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	134	257	39	160	276	210	215	307	186	45	183	63
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	134	257	39	160	276	210	215	307	186	45	183	63
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.73	0.73	0.73	0.79	0.79	0.79	0.70	0.70	0.70	0.77	0.77	0.77
PHF Volume:	185	354	54	203	350	266	308	440	267	58	236	81
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	185	354	54	203	350	266	308	440	267	58	236	81
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.05	1.05	1.00	1.05	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Final Vol.:	194	372	54	213	368	266	308	462	267	58	248	81
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.98	0.98	0.85	0.98	0.98	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Lanes:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1862	1862	1615	1862	1862	1615	1805	3800	1615	1805	3800	1615
Capacity Analysis Module:												
Vol/Sat:	0.10	0.20	0.03	0.11	0.20	0.16	0.17	0.12	0.17	0.03	0.07	0.05
Crit Moves:		****			****		****				****	
Green/Cycle:	0.32	0.32	0.32	0.31	0.31	0.31	0.27	0.31	0.31	0.06	0.10	0.10
Volume/Cap:	0.33	0.63	0.11	0.37	0.63	0.53	0.63	0.39	0.53	0.53	0.63	0.49
Delay/Veh:	16.9	20.0	15.7	17.3	20.1	19.1	22.7	17.5	19.2	33.2	30.1	29.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	16.9	20.0	15.7	17.3	20.1	19.1	22.7	17.5	19.2	33.2	30.1	29.1
DesignQueue:	8	15	2	8	15	11	13	18	11	3	13	4

PM Peak Hour - Existing Conditions
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

Intersection #1 R.P.X./Snyder Ln.

Cycle (sec): 100 — Critical Vol./Cap. (X): 0.791
Loss Time (sec): 0 (Y+R = 4 sec) — Average Delay (sec/veh): 23.0
Optimal Cycle: 109 — Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 1	0 0	1	1 1	0 0	1	1 0	2 0	1	1 0	2 0	1
Volume Module: >> Count Date: 15 Sep 1999 << 4:45 - 5:45 p.m.												
Base Vol:	201	416	47	98	419	209	293	293	267	38	157	160
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	201	416	47	98	419	209	293	293	267	38	157	160
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.93	0.93	0.93	0.96	0.96	0.96	0.91	0.91	0.91	0.84	0.84	0.84
PHF Volume:	215	446	50	102	436	218	323	323	294	45	186	189
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	215	446	50	102	436	218	323	323	294	45	186	189
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.05	1.05	1.00	1.05	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Final Vol.:	226	468	50	107	458	218	323	339	294	45	195	189
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.98	0.98	0.85	0.99	0.99	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Lanes:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1862	1862	1615	1881	1881	1615	1805	3800	1615	1805	3800	1615
Capacity Analysis Module:												
Vol/Sat:	0.12	0.25	0.03	0.06	0.24	0.13	0.18	0.09	0.18	0.02	0.05	0.12
Crit Moves:		****			****		****					****
Green/Cycle:	0.32	0.32	0.32	0.31	0.31	0.31	0.23	0.33	0.33	0.05	0.15	0.15
Volume/Cap:	0.38	0.79	0.10	0.18	0.79	0.44	0.79	0.27	0.55	0.55	0.35	0.79
Delay/Veh:	17.2	23.5	15.5	16.4	24.6	18.3	30.5	16.0	18.7	35.9	24.9	37.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	17.2	23.5	15.5	16.4	24.6	18.3	30.5	16.0	18.7	35.9	24.9	37.6
DesignQueue:	9	19	2	4	19	9	15	13	11	2	9	9

```
AM Existing              Tue Oct 5, 1999 15:34:03                  Page 3-1
------------------------------------------------------------------------------
                    AM Peak Hour - Existing Conditions
                    SSU Master Plan EIR Traffic Analysis
                             County of Sonoma
------------------------------------------------------------------------------
                     Level Of Service Computation Report
          1994 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #2 RPX/North SSU Entrance
******************************************************************************
Average Delay (sec/veh):       0.0         Worst Case Level Of Service:      A
******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:      0    0     0     0    0     0     0  319     0     0  212     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   0    0     0     0    0     0     0  319     0     0  212     0
Added Vol:     0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:   0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   0    0     0     0    0     0     0  319     0     0  212     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    0    0     0     0    0     0     0  354     0     0  236     0
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    0    0     0     0    0     0     0  354     0     0  236     0
Adjusted Volume Module:
Grade:            0%               0%               0%               0%
% Cycle/Cars:  xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
% Truck/Comb:  xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
PCE Adj:     1.10 1.10  1.10  1.10 1.10  1.10  1.10 1.00  1.00  1.10 1.00  1.00
Cycl/Car PCE:  xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
Trck/Cmb PCE:  xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
Adj Vol.:      0    0     0     0    0     0     0  354     0     0  236     0
Critical Gap Module:
MoveUp Time:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|----------------||----------------||----------------||----------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Adj Cap:     xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
------------|----------------||----------------||----------------||----------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   *    *     *     *    *     *     *    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:    *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:      0.0              0.0              0.0              0.0

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PM Existing              Tue Oct 5, 1999 15:34:46                  Page 4-1
------------------------------------------------------------------------------
                    PM Peak Hour - Existing Conditions
                    SSU Master Plan EIR Traffic Analysis
                             County of Sonoma
------------------------------------------------------------------------------
                     Level Of Service Computation Report
           1994 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #2 RPX/North SSU Entrance
******************************************************************************
Average Delay (sec/veh):       0.0         Worst Case Level Of Service:      A
******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:      0    0     0     0    0     0     0  438     0     0  355     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   0    0     0     0    0     0     0  438     0     0  355     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    0    0     0     0    0     0     0  487     0     0  394     0
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    0    0     0     0    0     0     0  487     0     0  394     0
------------|----------------||----------------||----------------||----------------|
Adjusted Volume Module:
Grade:            0%               0%               0%               0%
% Cycle/Cars:  xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
% Truck/Comb:  xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
PCE Adj:     1.10 1.10  1.10  1.10 1.10  1.10  1.10 1.00  1.00  1.10 1.00  1.00
Cycl/Car PCE:  xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
Trck/Cmb PCE:  xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
Adj Vol.:      0    0     0     0    0     0     0  487     0     0  394     0
------------|----------------||----------------||----------------||----------------|
Critical Gap Module:
MoveUp Time:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|----------------||----------------||----------------||----------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Adj Cap:     xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
------------|----------------||----------------||----------------||----------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:   *    *     *     *    *     *     *    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:    *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:      0.0              0.0              0.0              0.0

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AM Peak Hour - Existing Conditions
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #3 R.P.X./Petaluma Hill Rd.

Cycle (sec): 100 Critical Vol./Cap. (X): 0.947
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 23.8
Optimal Cycle: 180 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 1 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 0 0 0		
Volume Module:												
Base Vol:	129	561	0	0	876	83	54	0	265	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	129	561	0	0	876	83	54	0	265	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	129	561	0	0	876	83	54	0	265	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	143	623	0	0	973	92	60	0	294	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	143	623	0	0	973	92	60	0	294	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	143	623	0	0	973	92	60	0	294	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	1.00	1.00	0.89	0.89	0.78	1.00	0.78	1.00	1.00	1.00
Lanes:	1.00	1.00	0.00	0.00	0.91	0.09	0.17	0.00	0.83	0.00	0.00	0.00
Final Sat.:	1805	1900	0	0	1545	146	252	0	1234	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.08	0.33	0.00	0.00	0.63	0.63	0.24	0.00	0.24	0.00	0.00	0.00
Crit Moves:	****				****		****					
Green/Cycle:	0.08	0.75	0.00	0.00	0.66	0.66	0.25	0.00	0.25	0.00	0.00	0.00
Volume/Cap:	0.95	0.44	0.00	0.00	0.95	0.95	0.95	0.00	0.95	0.00	0.00	0.00
Delay/Veh:	71.1	3.2	0.0	0.0	21.4	21.4	47.9	0.0	47.9	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	71.1	3.2	0.0	0.0	21.4	21.4	47.9	0.0	47.9	0.0	0.0	0.0
DesignQueue:	7	10	0	0	21	2	3	0	13	0	0	0

PM Peak Hour - Existing Conditions
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

Intersection #3 R.P.X./Petaluma Hill Rd.

Cycle (sec): 100 Critical Vol./Cap. (X): 0.897
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 22.2
Optimal Cycle: 180 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 1 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 0 0 0		
Volume Module:												
Base Vol:	259	997	0	0	461	96	227	0	211	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	259	997	0	0	461	96	227	0	211	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	288	1108	0	0	512	107	252	0	234	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	288	1108	0	0	512	107	252	0	234	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	288	1108	0	0	512	107	252	0	234	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	1.00	1.00	0.88	0.88	0.81	1.00	0.81	1.00	1.00	1.00
Lanes:	1.00	1.00	0.00	0.00	0.83	0.17	0.52	0.00	0.48	0.00	0.00	0.00
Final Sat.:	1805	1900	0	0	1383	289	803	0	745	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.16	0.58	0.00	0.00	0.37	0.37	0.31	0.00	0.31	0.00	0.00	0.00
Crit Moves:		****		****					****			
Green/Cycle:	0.20	0.65	0.00	0.00	0.45	0.45	0.35	0.00	0.35	0.00	0.00	0.00
Volume/Cap:	0.81	0.90	0.00	0.00	0.81	0.81	0.90	0.00	0.90	0.00	0.00	0.00
Delay/Veh:	34.2	15.9	0.0	0.0	20.1	20.1	32.4	0.0	32.4	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	34.2	15.9	0.0	0.0	20.1	20.1	32.4	0.0	32.4	0.0	0.0	0.0
DesignQueue:	13	25	0	0	17	4	10	0	9	0	0	0

```
--------------------------------------------------------------------------------
                    AM Peak Hour - Existing Conditions
                   SSU Master Plan EIR Traffic Analysis
                            County of Sonoma
--------------------------------------------------------------------------------
                    Level Of Service Computation Report
         1994 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #4 Laurel Drive/Petaluma Hill Rd.
********************************************************************************
Average Delay (sec/veh):        0.1          Worst Case Level Of Service:      B
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        1  0  1  0  0   0  0  0  1  0   0  0  0  0  1   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 28 Apr 1998 <<
Base Vol:       17  657     0    0  968   168    0    0     0    0    0     0
Growth Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    17  657     0    0  968   168    0    0     0    0    0     0
Added Vol:       0    0     0    0    0     0    0    0     0    0    0     0
PasserByVol:     0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:    17  657     0    0  968   168    0    0     0    0    0     0
User Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:      0.84 0.84  1.00 1.00 0.87  0.87 1.00 1.00  1.00 1.00 1.00  1.00
PHF Volume:     20  780     0    0 1111   193    0    0     0    0    0     0
Reduct Vol:      0    0     0    0    0     0    0    0     0    0    0     0
Final Vol.:     20  780     0    0 1111   193    0    0     0    0    0     0
Adjusted Volume Module:
Grade:              0%               0%               0%               0%
% Cycle/Cars:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
% Truck/Comb:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
PCE Adj:      1.10 1.00  1.00 1.10 1.00  1.00 1.10 1.10  1.10 1.10 1.10  1.10
Cycl/Car PCE:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
Trck/Cmb PCE:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
Adj Vol.:       22  780     0    0 1111   193    0    0     0    0    0     0
Critical Gap Module:
MoveUp Time:   2.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Critical Gp:   5.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1304 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  410 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Adj Cap:     1.00 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    410 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:   9.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     B    *     *    *    *     *    *    *     *    *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *     *    *    *     *    *    *     *    *    *     *
ApproachDel:        0.3              0.0              0.0              0.0
```



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--------------------------------------------------------------------------------
                    PM Peak Hour - Existing Conditions
                   SSU Master Plan EIR Traffic Analysis
                            County of Sonoma
--------------------------------------------------------------------------------
                    Level Of Service Computation Report
          1994 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #4 Laurel Drive/Petaluma Hill Rd.
********************************************************************************
Average Delay (sec/veh):        0.0          Worst Case Level Of Service:      A
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        1  0  1  0  0   0  0  0  1  0   0  0  0  0  1   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        8 1220     0    0  614    48    0    0     0    0    0     0
Growth Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:     8 1220     0    0  614    48    0    0     0    0    0     0
User Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:      0.97 0.97  1.00 1.00 0.86  0.86 1.00 1.00  1.00 1.00 1.00  1.00
PHF Volume:      8 1260     0    0  716    56    0    0     0    0    0     0
Reduct Vol:      0    0     0    0    0     0    0    0     0    0    0     0
Final Vol.:      8 1260     0    0  716    56    0    0     0    0    0     0
------------|---------------||---------------||---------------||---------------|
Adjusted Volume Module:
Grade:              0%               0%               0%               0%
% Cycle/Cars:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
% Truck/Comb:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
PCE Adj:      1.10 1.00  1.00 1.10 1.00  1.00 1.10 1.10  1.10 1.10 1.10  1.10
Cycl/Car PCE:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
Trck/Cmb PCE:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
Adj Vol.:        9 1260     0    0  716    56    0    0     0    0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
MoveUp Time:   2.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Critical Gp:   5.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  772 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  734 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Adj Cap:     1.00 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    734 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:   5.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     A    *     *    *    *     *    *    *     *    *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *     *    *    *     *    *    *     *    *    *     *
ApproachDel:        0.0              0.0              0.0              0.0
```

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AM Peak Hour - Existing Conditions
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #5 E. Cotati Ave./Petaluma Hill Rd.

Cycle (sec):	100	Critical Vol./Cap. (X):	0.851
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	20.5
Optimal Cycle:	154	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 1 0 0			0 0 1 0 1			0 0 1! 0 0			0 0 0 0 0		
Volume Module:												
Base Vol:	236	368	0	0	663	324	239	0	204	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	236	368	0	0	663	324	239	0	204	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	236	368	0	0	663	324	239	0	204	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	262	409	0	0	737	360	266	0	227	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	262	409	0	0	737	360	266	0	227	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	262	409	0	0	737	360	266	0	227	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	1.00	1.00	1.00	0.85	0.81	1.00	0.81	1.00	1.00	1.00
Lanes:	1.00	1.00	0.00	0.00	1.00	1.00	0.54	0.00	0.46	0.00	0.00	0.00
Final Sat.:	1805	1900	0	0	1900	1615	835	0	713	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.15	0.22	0.00	0.00	0.39	0.22	0.32	0.00	0.32	0.00	0.00	0.00
Crit Moves:	****				****		****					
Green/Cycle:	0.17	0.63	0.00	0.00	0.46	0.46	0.37	0.00	0.37	0.00	0.00	0.00
Volume/Cap:	0.85	0.34	0.00	0.00	0.85	0.49	0.85	0.00	0.85	0.00	0.00	0.00
Delay/Veh:	39.7	5.8	0.0	0.0	21.4	12.7	26.7	0.0	26.7	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	39.7	5.8	0.0	0.0	21.4	12.7	26.7	0.0	26.7	0.0	0.0	0.0
DesignQueue:	13	9	0	0	25	11	10	0	8	0	0	0

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PM Peak Hour - Existing Conditions
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

Intersection #5 E. Cotati Ave./Petaluma Hill Rd.

Cycle (sec):	100	Critical Vol./Cap. (X):	0.933
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	27.2
Optimal Cycle:	180	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 1 0 0			0 0 1 0 1			0 0 1! 0 0			0 0 0 0 0		
Volume Module:												
Base Vol:	265	906	0	0	491	164	306	0	284	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	265	906	0	0	491	164	306	0	284	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	1.00	1.00	0.85	0.85	0.89	1.00	0.89	1.00	1.00	1.00
PHF Volume:	280	957	0	0	578	193	345	0	320	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	280	957	0	0	578	193	345	0	320	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	280	957	0	0	578	193	345	0	320	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	1.00	1.00	1.00	0.85	0.81	1.00	0.81	1.00	1.00	1.00
Lanes:	1.00	1.00	0.00	0.00	1.00	1.00	0.52	0.00	0.48	0.00	0.00	0.00
Final Sat.:	1805	1900	0	0	1900	1615	803	0	745	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.16	0.50	0.00	0.00	0.30	0.12	0.43	0.00	0.43	0.00	0.00	0.00
Crit Moves:		****		****			****					
Green/Cycle:	0.18	0.54	0.00	0.00	0.36	0.36	0.46	0.00	0.46	0.00	0.00	0.00
Volume/Cap:	0.85	0.93	0.00	0.00	0.85	0.33	0.93	0.00	0.93	0.00	0.00	0.00
Delay/Veh:	38.5	24.5	0.0	0.0	26.3	15.3	30.5	0.0	30.5	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	38.5	24.5	0.0	0.0	26.3	15.3	30.5	0.0	30.5	0.0	0.0	0.0
DesignQueue:	13	28	0	0	22	7	11	0	11	0	0	0

```
----------------------------------------------------------------------------
                 AM Peak Hour - Existing Conditions
                SSU Master Plan EIR Traffic Analysis
                          County of Sonoma
----------------------------------------------------------------------------
                 Level Of Service Computation Report
        1994 HCM Unsignalized Method (Future Volume Alternative)
****************************************************************************
Intersection #6 E. Cotati Ave./Cypress Dr.
****************************************************************************
Average Delay (sec/veh):        0.2        Worst Case Level Of Service:    B
****************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0    0  0  0  0  1    0  1  0  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     0    0    11    25  433     0     0  548    12
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     0    0    11    25  433     0     0  548    12
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0    0     0     0    0    11    25  433     0     0  548    12
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     0    0     0     0    0    12    28  481     0     0  609    13
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0    0     0     0    0    12    28  481     0     0  609    13
Adjusted Volume Module:
Grade:            0%               0%               0%               0%
% Cycle/Cars:  xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
% Truck/Comb:  xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
PCE Adj:     1.10 1.10  1.10  1.10 1.10  1.10  1.10 1.00  1.00  1.10 1.00  1.00
Cycl/Car PCE:  xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
Trck/Cmb PCE:  xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
Adj Vol.:       0    0     0     0    0    13    31  481     0     0  609    13
Critical Gap Module:
MoveUp Time:xxxxx xxxx xxxxx xxxxx xxxx   2.6   2.1 xxxx xxxxx xxxxx xxxx xxxxx
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx   5.5   5.0 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx   616   622 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx   675   866 xxxx xxxxx  xxxx xxxx xxxxx
Adj Cap:     xxxx xxxx xxxxx  xxxx xxxx  1.00  1.00 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx   675   866 xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx   5.4   4.3 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     B     A    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:        0.0              5.4              0.3              0.0
```



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----------------------------------------------------------------------------
                 PM Peak Hour - Existing Conditions
                SSU Master Plan EIR Traffic Analysis
                          County of Sonoma
----------------------------------------------------------------------------
                 Level Of Service Computation Report
         1994 HCM Unsignalized Method (Base Volume Alternative)
****************************************************************************
Intersection #6 E. Cotati Ave./Cypress Dr.
****************************************************************************
Average Delay (sec/veh):        1.6        Worst Case Level Of Service:    C
****************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0    0  0  1! 0  0    0  1  0  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    60    0    92     8  530     0     0  418    11
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    60    0    92     8  530     0     0  418    11
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     0    0     0    67    0   102     9  589     0     0  464    12
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0    0     0    67    0   102     9  589     0     0  464    12
------------|---------------||---------------||---------------||---------------|
Adjusted Volume Module:
Grade:            0%               0%               0%               0%
% Cycle/Cars:  xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
% Truck/Comb:  xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
PCE Adj:     1.10 1.10  1.10  1.10 1.10  1.10  1.10 1.00  1.00  1.10 1.00  1.00
Cycl/Car PCE:  xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
Trck/Cmb PCE:  xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
Adj Vol.:       0    0     0    73    0   112    10  589     0     0  464    12
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
MoveUp Time:xxxxx xxxx xxxxx   3.4 xxxx   2.6   2.1 xxxx xxxxx xxxxx xxxx xxxxx
Critical Gp:xxxxx xxxx xxxxx   6.5 xxxx   5.5   5.0 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1068 xxxx   471   477 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   255 xxxx   800  1016 xxxx xxxxx  xxxx xxxx xxxxx
Adj Cap:     xxxx xxxx xxxxx  0.99 xxxx  1.00  1.00 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   251 xxxx   800  1016 xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx  19.5 xxxx   5.2   3.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  429 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx 10.8 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    C     *     *    *     *     *    *     *
ApproachDel:        0.0             10.8              0.1              0.0
```

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-------------------------------------------------------------------------------
                      AM Peak Hour - Existing Conditions
                     SSU Master Plan EIR Traffic Analysis
                               County of Sonoma
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                       Level Of Service Computation Report
            1994 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #7 E. Cotati Ave./Sequoia Way
*******************************************************************************
Average Delay (sec/veh):         1.1          Worst Case Level Of Service:     D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   1  0  0  0  1   1  0  1  0  0   0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: 7:15 - 8:15 a.m.
Base Vol:        0    0     0    14    0    22   107  444     0     0  326   233
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0    14    0    22   107  444     0     0  326   233
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     0    0     0    14    0    22   107  444     0     0  326   233
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  0.64 1.00  0.64  0.73 0.73  1.00  1.00 0.70  0.70
PHF Volume:      0    0     0    22    0    35   147  610     0     0  462   330
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:      0    0     0    22    0    35   147  610     0     0  462   330
Adjusted Volume Module:
Grade:             0%               0%               0%               0%
% Cycle/Cars:    xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
% Truck/Comb:    xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
PCE Adj:      1.10 1.10  1.10  1.10 1.10  1.10  1.10 1.00  1.00  1.10 1.00  1.00
Cycl/Car PCE:    xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
Trck/Cmb PCE:    xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
Adj Vol.:        0    0     0    24    0    38   162  610     0     0  462   330
Critical Gap Module:
MoveUp Time:xxxxx xxxx xxxxx   3.4 xxxx   2.6   2.1 xxxx xxxxx xxxxx xxxx xxxxx
Critical Gp:xxxxx xxxx xxxxx   6.5 xxxx   5.5   5.0 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1219 xxxx   462   793 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   208 xxxx   807   718 xxxx xxxxx  xxxx xxxx xxxxx
Adj Cap:     xxxx xxxx xxxxx  0.77 xxxx  1.00  1.00 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   161 xxxx   807   718 xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx  25.8 xxxx   4.7   6.3 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     D    *     A     B    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:        0.0              12.9              1.3              0.0
```



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-------------------------------------------------------------------------------
                      PM Peak Hour - Existing Conditions
                     SSU Master Plan EIR Traffic Analysis
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                       Level Of Service Computation Report
             1994 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #7 E. Cotati Ave./Sequoia Way
*******************************************************************************
Average Delay (sec/veh):        11.5          Worst Case Level Of Service:     F
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   1  0  0  0  1   1  0  1  0  0   0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: 4:45 - 5:45 p.m.
Base Vol:        0    0     0   145    0   256    99  393     0     0  448    62
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0   145    0   256    99  393     0     0  448    62
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  0.79 1.00  0.79  0.85 0.85  1.00  1.00 0.93  0.93
PHF Volume:      0    0     0   183    0   323   117  465     0     0  482    67
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:      0    0     0   183    0   323   117  465     0     0  482    67
------------|---------------||---------------||---------------||---------------|
Adjusted Volume Module:
Grade:             0%               0%               0%               0%
% Cycle/Cars:    xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
% Truck/Comb:    xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
PCE Adj:      1.10 1.10  1.10  1.10 1.10  1.10  1.10 1.00  1.00  1.10 1.00  1.00
Cycl/Car PCE:    xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
Trck/Cmb PCE:    xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
Adj Vol.:        0    0     0   201    0   356   129  465     0     0  482    67
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
MoveUp Time:xxxxx xxxx xxxxx   3.4 xxxx   2.6   2.1 xxxx xxxxx xxxxx xxxx xxxxx
Critical Gp:xxxxx xxxx xxxxx   6.5 xxxx   5.5   5.0 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1064 xxxx   482   549 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   256 xxxx   789   939 xxxx xxxxx  xxxx xxxx xxxxx
Adj Cap:     xxxx xxxx xxxxx  0.86 xxxx  1.00  1.00 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   221 xxxx   789   939 xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx  81.0 xxxx   7.7   4.4 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     *     F    *     B     A    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:        0.0              34.2              1.0              0.0
```

AM Peak Hour - Existing Conditions
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #8 E. Cotati Ave./Bodway Pkwy.

Cycle (sec):	100	Critical Vol./Cap. (X):	0.532
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	12.8
Optimal Cycle:	40	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 1 0 1			0 1 0 0 1			1 0 1 1 0			1 0 0 1 0		
Volume Module:												
Base Vol:	67	25	123	11	0	33	363	417	49	53	235	60
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	67	25	123	11	0	33	363	417	49	53	235	60
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	67	25	123	11	0	33	363	417	49	53	235	60
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.85	0.85	0.85	0.79	0.79	0.79	0.78	0.78	0.78	0.86	0.86	0.86
PHF Volume:	79	29	144	14	0	42	463	532	63	62	273	70
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	79	29	144	14	0	42	463	532	63	62	273	70
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.05	1.05	1.00	1.00	1.00
Final Vol.:	79	29	144	14	0	42	463	558	66	62	273	70
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.87	1.00	0.85	0.91	1.00	0.85	0.95	0.98	0.98	0.95	0.97	0.97
Lanes:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.79	0.21	1.00	0.80	0.20
Final Sat.:	1653	1900	1615	1729	0	1615	1805	3330	394	1805	1467	376
Capacity Analysis Module:												
Vol/Sat:	0.05	0.02	0.09	0.01	0.00	0.03	0.26	0.17	0.17	0.03	0.19	0.19
Crit Moves:			****				****				****	
Green/Cycle:	0.17	0.17	0.17	0.17	0.00	0.17	0.48	0.69	0.69	0.14	0.35	0.35
Volume/Cap:	0.29	0.09	0.53	0.05	0.00	0.16	0.53	0.24	0.24	0.24	0.53	0.53
Delay/Veh:	23.7	22.7	26.2	22.6	0.0	23.0	12.1	3.7	3.7	24.7	17.4	17.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	23.7	22.7	26.2	22.6	0.0	23.0	12.1	3.7	3.7	24.7	17.4	17.4
DesignQueue:	4	1	7	1	0	2	14	10	1	3	10	3

PM Peak Hour - Existing Conditions
SSU Master Plan EIR Traffic Analysis
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Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

Intersection #8 E. Cotati Ave./Bodway Pkwy.

Cycle (sec):	100	Critical Vol./Cap. (X):	0.660
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	16.0
Optimal Cycle:	55	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 1 0 1			0 1 0 0 1			1 0 1 1 0			1 0 0 1 0		
Volume Module:												
Base Vol:	97	27	65	68	18	214	203	359	40	91	598	15
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	97	27	65	68	18	214	203	359	40	91	598	15
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.73	0.73	0.73	0.89	0.89	0.89	0.91	0.91	0.91
PHF Volume:	111	31	74	93	25	292	227	402	45	100	655	16
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	111	31	74	93	25	292	227	402	45	100	655	16
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.05	1.05	1.00	1.00	1.00
Final Vol.:	111	31	74	93	25	292	227	422	47	100	655	16
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.55	1.00	0.85	0.87	0.87	0.85	0.95	0.99	0.99	0.95	1.00	1.00
Lanes:	1.00	1.00	1.00	0.79	0.21	1.00	1.00	1.80	0.20	1.00	0.98	0.02
Final Sat.:	1045	1900	1615	1303	350	1615	1805	3385	377	1805	1855	45
Capacity Analysis Module:												
Vol/Sat:	0.11	0.02	0.05	0.07	0.07	0.18	0.13	0.12	0.12	0.06	0.35	0.35
Crit Moves:						****	****				****	
Green/Cycle:	0.27	0.27	0.27	0.27	0.27	0.27	0.19	0.50	0.50	0.22	0.54	0.54
Volume/Cap:	0.39	0.06	0.17	0.26	0.26	0.66	0.66	0.25	0.25	0.25	0.66	0.66
Delay/Veh:	19.5	17.3	17.9	18.4	18.4	23.3	27.4	9.1	9.1	20.7	11.9	11.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	19.5	17.3	17.9	18.4	18.4	23.3	27.4	9.1	9.1	20.7	11.9	11.9
DesignQueue:	5	1	3	4	1	12	11	12	1	4	19	0

AM Peak Hour - Existing Conditions
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Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #9 E. Cotati Ave./Snyder-Maurice

Cycle (sec): 100 Critical Vol./Cap. (X): 0.591
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 18.2
Optimal Cycle: 56 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1	1 0	1 0	1	0 1	1 0	2	0 1	1 0	2	0 1
Volume Module: >> Count Date: 15 Sep 1999 << 7:15 - 8:15 a.m.												
Base Vol:	91	195	41	307	130	185	206	481	17	15	124	149
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	91	195	41	307	130	185	206	481	17	15	124	149
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	91	195	41	307	130	185	206	481	17	15	124	149
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.87	0.87	0.87	0.76	0.76	0.76	0.72	0.72	0.72	0.69	0.69	0.69
PHF Volume:	105	224	47	403	171	243	285	664	23	22	178	214
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	105	224	47	403	171	243	285	664	23	22	178	214
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.05	1.05	1.00	1.00	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Final Vol.:	105	235	49	403	171	243	285	698	23	22	187	214
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.97	0.97	0.95	1.00	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Lanes:	1.00	1.65	0.35	1.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1805	3050	636	1805	1900	1615	1805	3800	1615	1805	3800	1615
Capacity Analysis Module:												
Vol/Sat:	0.06	0.08	0.08	0.22	0.09	0.15	0.16	0.18	0.01	0.01	0.05	0.13
Crit Moves:		****		****			****					****
Green/Cycle:	0.14	0.13	0.13	0.38	0.37	0.37	0.27	0.46	0.46	0.03	0.22	0.22
Volume/Cap:	0.41	0.59	0.59	0.59	0.25	0.41	0.59	0.40	0.03	0.40	0.22	0.59
Delay/Veh:	25.9	27.9	27.9	17.1	14.3	15.5	22.0	11.6	9.5	33.2	20.5	24.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	25.9	27.9	27.9	17.1	14.3	15.5	22.0	11.6	9.5	33.2	20.5	24.3
DesignQueue:	5	12	2	15	6	9	12	22	1	1	8	10

PM Peak Hour - Existing Conditions
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

Intersection #9 E. Cotati Ave./Snyder-Maurice

Cycle (sec): 100 Critical Vol./Cap. (X): 0.638
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 18.3
Optimal Cycle: 63 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1	1 0	1 0	1	0 1	1 0	2	0 1	1 0	2	0 1
Volume Module: >> Count Date: 15 Sep 1999 << 4:30 to 5:30 p.m.												
Base Vol:	69	155	18	251	198	254	215	312	69	45	450	417
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	69	155	18	251	198	254	215	312	69	45	450	417
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.84	0.84	0.84	0.93	0.93	0.93	0.81	0.81	0.81	0.93	0.93	0.93
PHF Volume:	82	185	21	271	214	275	264	383	85	48	482	446
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	82	185	21	271	214	275	264	383	85	48	482	446
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.05	1.05	1.00	1.00	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Final Vol.:	82	194	23	271	214	275	264	402	85	48	506	446
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.98	0.98	0.95	1.00	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Lanes:	1.00	1.79	0.21	1.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1805	3329	395	1805	1900	1615	1805	3800	1615	1805	3800	1615
Capacity Analysis Module:												
Vol/Sat:	0.05	0.06	0.06	0.15	0.11	0.17	0.15	0.11	0.05	0.03	0.13	0.28
Crit Moves:	****					****	****					****
Green/Cycle:	0.07	0.09	0.09	0.24	0.27	0.27	0.23	0.53	0.53	0.13	0.43	0.43
Volume/Cap:	0.64	0.62	0.62	0.62	0.42	0.64	0.64	0.20	0.10	0.20	0.31	0.64
Delay/Veh:	36.0	30.4	30.4	23.6	19.9	23.1	24.8	8.0	7.6	25.0	12.0	15.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	36.0	30.4	30.4	23.6	19.9	23.1	24.8	8.0	7.6	25.0	12.0	15.7
DesignQueue:	4	10	1	12	9	12	12	11	2	2	17	15

APPENDIX E.5

CUMULATIVE BASE (FUTURE WITHOUT PROJECT) CONDITIONS LEVEL OF SERVICE CALCULATIONS

AM Peak Hour - Future Conditions no SSU growth
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #1 R.P.X./Snyder Ln.

Cycle (sec):	100	Critical Vol./Cap. (X):	1.054
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	48.1
Optimal Cycle:	180	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 1 0 0 1			1 1 0 0 1			1 0 2 0 1			1 0 2 0 1		
Volume Module: 7:45 - 8:45 a.m.												
Base Vol:	166	474	261	127	540	168	245	936	346	237	293	49
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	166	474	261	127	540	168	245	936	346	237	293	49
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Sauvignon:	-1	-1	-2	-13	-1	0	0	-23	-9	0	-1	0
Initial Fut:	165	473	259	114	539	168	245	913	337	237	292	49
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	183	526	288	127	599	187	272	1014	374	263	324	54
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	183	526	288	127	599	187	272	1014	374	263	324	54
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.05	1.05	1.00	1.05	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Final Vol.:	193	552	288	133	629	187	272	1065	374	263	341	54
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.99	0.99	0.85	0.99	0.99	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Lanes:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1881	1881	1615	1881	1881	1615	1805	3800	1615	1805	3800	1615
Capacity Analysis Module:												
Vol/Sat:	0.10	0.29	0.18	0.07	0.33	0.12	0.15	0.28	0.23	0.15	0.09	0.03
Crit Moves:		****			****			****		****		
Green/Cycle:	0.28	0.28	0.28	0.32	0.32	0.32	0.25	0.27	0.27	0.14	0.15	0.15
Volume/Cap:	0.37	1.05	0.64	0.22	1.05	0.36	0.59	1.05	0.87	1.05	0.59	0.22
Delay/Veh:	18.8	65.1	22.6	16.2	63.5	17.2	22.7	60.9	34.8	89.2	26.8	24.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	18.8	65.1	22.6	16.2	63.5	17.2	22.7	60.9	34.8	89.2	26.8	24.2
DesignQueue:	8	24	12	5	26	7	12	47	16	13	16	3

PM Peak Hour - Future Conditions no SSU growth
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #1 R.P.X./Snyder Ln.

Cycle (sec):	100	Critical Vol./Cap. (X):	1.275
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	123.4
Optimal Cycle:	180	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 1 0 0 1			1 1 0 0 1			1 0 2 0 1			1 0 2 0 1		
Volume Module:												
Base Vol:	336	777	268	102	748	238	234	501	297	223	534	112
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	336	777	268	102	748	238	234	501	297	223	534	112
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Sauvignon:	-8	-11	-1	-4	-1	0	0	-8	-6	-1	-10	-1
Initial Fut:	328	766	267	98	747	238	234	493	291	222	524	111
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	364	851	297	109	830	264	260	548	323	247	582	123
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	364	851	297	109	830	264	260	548	323	247	582	123
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.05	1.05	1.00	1.05	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Final Vol.:	383	894	297	114	872	264	260	575	323	247	611	123
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.99	0.99	0.85	0.99	0.99	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Lanes:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1881	1881	1615	1881	1881	1615	1805	3800	1615	1805	3800	1615
Capacity Analysis Module:												
Vol/Sat:	0.20	0.48	0.18	0.06	0.46	0.16	0.14	0.15	0.20	0.14	0.16	0.08
Crit Moves:		****			****				****	****		
Green/Cycle:	0.37	0.37	0.37	0.36	0.36	0.36	0.12	0.16	0.16	0.11	0.14	0.14
Volume/Cap:	0.55	1.28	0.49	0.17	1.28	0.45	1.15	0.97	1.28	1.28	1.15	0.55
Delay/Veh:	16.2	185	16.1	13.9	188	16.0	138.9	48.0	216.3	226.4	119	28.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	16.2	185	16.1	13.9	188	16.0	138.9	48.0	216.3	226.4	119	28.0
DesignQueue:	14	36	11	4	35	10	13	29	16	13	31	6

AM Peak Hour - Future Conditions (mitigated)
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #1 R.P.X./Snyder Ln.

Cycle (sec):	100	Critical Vol./Cap. (X):	0.693
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	20.9
Optimal Cycle:	74	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	2	0 1	1 0	2	0 1	1 0	2	0 1	1 0	2	0 1
Volume Module: 7:45 - 8:45 a.m.												
Base Vol:	166	474	261	127	540	168	245	936	346	237	293	49
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	166	474	261	127	540	168	245	936	346	237	293	49
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Sauvignon:	-1	-1	-2	-13	-1	0	0	-23	-9	0	-1	0
Initial Fut:	165	473	259	114	539	168	245	913	337	237	292	49
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	183	526	288	127	599	187	272	1014	374	263	324	54
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	183	526	288	127	599	187	272	1014	374	263	324	54
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Final Vol.:	183	552	288	127	629	187	272	1065	374	263	341	54
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	0.95	1.00	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1805	3800	1615	1805	3800	1615	1805	3800	1615	1805	3800	1615
Capacity Analysis Module:												
Vol/Sat:	0.10	0.15	0.18	0.07	0.17	0.12	0.15	0.28	0.23	0.15	0.09	0.03
Crit Moves:	****				****			****		****		
Green/Cycle:	0.15	0.28	0.28	0.11	0.24	0.24	0.39	0.40	0.40	0.21	0.23	0.23
Volume/Cap:	0.69	0.53	0.65	0.65	0.69	0.48	0.39	0.69	0.57	0.69	0.39	0.15
Delay/Veh:	31.3	20.2	22.8	32.5	24.0	21.9	14.6	16.9	15.8	27.3	21.2	19.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	31.3	20.2	22.8	32.5	24.0	21.9	14.6	16.9	15.8	27.3	21.2	19.9
DesignQueue:	9	23	12	6	28	9	10	38	13	12	15	2

PM Peak Hour - Future Conditions (mitigated)
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #1 R.P.X./Snyder Ln.

Cycle (sec):	100	Critical Vol./Cap. (X):	0.768
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	21.8
Optimal Cycle:	98	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	2	0 1	1 0	2	0 1	1 0	2	0 1	1 0	2	0 1
Volume Module:												
Base Vol:	336	777	268	102	748	238	234	501	297	223	534	112
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	336	777	268	102	748	238	234	501	297	223	534	112
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Sauvignon:	-8	-11	-1	-4	-1	0	0	-8	-6	-1	-10	-1
Initial Fut:	328	766	267	98	747	238	234	493	291	222	524	111
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	364	851	297	109	830	264	260	548	323	247	582	123
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	364	851	297	109	830	264	260	548	323	247	582	123
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Final Vol.:	364	894	297	109	872	264	260	575	323	247	611	123
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	0.95	1.00	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1805	3800	1615	1805	3800	1615	1805	3800	1615	1805	3800	1615
Capacity Analysis Module:												
Vol/Sat:	0.20	0.24	0.18	0.06	0.23	0.16	0.14	0.15	0.20	0.14	0.16	0.08
Crit Moves:	****				****				****	****		
Green/Cycle:	0.26	0.45	0.45	0.11	0.30	0.30	0.21	0.26	0.26	0.18	0.23	0.23
Volume/Cap:	0.77	0.53	0.41	0.53	0.77	0.55	0.70	0.58	0.77	0.77	0.70	0.33
Delay/Veh:	27.1	13.2	12.3	28.9	22.9	20.0	27.5	21.5	27.8	32.6	24.4	20.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	27.1	13.2	12.3	28.9	22.9	20.0	27.5	21.5	27.8	32.6	24.4	20.9
DesignQueue:	14	29	10	5	36	11	12	25	14	12	27	5

AM Peak Hour - Future Conditions no SSU growth
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 RPX/North SSU Entrance

Average Delay (sec/veh): 236.0 Worst Case Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Stop Sign			Stop Sign			Uncontrolled			Uncontrolled	
Rights:		Include			Include			Include			Include	
Lanes:		1 0 0 1 0			1 0 0 1 0			1 0 0 1 0			1 0 0 1 0	
Volume Module:												
Base Vol:	15	0	7	350	0	72	66	351	97	29	233	357
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	15	0	7	350	0	72	66	351	97	29	233	357
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Sauvignon:	-1	0	0	0	-5	0	0	-23	-5	-3	0	0
Initial Fut:	14	0	7	350	-5	72	66	328	92	26	233	357
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	16	0	8	389	-6	80	73	364	102	29	259	397
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	16	0	8	389	0	80	73	364	102	29	259	397
Adjusted Volume Module:												
Grade:		0%			0%			0%			0%	
% Cycle/Cars:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
% Truck/Comb:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
PCE Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.00	1.00	1.10	1.00	1.00
Cycl/Car PCE:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
Trck/Cmb PCE:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
Adj Vol.:	17	0	9	428	0	88	81	364	102	32	259	397
Critical Gap Module:												
MoveUp Time:	3.4	xxxx	2.6	3.4	xxxx	2.6	2.1	xxxx	xxxxx	2.1	xxxx	xxxxx
Critical Gp:	6.5	xxxx	5.5	6.5	xxxx	5.5	5.0	xxxx	xxxxx	5.0	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1015	xxxx	416	979	xxxx	457	656	xxxx	xxxxx	467	xxxx	xxxxx
Potent Cap.:	274	xxxx	853	287	xxxx	812	835	xxxx	xxxxx	1027	xxxx	xxxxx
Adj Cap:	0.81	xxxx	1.00	0.90	xxxx	1.00	1.00	xxxx	xxxxx	1.00	xxxx	xxxxx
Move Cap.:	221	xxxx	853	257	xxxx	812	835	xxxx	xxxxx	1027	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	17.6	xxxx	4.3	976.7	xxxx	4.9	4.7	xxxx	xxxxx	3.6	xxxx	xxxxx
LOS by Move:	C	*	*	F	*	*	A	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	853	xxxx	xxxx	812	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	4.3	xxxxx	xxxx	4.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	A	*	*	A	*	*	*	*	*	*
ApproachDel:		13.1			310.9			0.7			0.0	

PM Peak Hour - Future Conditions no SSU growth
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 RPX/North SSU Entrance

Average Delay (sec/veh): 343.1 Worst Case Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Stop Sign			Stop Sign			Uncontrolled			Uncontrolled	
Rights:		Include			Include			Include			Include	
Lanes:		1 0 0 1 0			1 0 0 1 0			1 0 0 1 0			1 0 0 1 0	
Volume Module:												
Base Vol:	181	0	43	357	0	66	72	296	49	24	355	350
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	181	0	43	357	0	66	72	296	49	24	355	350
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Sauvignon:	-12	-4	-4	0	-2	0	0	-8	-2	-2	-1	0
Initial Fut:	169	-4	39	357	-2	66	72	288	47	22	354	350
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	188	-4	43	397	-2	73	80	320	52	24	393	389
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	188	0	43	397	0	73	80	320	52	24	393	389
Adjusted Volume Module:												
Grade:		0%			0%			0%			0%	
% Cycle/Cars:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
% Truck/Comb:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
PCE Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.00	1.00	1.10	1.00	1.00
Cycl/Car PCE:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
Trck/Cmb PCE:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
Adj Vol.:	207	0	48	436	0	81	88	320	52	27	393	389
Critical Gap Module:												
MoveUp Time:	3.4	xxxx	2.6	3.4	xxxx	2.6	2.1	xxxx	xxxxx	2.1	xxxx	xxxxx
Critical Gp:	6.5	xxxx	5.5	6.5	xxxx	5.5	5.0	xxxx	xxxxx	5.0	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1075	xxxx	346	1060	xxxx	588	782	xxxx	xxxxx	372	xxxx	xxxxx
Potent Cap.:	253	xxxx	925	258	xxxx	697	727	xxxx	xxxxx	1139	xxxx	xxxxx
Adj Cap:	0.79	xxxx	1.00	0.85	xxxx	1.00	1.00	xxxx	xxxxx	1.00	xxxx	xxxxx
Move Cap.:	199	xxxx	925	218	xxxx	697	727	xxxx	xxxxx	1139	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	149.7	xxxx	4.1	1531	xxxx	5.8	5.6	xxxx	xxxxx	3.2	xxxx	xxxxx
LOS by Move:	F	*	*	F	*	*	B	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	925	xxxx	xxxx	697	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	4.1	xxxxx	xxxx	5.8	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	A	*	*	B	*	*	*	*	*	*
ApproachDel:		122.4			1293.0			1.1			0.1	

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AM Peak Hour - Future Conditions (mitigated)
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #2 RPK/North SSU Entrance

Cycle (sec):	100	Critical Vol./Cap. (X):	0.509
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	12.6
Optimal Cycle:	38	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Permitted			Permitted			Protected			Protected	
Rights:		Include			Include			Include			Include	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 0 1 0			1 0 0 1 0			1 0 0 1 0			1 0 1 0 1		
Volume Module:												
Base Vol:	15	0	7	350	0	72	66	351	97	29	233	357
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	15	0	7	350	0	72	66	351	97	29	233	357
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Sauvignon:	-1	0	0	0	-5	0	0	-23	-5	-3	0	0
Initial Fut:	14	0	7	350	-5	72	66	328	92	26	233	357
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	16	0	8	389	-6	80	73	364	102	29	259	397
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	16	0	8	389	0	80	73	364	102	29	259	397
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	16	0	8	389	0	80	73	364	102	29	259	397
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.70	1.00	0.85	0.92	1.00	0.85	0.95	0.97	0.97	0.95	1.00	0.85
Lanes:	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.78	0.22	1.00	1.00	1.00
Final Sat.:	1330	0	1615	1748	0	1615	1805	1440	403	1805	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.01	0.00	0.00	0.22	0.00	0.05	0.04	0.25	0.25	0.02	0.14	0.25
Crit Moves:				****			****					****
Green/Cycle:	0.44	0.00	0.44	0.44	0.00	0.44	0.08	0.53	0.53	0.03	0.48	0.48
Volume/Cap:	0.03	0.00	0.01	0.51	0.00	0.11	0.51	0.48	0.48	0.48	0.28	0.51
Delay/Veh:	10.3	0.0	10.3	13.6	0.0	10.8	31.0	9.9	9.9	35.0	10.0	11.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.3	0.0	10.3	13.6	0.0	10.8	31.0	9.9	9.9	35.0	10.0	11.9
DesignQueue:	1	0	0	13	0	3	4	10	3	2	8	12

PM Future Mon Oct 11, 1999 14:18:07 Page 4-1

PM Peak Hour - Future Conditions (mitigated)
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #2 RPK/North SSU Entrance

Cycle (sec):	100	Critical Vol./Cap. (X):	0.546
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	13.2
Optimal Cycle:	41	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Permitted			Permitted			Protected			Protected	
Rights:		Include			Include			Include			Include	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 0 1 0			1 0 0 1 0			1 0 0 1 0			1 0 1 0 1		
Volume Module:												
Base Vol:	181	0	43	357	0	66	72	296	49	24	355	350
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	181	0	43	357	0	66	72	296	49	24	355	350
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Sauvignon:	-12	-4	-4	0	-2	0	0	-8	-2	-2	-1	0
Initial Fut:	169	-4	39	357	-2	66	72	288	47	22	354	350
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	188	-4	43	397	-2	73	80	320	52	24	393	389
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	188	0	43	397	0	73	80	320	52	24	393	389
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	188	0	43	397	0	73	80	320	52	24	393	389
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.72	1.00	0.85	0.80	1.00	0.85	0.95	0.98	0.98	0.95	1.00	0.85
Lanes:	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.86	0.14	1.00	1.00	1.00
Final Sat.:	1368	0	1615	1520	0	1615	1805	1602	260	1805	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.14	0.00	0.03	0.26	0.00	0.05	0.04	0.20	0.20	0.01	0.21	0.24
Crit Moves:				****			****					****
Green/Cycle:	0.48	0.00	0.48	0.48	0.00	0.48	0.08	0.49	0.49	0.03	0.44	0.44
Volume/Cap:	0.29	0.00	0.06	0.55	0.00	0.09	0.55	0.41	0.41	0.41	0.47	0.55
Delay/Veh:	10.3	0.0	9.0	12.6	0.0	9.2	31.7	10.7	10.7	33.2	13.1	14.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.3	0.0	9.0	12.6	0.0	9.2	31.7	10.7	10.7	33.2	13.1	14.0
DesignQueue:	6	0	1	12	0	2	4	10	2	1	13	13

SSU MASTER PLAN TRAFFIC ANALYSIS - AM FUTURE (NO SSU GROWTH) * N-AMFUT *
Rohnert Park Expressway/Future North Entrance
Intersection ID: 1
Roundabout

Table S.15 - CAPACITY AND LEVEL OF SERVICE (HCM STYLE)

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS
West: Eastbound RP Expressway						
12	LTR	539	971	0.555*	3.8	B
		539	971	0.555	3.8	B
South: Northbound SSU North						
32	LTR	28	570	0.049	5.9	B
		28	570	0.049	5.9	B
East: Westbound RP Expressway						
22	LT	288	735	0.392	0.4	A
23	R	397	1013	0.392	0.4	A
		685	1748	0.392	0.4	A
North: Southbound Eleanor Drive						
42	LT	391	980	0.399	1.8	B
43	R	80	201	0.398	1.8	B
		471	1181	0.399	1.8	B
ALL VEHICLES:		1723	4470	0.555	1.9	B
INTERSECTION:		1723	4470	0.555	1.9	B

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria),
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in
the SIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

SSU MASTER PLAN TRAFFIC ANALYSIS - PM FUTURE (NO SSU GROWTH) * N-PMFUT *
Rohnert Park Expressway/Future North Entrance
Intersection ID: 1
Roundabout

Table S.15 - CAPACITY AND LEVEL OF SERVICE (HCM STYLE)

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS
West: Eastbound RP Expressway						
12	LTR	452	923	0.490	3.2	B
		452	923	0.490	3.2	B
South: Northbound SSU North						
32	LTR	233	619	0.376	6.9	B
		233	619	0.376	6.9	B
East: Westbound RP Expressway						
22	LT	418	723	0.578*	1.6	A
23	R	389	673	0.578*	1.6	A
		807	1396	0.578	1.6	A
North: Southbound Eleanor Drive						
42	LT	399	699	0.571	6.6	B
43	R	73	128	0.570	6.6	B
		472	827	0.571	6.6	B
ALL VEHICLES:		1964	3764	0.578	3.8	B
INTERSECTION:		1964	3764	0.578	3.8	B

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria),
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in
the SIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

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----------------------------------------------------------------------------
              AM Peak Hour - Future Conditions (no SSU growth)
                  SSU Master Plan EIR Traffic Analysis
                           County of Sonoma
----------------------------------------------------------------------------
                   Level Of Service Computation Report
          1994 HCM Operations Method (Future Volume Alternative)
****************************************************************************
Intersection #3 R.P.K./Petaluma Hill Rd.
****************************************************************************
Cycle (sec):          100               Critical Vol./Cap. (X):        1.441
Loss Time (sec):        0 (Y+R = 4 sec) Average Delay (sec/veh):       259.5
Optimal Cycle:        180               Level Of Service:                  F
****************************************************************************
Approach:      North Bound      South Bound       East Bound      West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase     Split Phase
Rights:           Include          Include         Include         Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        1  0  1  0  0   0  0  0  1  0   0  0  1! 0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     371 1255    0     0  973   65    51    0  680     0    0    0
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:  371 1255    0     0  973   65    51    0  680     0    0    0
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
Sauvignon:     -2   -1    0     0   -8   -1     0    0  -23     0    0    0
Initial Fut:  369 1254    0     0  965   64    51    0  657     0    0    0
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:   410 1393    0     0 1072   71    57    0  730     0    0    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:  410 1393    0     0 1072   71    57    0  730     0    0    0
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Final Vol.:   410 1393    0     0 1072   71    57    0  730     0    0    0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  0.95 1.00 1.00  1.00 0.89 0.89  0.77 1.00 0.77  1.00 1.00 1.00
Lanes:       1.00 1.00 0.00  0.00 0.94 0.06  0.07 0.00 0.93  0.00 0.00 0.00
Final Sat.:  1805 1900    0     0 1586  105   106    0 1357     0    0    0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.23 0.73 0.00  0.00 0.68 0.68  0.54 0.00 0.54  0.00 0.00 0.00
Crit Moves:  ****                 ****       ****
Green/Cycle: 0.16 0.63 0.00  0.00 0.47 0.47  0.37 0.00 0.37  0.00 0.00 0.00
Volume/Cap:  1.44 1.17 0.00  0.00 1.44 1.44  1.44 0.00 1.44  0.00 0.00 0.00
Delay/Veh:  374.2  102  0.0   0.0  345 345.4 353.5  0.0 353.5  0.0  0.0  0.0
User DelAdj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh: 374.2  102  0.0   0.0  345 345.4 353.5  0.0 353.5  0.0  0.0  0.0
DesignQueue:   20   36    0     0   38    3     2    0   29     0    0    0
****************************************************************************
```



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----------------------------------------------------------------------------
              PM Peak Hour - Future Conditions (no SSU growth)
                  SSU Master Plan EIR Traffic Analysis
                           County of Sonoma
----------------------------------------------------------------------------
                   Level Of Service Computation Report
          1994 HCM Operations Method (Future Volume Alternative)
****************************************************************************
Intersection #3 R.P.K./Petaluma Hill Rd.
****************************************************************************
Cycle (sec):          100               Critical Vol./Cap. (X):        1.719
Loss Time (sec):        0 (Y+R = 4 sec) Average Delay (sec/veh):       550.9
Optimal Cycle:        180               Level Of Service:                  F
****************************************************************************
Approach:      North Bound      South Bound       East Bound      West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase     Split Phase
Rights:           Include          Include         Include         Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        1  0  1  0  0   0  0  0  1  0   0  0  1! 0  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     666 1060    0     0 1024   91   185    0  611     0    0    0
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:  666 1060    0     0 1024   91   185    0  611     0    0    0
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
Sauvignon:     -3   -7    0     0   -1   -1    -4    0   -8     0    0    0
Initial Fut:  663 1053    0     0 1023   90   181    0  603     0    0    0
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:   737 1170    0     0 1137  100   201    0  670     0    0    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:  737 1170    0     0 1137  100   201    0  670     0    0    0
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Final Vol.:   737 1170    0     0 1137  100   201    0  670     0    0    0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  0.95 1.00 1.00  1.00 0.89 0.89  0.79 1.00 0.79  1.00 1.00 1.00
Lanes:       1.00 1.00 0.00  0.00 0.92 0.08  0.23 0.00 0.77  0.00 0.00 0.00
Final Sat.:  1805 1900    0     0 1554  137   347    0 1158     0    0    0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.41 0.62 0.00  0.00 0.73 0.73  0.58 0.00 0.58  0.00 0.00 0.00
Crit Moves:  ****                 ****       ****
Green/Cycle: 0.24 0.66 0.00  0.00 0.43 0.43  0.34 0.00 0.34  0.00 0.00 0.00
Volume/Cap:  1.72 0.93 0.00  0.00 1.72 1.72  1.72 0.00 1.72  0.00 0.00 0.00
Delay/Veh:  781.2 18.3  0.0   0.0  766 766.3 774.7  0.0 774.7  0.0  0.0  0.0
User DelAdj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh: 781.2 18.3  0.0   0.0  766 766.3 774.7  0.0 774.7  0.0  0.0  0.0
DesignQueue:   35   26    0     0   44    4     8    0   28     0    0    0
****************************************************************************
```

```
-------------------------------------------------------------------------------
              AM Peak Hour - Future Conditions  mitigated
                  SSU Master Plan EIR Traffic Analysis
                           County of Sonoma
-------------------------------------------------------------------------------
                 Level Of Service Computation Report
        1994 HCM Operations Method (Future Volume Alternative)
*******************************************************************************
Intersection #3 R.P.X./Petaluma Hill Rd.
*******************************************************************************
Cycle (sec):          100               Critical Vol./Cap. (X):        0.771
Loss Time (sec):        0 (Y-R = 4 sec) Average Delay (sec/veh):        12.8
Optimal Cycle:        100               Level Of Service:                  B
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:          Include          Include            Ovl             Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:         1  0  2  0  0    0  0  1  1  0    1  0  0  0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     371 1255      0     0  973    65    51     0   680     0     0     0
Growth Adj:  1.00 1.00   1.00  1.00 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:  371 1255      0     0  973    65    51     0   680     0     0     0
Added Vol:      0    0      0     0    0     0     0     0     0     0     0     0
Sauvignon:     -2   -1      0     0   -8    -1     0     0   -23     0     0     0
Initial Fut:  369 1254      0     0  965    64    51     0   657     0     0     0
User Adj:    1.00 1.00   1.00  1.00 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     0.90 0.90   0.90  0.90 0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90
PHF Volume:   410 1393      0     0 1072    71    57     0   730     0     0     0
Reduct Vol:     0    0      0     0    0     0     0     0     0     0     0     0
Reduced Vol:  410 1393      0     0 1072    71    57     0   730     0     0     0
PCE Adj:     1.00 1.00   1.00  1.00 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00 1.05   1.00  1.00 1.05  1.05  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:   410 1463      0     0 1126    75    57     0   730     0     0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900   1900  1900 1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  0.95 1.00   1.00  1.00 0.99  0.99  0.95  1.00  0.85  1.00  1.00  1.00
Lanes:       1.00 2.00   0.00  0.00 1.88  0.12  1.00  0.00  1.00  0.00  0.00  0.00
Final Sat.:  1805 3800      0     0 3527   235  1805     0  1615     0     0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.23 0.39   0.00  0.00 0.32  0.32  0.03  0.00  0.45  0.00  0.00  0.00
Crit Moves:  ****                   ****                        ****
Green/Cycle: 0.29 0.71   0.00  0.00 0.41  0.41  0.29  0.00  0.59  0.00  0.00  0.00
Volume/Cap:  0.77 0.54   0.00  0.00 0.77  0.77  0.11  0.00  0.77  0.00  0.00  0.00
Delay/Veh:   25.5  4.6    0.0   0.0 18.0  18.0  16.7   0.0  12.9   0.0   0.0   0.0
User DelAdj: 1.00 1.00   1.00  1.00 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:  25.5  4.6    0.0   0.0 18.0  18.0  16.7   0.0  12.9   0.0   0.0   0.0
DesignQueue:   17   26      0     0   40     3     2     0    19     0     0     0
*******************************************************************************
```



```
-------------------------------------------------------------------------------
              PM Peak Hour - Future Conditions  mitigated
                  SSU Master Plan EIR Traffic Analysis
                           County of Sonoma
-------------------------------------------------------------------------------
                 Level Of Service Computation Report
        1994 HCM Operations Method (Future Volume Alternative)
*******************************************************************************
Intersection #3 R.P.X./Petaluma Hill Rd.
*******************************************************************************
Cycle (sec):          100               Critical Vol./Cap. (X):        0.865
Loss Time (sec):        0 (Y-R = 4 sec) Average Delay (sec/veh):        14.9
Optimal Cycle:        169               Level Of Service:                  B
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:          Include          Include            Ovl             Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:         1  0  2  0  0    0  0  1  1  0    1  0  0  0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     666 1060      0     0 1024    91   185     0   611     0     0     0
Growth Adj:  1.00 1.00   1.00  1.00 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:  666 1060      0     0 1024    91   185     0   611     0     0     0
Added Vol:      0    0      0     0    0     0     0     0     0     0     0     0
Sauvignon:     -3   -7      0     0   -1    -1    -4     0    -8     0     0     0
Initial Fut:  663 1053      0     0 1023    90   181     0   603     0     0     0
User Adj:    1.00 1.00   1.00  1.00 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     0.90 0.90   0.90  0.90 0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90
PHF Volume:   737 1170      0     0 1137   100   201     0   670     0     0     0
Reduct Vol:     0    0      0     0    0     0     0     0     0     0     0     0
Reduced Vol:  737 1170      0     0 1137   100   201     0   670     0     0     0
PCE Adj:     1.00 1.00   1.00  1.00 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00 1.05   1.00  1.00 1.05  1.05  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:   737 1229      0     0 1194   105   201     0   670     0     0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900   1900  1900 1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  0.95 1.00   1.00  1.00 0.99  0.99  0.95  1.00  0.85  1.00  1.00  1.00
Lanes:       1.00 2.00   0.00  0.00 1.84  0.16  1.00  0.00  1.00  0.00  0.00  0.00
Final Sat.:  1805 3800      0     0 3458   304  1805     0  1615     0     0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.41 0.32   0.00  0.00 0.35  0.35  0.11  0.00  0.41  0.00  0.00  0.00
Crit Moves:  ****                   ****        ****
Green/Cycle: 0.47 0.87   0.00  0.00 0.40  0.40  0.13  0.00  0.60  0.00  0.00  0.00
Volume/Cap:  0.86 0.37   0.00  0.00 0.86  0.86  0.86  0.00  0.69  0.00  0.00  0.00
Delay/Veh:   21.8  0.8    0.0   0.0 21.8  21.8  46.2   0.0  10.3   0.0   0.0   0.0
User DelAdj: 1.00 1.00   1.00  1.00 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:  21.8  0.8    0.0   0.0 21.8  21.8  46.2   0.0  10.3   0.0   0.0   0.0
DesignQueue:   24   10      0     0   44     4    10     0    16     0     0     0
*******************************************************************************
```

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--------------------------------------------------------------------------------
            AM Peak Hour - Future Conditions (no SSU growth)
                  SSU Master Plan EIR Traffic Analysis
                           County of Sonoma
--------------------------------------------------------------------------------
                  Level Of Service Computation Report
       1994 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #4 Laurel Drive/Petaluma Hill Rd.
********************************************************************************
Average Delay (sec/veh):      0.1            Worst Case Level Of Service:      C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       1  0  1  0  0    0  0  0  1  0    0  0  0  0  1    0  0  0  0  0
------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:      17 1539     0     0 1419   168     0     0     3     0     0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   17 1539     0     0 1419   168     0     0     3     0     0     0
Added Vol:      0    0     0     0    0     0     0     0     0     0     0     0
Sauvignon:     -3   -3     0     0  -17   -14     0     0     0     0     0     0
Initial Fut:   14 1536     0     0 1402   154     0     0     3     0     0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    16 1707     0     0 1558   171     0     0     3     0     0     0
Reduct Vol:     0    0     0     0    0     0     0     0     0     0     0     0
Final Vol.:    16 1707     0     0 1558   171     0     0     3     0     0     0
Adjusted Volume Module:
Grade:             0%               0%               0%               0%
% Cycle/Cars:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
% Truck/Comb:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
PCE Adj:     1.10 1.00  1.00  1.10 1.00  1.00  1.10 1.10  1.10  1.10 1.10  1.10
Cycl/Car PCE:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
Trck/Cmb PCE:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
Adj Vol.:      17 1707     0     0 1558   171     0     0     4     0     0     0
Critical Gap Module:
MoveUp Time:  2.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   2.6 xxxxx xxxx xxxxx
Critical Gp:  5.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   5.5 xxxxx xxxx xxxxx
------------|----------------||----------------||----------------||----------------|
Capacity Module:
Cnflict Vol: 1729 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx  1643  xxxx xxxx xxxxx
Potent Cap.:  257 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   204  xxxx xxxx xxxxx
Adj Cap:     1.00 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx  1.00  xxxx xxxx xxxxx
Move Cap.:    257 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   204  xxxx xxxx xxxxx
------------|----------------||----------------||----------------||----------------|
Level Of Service Module:
Stopped Del: 14.9 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  18.0 xxxxx xxxx xxxxx
LOS by Move:    C    *     *     *    *     *     *    *     C     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:       0.1              0.0             18.0              0.0
```



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--------------------------------------------------------------------------------
            PM Peak Hour - Future Conditions (no SSU growth)
                  SSU Master Plan EIR Traffic Analysis
                           County of Sonoma
--------------------------------------------------------------------------------
                  Level Of Service Computation Report
       1994 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #4 Laurel Drive/Petaluma Hill Rd.
********************************************************************************
Average Delay (sec/veh):      0.1            Worst Case Level Of Service:      D
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       1  0  1  0  0    0  0  0  1  0    0  0  0  0  1    0  0  0  0  0
------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:       8 1712     0     0 1586    48     0     0    17     0     0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    8 1712     0     0 1586    48     0     0    17     0     0     0
Added Vol:      0    0     0     0    0     0     0     0     0     0     0     0
Sauvignon:     -1  -10     0     0   -5    -4     0     0    -2     0     0     0
Initial Fut:    7 1702     0     0 1581    44     0     0    15     0     0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     8 1891     0     0 1757    49     0     0    17     0     0     0
Reduct Vol:     0    0     0     0    0     0     0     0     0     0     0     0
Final Vol.:     8 1891     0     0 1757    49     0     0    17     0     0     0
Adjusted Volume Module:
Grade:             0%               0%               0%               0%
% Cycle/Cars:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
% Truck/Comb:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
PCE Adj:     1.10 1.00  1.00  1.10 1.00  1.00  1.10 1.10  1.10  1.10 1.10  1.10
Cycl/Car PCE:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
Trck/Cmb PCE:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
Adj Vol.:       9 1891     0     0 1757    49     0     0    18     0     0     0
Critical Gap Module:
MoveUp Time:  2.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   2.6 xxxxx xxxx xxxxx
Critical Gp:  5.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   5.5 xxxxx xxxx xxxxx
------------|----------------||----------------||----------------||----------------|
Capacity Module:
Cnflict Vol: 1806 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx  1781  xxxx xxxx xxxxx
Potent Cap.:  236 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   173  xxxx xxxx xxxxx
Adj Cap:     1.00 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx  1.00  xxxx xxxx xxxxx
Move Cap.:    236 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   173  xxxx xxxx xxxxx
------------|----------------||----------------||----------------||----------------|
Level Of Service Module:
Stopped Del: 15.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  23.0 xxxxx xxxx xxxxx
LOS by Move:    C    *     *     *    *     *     *    *     D     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:       0.1              0.0             23.0              0.0
```

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------------------------------------------------------------------------------
           AM Peak Hour - Future Conditions  no SSU growth
                  SSU Master Plan EIR Traffic Analysis
                            County of Sonoma
------------------------------------------------------------------------------
                     Level Of Service Computation Report
           1994 HCM Operations Method  Future Volume Alternative
******************************************************************************
Intersection #5 E. Cotati Ave./Petaluma Hill Rd.
******************************************************************************
Cycle (sec):         100              Critical Vol./Cap. (X):        1.217
Loss Time (sec):       0 (Y+R =  4 sec) Average Delay (sec/veh):      93.5
Optimal Cycle:       180              Level Of Service:                  F
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0    0     0     0    0    0     0    0    0     0
Lanes:        1  0  1  0  0   0  0  1  0  1    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      287 1003     0     0 1046   353   430    0   189     0    0     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   287 1003     0     0 1046   353   430    0   189     0    0     0
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
Sauvignon:      -5   -5     0     0   -1   -16    -1    0    -1     0    0     0
Initial Fut:   282  998     0     0 1045   337   429    0   188     0    0     0
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    313 1109     0     0 1161   374   477    0   209     0    0     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   313 1109     0     0 1161   374   477    0   209     0    0     0
PCE Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    313 1109     0     0 1161   374   477    0   209     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:   0.95 1.00  1.00  1.00 1.00  0.85  0.83 1.00  0.83  1.00 1.00  1.00
Lanes:        1.00 1.00  0.00  0.00 1.00  1.00  0.70 0.00  0.30  0.00 0.00  0.00
Final Sat.:   1805 1900     0     0 1900  1615  1102    0   483     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.17 0.58  0.00  0.00 0.61  0.23  0.43 0.00  0.43  0.00 0.00  0.00
Crit Moves:   ****                   ****                    ****
Green/Cycle:  0.14 0.64  0.00  0.00 0.50  0.50  0.36 0.00  0.36  0.00 0.00  0.00
Volume/Cap:   1.22 0.91  0.00  0.00 1.22  0.46  1.22 0.00  1.22  0.00 0.00  0.00
Delay/Veh:   173.3 16.9   0.0   0.0  138  10.7 149.8  0.0 149.8   0.0  0.0   0.0
User DelAdj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  173.3 16.9   0.0   0.0  139  10.7 149.8  0.0 149.8   0.0  0.0   0.0
DesignQueue:    16   26     0     0   39    11    19    0     8     0    0     0
******************************************************************************
```



```
------------------------------------------------------------------------------
           PM Peak Hour - Future Conditions  no SSU growth
                  SSU Master Plan EIR Traffic Analysis
                            County of Sonoma
------------------------------------------------------------------------------
                     Level Of Service Computation Report
           1994 HCM Operations Method (Future Volume Alternative
******************************************************************************
Intersection #5 E. Cotati Ave./Petaluma Hill Rd.
******************************************************************************
Cycle (sec):         100              Critical Vol./Cap. (X):        1.424
Loss Time (sec):       0 (Y+R =  4 sec) Average Delay (sec/veh):     248.0
Optimal Cycle:       180              Level Of Service:                  F
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0    0     0     0    0    0     0    0    0     0
Lanes:        1  0  1  0  0   0  0  1  0  1    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      240 1433     0     0 1365   287   301    0   375     0    0     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   240 1433     0     0 1365   287   301    0   375     0    0     0
Added Vol:       0    0     0     0    0     0     0    0     0     0    0     0
Sauvignon:      -2   -2     0     0   -4    -3    -9    0    -4     0    0     0
Initial Fut:   238 1431     0     0 1361   284   292    0   371     0    0     0
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    264 1590     0     0 1512   316   324    0   412     0    0     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   264 1590     0     0 1512   316   324    0   412     0    0     0
PCE Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    264 1590     0     0 1512   316   324    0   412     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:   0.95 1.00  1.00  1.00 1.00  0.85  0.80 1.00  0.80  1.00 1.00  1.00
Lanes:        1.00 1.00  0.00  0.00 1.00  1.00  0.44 0.00  0.56  0.00 0.00  0.00
Final Sat.:   1805 1900     0     0 1900  1615   672    0   855     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.15 0.84  0.00  0.00 0.80  0.20  0.48 0.00  0.48  0.00 0.00  0.00
Crit Moves:   ****                   ****                    ****
Green/Cycle:  0.10 0.66  0.00  0.00 0.56  0.56  0.34 0.00  0.34  0.00 0.00  0.00
Volume/Cap:   1.42 1.27  0.00  0.00 1.42  0.35  1.42 0.00  1.42  0.00 0.00  0.00
Delay/Veh:   370.8  166   0.0   0.0  320   7.9 336.2  0.0 336.2   0.0  0.0   0.0
User DelAdj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  370.8  166   0.0   0.0  320   7.9 336.2  0.0 336.2   0.0  0.0   0.0
DesignQueue:    14   38     0     0   47     8    13    0    17     0    0     0
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AM Peak Hour - Future Conditions (mitigated)
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #5 E. Cotati Ave./Petaluma Hill Rd.

Cycle (sec):	100	Critical Vol./Cap. (X):	0.758
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	15.0
Optimal Cycle:	94	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 2 0 0			0 0 2 0 1			1 0 0 0 1			0 0 0 0 0		
Volume Module:												
Base Vol:	287	1003	0	0	1046	353	430	0	189	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	287	1003	0	0	1046	353	430	0	189	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Sauvignon:	-5	-5	0	0	-1	-16	-1	0	-1	0	0	0
Initial Fut:	282	998	0	0	1045	337	429	0	188	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	313	1109	0	0	1161	374	477	0	209	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	313	1109	0	0	1161	374	477	0	209	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	313	1164	0	0	1219	374	477	0	209	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	1.00	1.00	1.00	0.85	0.95	1.00	0.85	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	2.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	1805	3800	0	0	3800	1615	1805	0	1615	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.17	0.31	0.00	0.00	0.32	0.23	0.26	0.00	0.13	0.00	0.00	0.00
Crit Moves:	****				****		****					
Green/Cycle:	0.23	0.65	0.00	0.00	0.42	0.42	0.35	0.00	0.35	0.00	0.00	0.00
Volume/Cap:	0.76	0.47	0.00	0.00	0.76	0.55	0.76	0.00	0.37	0.00	0.00	0.00
Delay/Veh:	28.7	5.8	0.0	0.0	17.3	14.7	22.3	0.0	16.0	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	28.7	5.8	0.0	0.0	17.3	14.7	22.3	0.0	16.0	0.0	0.0	0.0
DesignQueue:	14	25	0	0	43	13	18	0	8	0	0	0

PM Peak Hour - Future Conditions (mitigated)
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #5 E. Cotati Ave./Petaluma Hill Rd.

Cycle (sec):	100	Critical Vol./Cap. (X):	0.819
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	14.2
Optimal Cycle:	126	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 2 0 0			0 0 2 0 1			1 0 0 0 1			0 0 0 0 0		
Volume Module:												
Base Vol:	240	1433	0	0	1365	287	301	0	375	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	240	1433	0	0	1365	287	301	0	375	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Sauvignon:	-2	-2	0	0	-4	-3	-9	0	-4	0	0	0
Initial Fut:	238	1431	0	0	1361	284	292	0	371	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	264	1590	0	0	1512	316	324	0	412	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	264	1590	0	0	1512	316	324	0	412	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	264	1670	0	0	1588	316	324	0	412	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	1.00	1.00	1.00	0.85	0.95	1.00	0.85	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	2.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	1805	3800	0	0	3800	1615	1805	0	1615	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.15	0.44	0.00	0.00	0.42	0.20	0.18	0.00	0.26	0.00	0.00	0.00
Crit Moves:	****				****				****			
Green/Cycle:	0.18	0.69	0.00	0.00	0.51	0.51	0.31	0.00	0.31	0.00	0.00	0.00
Volume/Cap:	0.82	0.64	0.00	0.00	0.82	0.38	0.58	0.00	0.82	0.00	0.00	0.00
Delay/Veh:	36.0	6.0	0.0	0.0	15.4	9.8	19.8	0.0	27.7	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	36.0	6.0	0.0	0.0	15.4	9.8	19.8	0.0	27.7	0.0	0.0	0.0
DesignQueue:	13	33	0	0	49	9	15	0	27	0	0	0

AM Peak Hour - Future Conditions no SSU growth
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Unsignalized Method Future Volume Alternative

Intersection #6 E. Cotati Ave./Cypress Dr.

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 0 0 1			0 1 0 0 0			0 0 0 1 0		
Volume Module:												
Base Vol:	0	0	0	0	0	8	15	448	0	0	615	12
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	8	15	448	0	0	615	12
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Sauvignon:	0	0	0	0	0	-1	-8	-1	0	0	-13	-8
Initial Fut:	0	0	0	0	0	7	7	447	0	0	602	4
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	0	0	0	0	0	8	8	497	0	0	669	4
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	0	0	0	0	8	8	497	0	0	669	4
Adjusted Volume Module:												
Grade:	0%			0%			0%			0%		
% Cycle/Cars:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
% Truck/Comb:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
PCE Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.00	1.00	1.10	1.00	1.00
Cycl/Car PCE:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
Trck/Cmb PCE:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
Adj Vol.:	0	0	0	0	0	9	9	497	0	0	669	4
Critical Gap Module:												
MoveUp Time:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	2.6	2.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	5.5	5.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	671	673	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	633	819	xxxx	xxxxx	xxxx	xxxx	xxxxx
Adj Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	1.00	1.00	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	633	819	xxxx	xxxxx	xxxx	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	5.8	4.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	B	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	0.0			5.8			0.1			0.0		

PM Peak Hour - Future Conditions no SSU growth
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Unsignalized Method Future Volume Alternative

Intersection #6 E. Cotati Ave./Cypress Dr.

Average Delay (sec/veh): 1.8 Worst Case Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 1 0 0 0			0 0 0 1 0		
Volume Module:												
Base Vol:	0	0	0	60	0	109	3	624	0	0	541	11
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	60	0	109	3	624	0	0	541	11
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Sauvignon:	0	0	0	-4	0	-11	-4	-9	0	0	-12	-3
Initial Fut:	0	0	0	56	0	98	-1	615	0	0	529	8
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	0	0	0	62	0	109	-1	683	0	0	588	9
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	0	0	62	0	109	0	683	0	0	588	9
Adjusted Volume Module:												
Grade:	0%			0%			0%			0%		
% Cycle/Cars:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
% Truck/Comb:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
PCE Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.00	1.00	1.10	1.00	1.00
Cycl/Car PCE:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
Trck/Cmb PCE:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
Adj Vol.:	0	0	0	68	0	120	0	683	0	0	588	9
Critical Gap Module:												
MoveUp Time:	xxxxx	xxxx	xxxxx	3.4	xxxx	2.6	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Critical Gp:	xxxxx	xxxx	xxxxx	6.5	xxxx	5.5	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	1276	xxxx	592	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	193	xxxx	694	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Adj Cap:	xxxx	xxxx	xxxxx	1.00	xxxx	1.00	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	193	xxxx	694	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	27.4	xxxx	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	357	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	xxxxx	xxxxx	13.9	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	C	*	*	*	*	*	*	*
ApproachDel:	0.0			13.9			0.0			0.0		

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AM Peak Hour - Future Conditions (no SSU growth)
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 E. Cotati Ave./Sequoia Way

Average Delay (sec/veh): 0.4 Worst Case Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	1	0 0	0 0	1	0 1
Volume Module: 7:15 - 8:15 a.m.												
Base Vol:	0	0	0	8	0	14	78	553	0	0	450	155
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	8	0	14	78	553	0	0	450	155
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Sauvignon:	0	0	0	-1	0	-2	-13	-8	0	0	-4	-10
Initial Fut:	0	0	0	7	0	12	65	545	0	0	446	145
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	0	0	0	8	0	13	72	606	0	0	496	161
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	0	0	8	0	13	72	606	0	0	496	161
Adjusted Volume Module:												
Grade:	0%			0%			0%			0%		
% Cycle/Cars:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
% Truck/Comb:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
PCE Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.00	1.00	1.10	1.00	1.00
Cycl/Car PCE:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
Trck/Cmb PCE:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
Adj Vol.:	0	0	0	9	0	15	79	606	0	0	496	161
Critical Gap Module:												
MoveUp Time:	xxxxx	xxxx	xxxxx	3.4	xxxx	2.6	2.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Critical Gp:	xxxxx	xxxx	xxxxx	6.5	xxxx	5.5	5.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	1173	xxxx	496	657	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	222	xxxx	777	834	xxxx	xxxxx	xxxx	xxxx	xxxxx
Adj Cap:	xxxx	xxxx	xxxxx	0.90	xxxx	1.00	1.00	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	200	xxxx	777	834	xxxx	xxxxx	xxxx	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	18.7	xxxx	4.7	4.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	C	*	A	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	0.0			9.9			0.5			0.0		

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PM Peak Hour - Future Conditions (no SSU growth)
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 E. Cotati Ave./Sequoia Way

Average Delay (sec/veh): 4.7 Worst Case Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	1	0 0	0 0	1	0 1
Volume Module:												
Base Vol:	0	0	0	102	0	152	65	526	0	0	588	43
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	102	0	152	65	526	0	0	588	43
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Sauvignon:	0	0	0	-5	0	-15	-8	-7	0	0	-12	-3
Initial Fut:	0	0	0	97	0	137	57	519	0	0	576	40
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	0	0	0	108	0	152	63	577	0	0	640	44
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	0	0	108	0	152	63	577	0	0	640	44
Adjusted Volume Module:												
Grade:	0%			0%			0%			0%		
% Cycle/Cars:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
% Truck/Comb:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
PCE Adj:	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.00	1.00	1.10	1.00	1.00
Cycl/Car PCE:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
Trck/Cmb PCE:	xxxx	xxxx		xxxx	xxxx		xxxx	xxxx		xxxx	xxxx	
Adj Vol.:	0	0	0	119	0	167	70	577	0	0	640	44
Critical Gap Module:												
MoveUp Time:	xxxxx	xxxx	xxxxx	3.4	xxxx	2.6	2.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Critical Gp:	xxxxx	xxxx	xxxxx	6.5	xxxx	5.5	5.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	1280	xxxx	640	684	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	192	xxxx	656	809	xxxx	xxxxx	xxxx	xxxx	xxxxx
Adj Cap:	xxxx	xxxx	xxxxx	0.91	xxxx	1.00	1.00	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	176	xxxx	656	809	xxxx	xxxxx	xxxx	xxxx	xxxxx
Level Of Service Module:												
Stopped Del:	xxxxx	xxxx	xxxxx	51.7	xxxx	7.1	4.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	F	*	B	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	0.0			25.6			0.5			0.0		

Traffix 7.1.0607 (c) 1999 Dowling Assoc. Licensed to W-TRANS, Santa Rosa, CA

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------------------------------------------------------------------------------
              AM Peak Hour - Future Conditions (mitigated)
                 SSU Master Plan EIR Traffic Analysis
                           County of Sonoma
------------------------------------------------------------------------------
                  Level Of Service Computation Report
          1994 HCM Operations Method (Future Volume Alternative)
******************************************************************************
Intersection #7 E. Cotati Ave./Sequoia Way
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap. (X):        0.327
Loss Time (sec):       0 (Y+R =  4 sec) Average Delay (sec/veh):        2.4
Optimal Cycle:        34               Level Of Service:                 A
******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:     0     0     0    0     0     0    0     0     0    0     0     0
Lanes:         0  0  0  0  0   1  0  0  0  1   1  0  1  0  0   0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: 7:15 - 8:15 a.m.
Base Vol:       0     0     0    8     0    14   78   553     0    0   450   155
Growth Adj:  1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
Initial Bse:    0     0     0    8     0    14   78   553     0    0   450   155
Added Vol:      0     0     0    0     0     0    0     0     0    0     0     0
Sauvignon:      0     0     0   -1     0    -2  -13    -8     0    0    -4   -10
Initial Fut:    0     0     0    7     0    12   65   545     0    0   446   145
User Adj:    1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
PHF Adj:     0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90
PHF Volume:     0     0     0    8     0    13   72   606     0    0   496   161
Reduct Vol:     0     0     0    0     0     0    0     0     0    0     0     0
Reduced Vol:    0     0     0    8     0    13   72   606     0    0   496   161
PCE Adj:     1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
Final Vol.:     0     0     0    8     0    13   72   606     0    0   496   161
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900  1900
Adjustment:  1.00  1.00  1.00 0.95  1.00  0.85 0.95  1.00  1.00 1.00  1.00  0.85
Lanes:       0.00  0.00  0.00 1.00  0.00  1.00 1.00  1.00  0.00 0.00  1.00  1.00
Final Sat.:     0     0     0 1805     0  1615 1805  1900     0    0  1900  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00  0.00  0.00 0.00  0.00  0.01 0.04  0.32  0.00 0.00  0.26  0.10
Crit Moves:                               ****        ****       ****
Green/Cycle: 0.00  0.00  0.00 0.02  0.00  0.02 0.13  0.98  0.00 0.00  0.85  0.85
Volume/Cap:  0.00  0.00  0.00 0.18  0.00  0.33 0.31  0.33  0.00 0.00  0.31  0.12
Delay/Veh:    0.0   0.0   0.0 31.1   0.0  32.7 25.8   0.1   0.0  0.0   1.1   0.9
User DelAdj: 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
AdjDel/Veh:   0.0   0.0   0.0 31.1   0.0  32.7 25.8   0.1   0.0  0.0   1.1   0.9
DesignQueue:    0     0     0    0     0     1    4     1     0    0     5     1
******************************************************************************
```



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------------------------------------------------------------------------------
              PM Peak Hour - Future Conditions (mitigated)
                 SSU Master Plan EIR Traffic Analysis
                           County of Sonoma
------------------------------------------------------------------------------
                  Level Of Service Computation Report
          1994 HCM Operations Method (Future Volume Alternative)
******************************************************************************
Intersection #7 E. Cotati Ave./Sequoia Way
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap. (X):        0.466
Loss Time (sec):       0 (Y+R =  4 sec) Average Delay (sec/veh):        7.3
Optimal Cycle:        43               Level Of Service:                 B
******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:     0     0     0    0     0     0    0     0     0    0     0     0
Lanes:         0  0  0  0  0   1  0  0  0  1   1  0  1  0  0   0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0     0     0  102     0   152   65   526     0    0   588    43
Growth Adj:  1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
Initial Bse:    0     0     0  102     0   152   65   526     0    0   588    43
Added Vol:      0     0     0    0     0     0    0     0     0    0     0     0
Sauvignon:      0     0     0   -5     0   -15   -8    -7     0    0   -12    -3
Initial Fut:    0     0     0   97     0   137   57   519     0    0   576    40
User Adj:    1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
PHF Adj:     0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90
PHF Volume:     0     0     0  108     0   152   63   577     0    0   640    44
Reduct Vol:     0     0     0    0     0     0    0     0     0    0     0     0
Reduced Vol:    0     0     0  108     0   152   63   577     0    0   640    44
PCE Adj:     1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
Final Vol.:     0     0     0  108     0   152   63   577     0    0   640    44
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900  1900
Adjustment:  1.00  1.00  1.00 0.95  1.00  0.85 0.95  1.00  1.00 1.00  1.00  0.85
Lanes:       0.00  0.00  0.00 1.00  0.00  1.00 1.00  1.00  0.00 0.00  1.00  1.00
Final Sat.:     0     0     0 1805     0  1615 1805  1900     0    0  1900  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00  0.00  0.00 0.06  0.00  0.09 0.03  0.30  0.00 0.00  0.34  0.03
Crit Moves:                               **** ****                   ****
Green/Cycle: 0.00  0.00  0.00 0.20  0.00  0.20 0.07  0.80  0.00 0.00  0.72  0.72
Volume/Cap:  0.00  0.00  0.00 0.30  0.00  0.47 0.47  0.38  0.00 0.00  0.47  0.04
Delay/Veh:    0.0   0.0   0.0 22.0   0.0  23.5 30.5   2.0   0.0  0.0   3.9   2.5
User DelAdj: 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
AdjDel/Veh:   0.0   0.0   0.0 22.0   0.0  23.5 30.5   2.0   0.0  0.0   3.9   2.5
DesignQueue:    0     0     0    5     0     7    3     7     0    0    11     1
******************************************************************************
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SSU MASTER PLAN TRAFFIC ANALYSIS - AM FUTURE (NO SSU GROWTH) * S-AMFUT *
East Cotati Avenue/Sequoia Way
Intersection ID: 1
Roundabout

Table S.15 - CAPACITY AND LEVEL OF SERVICE (HCM STYLE)

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS
West: Eastbound E Cotati Avenue						
12	LT	677	1871	0.362*	0.0	A
		677	1871	0.362	0.0	A
East: Westbound E Cotati Avenue						
22	T	496	1385	0.358	0.3	A
23	R	161	450	0.358	0.3	A
		657	1835	0.358	0.3	A
North: Southbound Sequoia Way						
42	L	9	333	0.027	2.7	B
43	R	14	517	0.027	2.7	B
		23	850	0.027	2.7	B
ALL VEHICLES:		1357	4555	0.362	0.2	A
INTERSECTION:		1357	4555	0.362	0.2	A

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria),
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in
the SIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

SSU MASTER PLAN TRAFFIC ANALYSIS - PM FUTURE (NO SSU GROWTH) * S-PMFUT *
East Cotati Avenue/Sequoia Way
Intersection ID: 1
Roundabout

Table S.15 - CAPACITY AND LEVEL OF SERVICE (HCM STYLE)

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS
West: Eastbound E Cotati Avenue						
12	LT	640	1697	0.377*	0.4	A
		640	1697	0.377	0.4	A
East: Westbound E Cotati Avenue						
22	T	640	1714	0.373	0.2	B
23	R	45	121	0.372	0.2	B
		685	1835	0.373	0.2	B
North: Southbound Sequoia Way						
42	L	108	334	0.323	4.7	B
43	R	152	471	0.323	4.7	B
		260	805	0.323	4.7	B
ALL VEHICLES:		1585	4336	0.377	1.1	B
INTERSECTION:		1585	4336	0.377	1.1	B

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria),
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in
the SIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

AM Peak Hour - Future Conditions no SSU growth
SSU Master Plan EIP Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative

Intersection #8 E. Cotati Ave./Bodway Pkwy.

Cycle (sec):	100	Critical Vol./Cap. (X):	0.510
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	13.2
Optimal Cycle:	38	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 0	1	0 1	0 0	1	1 0	1 1	0	1 0	0 1	0
Volume Module:												
Base Vol:	302	25	115	8	0	25	266	468	162	16	240	41
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	302	25	115	8	0	25	266	468	162	16	240	41
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Sauvignon:	0	-1	0	0	0	-1	-12	-20	0	0	-3	-3
Initial Fut:	302	24	115	8	0	24	254	448	162	16	237	38
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	336	27	128	9	0	27	282	498	180	18	263	42
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	336	27	128	9	0	27	282	498	180	18	263	42
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.05	1.05	1.00	1.00	1.00
Final Vol.:	336	27	128	9	0	27	282	523	189	18	263	42
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.85	0.94	1.00	0.85	0.95	0.96	0.96	0.95	0.98	0.98
Lanes:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.47	0.53	1.00	0.86	0.14
Final Sat.:	1748	1900	1615	1786	0	1615	1805	2680	968	1805	1606	256
Capacity Analysis Module:												
Vol/Sat:	0.19	0.01	0.08	0.01	0.00	0.02	0.16	0.20	0.20	0.01	0.16	0.16
Crit Moves:	****						****				****	
Green/Cycle:	0.38	0.38	0.38	0.38	0.00	0.38	0.30	0.59	0.59	0.33	0.32	0.32
Volume/Cap:	0.51	0.04	0.21	0.01	0.00	0.04	0.51	0.33	0.33	0.33	0.51	0.51
Delay/Veh:	16.2	12.8	13.7	12.7	0.0	12.8	19.2	6.6	6.6	31.9	18.5	18.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	16.2	12.8	13.7	12.7	0.0	12.8	19.2	6.6	6.6	31.9	18.5	18.5
DesignQueue:	12	1	5	0	0	1	11	12	4	1	10	2

PM Peak Hour - Future Conditions (no SSU growth)
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative

Intersection #8 E. Cotati Ave./Bodway Pkwy.

Cycle (sec):	100	Critical Vol./Cap. (X):	0.665
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	14.9
Optimal Cycle:	55	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 0	1	0 1	0 0	1	1 0	1 1	0	1 0	0 1	0
Volume Module:												
Base Vol:	320	27	20	8	18	136	140	344	180	85	641	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	320	27	20	8	18	136	140	344	180	85	641	10
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Sauvignon:	0	-2	0	-4	-1	-8	-7	-11	0	0	-26	-1
Initial Fut:	320	25	20	4	17	128	133	333	180	85	615	9
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	356	28	22	4	19	142	148	370	200	94	683	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	356	28	22	4	19	142	148	370	200	94	683	10
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.05	1.05	1.00	1.00	1.00
Final Vol.:	356	28	22	4	19	142	148	389	210	94	683	10
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.86	1.00	0.85	0.99	0.99	0.85	0.95	0.95	0.95	0.95	1.00	1.00
Lanes:	1.00	1.00	1.00	0.17	0.83	1.00	1.00	1.30	0.70	1.00	0.99	0.01
Final Sat.:	1634	1900	1615	327	1554	1615	1805	2344	1266	1805	1873	27
Capacity Analysis Module:												
Vol/Sat:	0.22	0.01	0.01	0.01	0.01	0.09	0.08	0.17	0.17	0.05	0.36	0.36
Crit Moves:	****						****				****	
Green/Cycle:	0.33	0.33	0.33	0.33	0.33	0.33	0.12	0.51	0.51	0.16	0.55	0.55
Volume/Cap:	0.66	0.04	0.04	0.04	0.04	0.27	0.66	0.32	0.32	0.32	0.66	0.66
Delay/Veh:	20.8	14.8	14.8	14.8	14.8	16.1	32.0	9.3	9.3	24.2	11.5	11.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	20.8	14.8	14.8	14.8	14.8	16.1	32.0	9.3	9.3	24.2	11.5	11.5
DesignQueue:	14	1	1	0	1	5	7	11	6	4	19	0

AM Peak Hour - Future Conditions no SSU growth
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative

Intersection #49 E. Cotati Ave./Snyder-Maurice

Cycle (sec):	100	Critical Vol./Cap. (X):	0.778
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	20.9
Optimal Cycle:	102	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 1 1 0			1 0 1 0 1			1 0 2 0 1			1 0 2 0 1		
Volume Module: 7:15 - 8:15 a.m.												
Base Vol:	91	197	41	268	130	515	419	430	17	15	168	158
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	91	197	41	268	130	515	419	430	17	15	168	158
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Sauvignon:	0	0	0	-10	0	0	0	-23	0	0	-2	-2
Initial Fut:	91	197	41	258	130	515	419	407	17	15	166	156
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	101	219	46	287	144	572	466	452	19	17	184	173
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	101	219	46	287	144	572	466	452	19	17	184	173
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.05	1.05	1.00	1.00	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Final Vol.:	101	230	48	287	144	572	466	475	19	17	194	173
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.97	0.97	0.95	1.00	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Lanes:	1.00	1.65	0.35	1.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1805	3050	636	1805	1900	1615	1805	3800	1615	1805	3800	1615
Capacity Analysis Module:												
Vol/Sat:	0.06	0.08	0.08	0.16	0.08	0.35	0.26	0.13	0.01	0.01	0.05	0.11
Crit Moves:	****					****	****					****
Green/Cycle:	0.07	0.17	0.17	0.36	0.46	0.46	0.33	0.44	0.44	0.03	0.14	0.14
Volume/Cap:	0.78	0.44	0.44	0.44	0.17	0.78	0.78	0.29	0.03	0.29	0.37	0.78
Delay/Veh:	45.8	24.4	24.4	16.1	10.3	18.4	23.7	11.7	10.3	31.2	25.5	37.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	45.8	24.4	24.4	16.1	10.3	18.4	23.7	11.7	10.3	31.2	25.5	37.4
DesignQueue:	5	11	2	11	4	19	18	15	1	1	9	8

PM Peak Hour - Future Conditions no SSU growth
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #49 E. Cotati Ave./Snyder-Maurice

Cycle (sec):	100	Critical Vol./Cap. (X):	0.937
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	29.8
Optimal Cycle:	180	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 1 1 0			1 0 1 0 1			1 0 2 0 1			1 0 2 0 1		
Volume Module:												
Base Vol:	69	155	18	207	200	468	623	419	69	45	450	296
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	69	155	18	207	200	468	623	419	69	45	450	296
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Sauvignon:	0	0	0	-8	0	0	0	-10	0	0	-13	-21
Initial Fut:	69	155	18	199	200	468	623	409	69	45	437	275
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	77	172	20	221	222	520	692	454	77	50	486	306
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	77	172	20	221	222	520	692	454	77	50	486	306
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.05	1.05	1.00	1.00	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Final Vol.:	77	181	21	221	222	520	692	477	77	50	510	306
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.99	0.99	0.95	1.00	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Lanes:	1.00	1.79	0.21	1.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1805	3371	391	1805	1900	1615	1805	3800	1615	1805	3800	1615
Capacity Analysis Module:												
Vol/Sat:	0.04	0.05	0.05	0.12	0.12	0.32	0.38	0.13	0.05	0.03	0.13	0.19
Crit Moves:	****					****	****					****
Green/Cycle:	0.05	0.12	0.12	0.27	0.34	0.34	0.41	0.50	0.50	0.11	0.20	0.20
Volume/Cap:	0.94	0.45	0.45	0.45	0.34	0.94	0.94	0.25	0.10	0.25	0.66	0.94
Delay/Veh:	86.9	27.0	27.0	20.1	15.9	37.8	32.5	9.2	8.5	26.4	25.3	49.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	86.9	27.0	27.0	20.1	15.9	37.8	32.5	9.2	8.5	26.4	25.3	49.8
DesignQueue:	4	9	1	9	8	20	25	24	2	2	23	24

APPENDIX E.6

CUMULATIVE (FUTURE WITH PROJECT) CONDITIONS LEVEL OF SERVICE CALCULATIONS

AM Peak Hour - Future plus SSU Master Plan Buildout
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #1 R.P.X./Snyder Ln.

Cycle (sec): 100 Critical Vol./Cap. (X): 1.079
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 53.3
Optimal Cycle: 180 Level Of Service: E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 1 0 0 1			1 1 0 0 1			1 0 2 0 1			1 0 2 0 1		
Volume Module: 7:45 - 8:45 a.m.												
Base Vol:	166	474	261	127	540	168	245	936	346	237	293	49
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	166	474	261	127	540	168	245	936	346	237	293	49
Added Vol:	0	0	-6	-2	0	0	0	-18	0	-35	-96	-12
NewSSU:	5	6	10	69	5	0	0	119	45	1	6	1
Initial Fut:	171	480	265	194	545	168	245	1037	391	203	203	38
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	190	533	294	216	606	187	272	1152	434	226	226	42
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	190	533	294	216	606	187	272	1152	434	226	226	42
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.05	1.05	1.00	1.05	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Final Vol.:	200	560	294	226	636	187	272	1210	434	226	237	42
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.99	0.99	0.85	0.99	0.99	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Lanes:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1881	1881	1615	1881	1881	1615	1805	3800	1615	1805	3800	1615
Capacity Analysis Module:												
Vol/Sat:	0.11	0.30	0.18	0.12	0.34	0.12	0.15	0.32	0.27	0.13	0.06	0.03
Crit Moves:		****			****			****		****		
Green/Cycle:	0.28	0.28	0.28	0.31	0.31	0.31	0.29	0.29	0.29	0.12	0.12	0.12
Volume/Cap:	0.39	1.08	0.66	0.38	1.08	0.37	0.52	1.08	0.91	1.09	0.52	0.22
Delay/Veh:	19.0	74.8	23.2	17.4	71.9	17.4	19.9	68.5	37.4	104.4	27.5	25.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	19.0	74.8	23.2	17.4	71.9	17.4	19.9	68.5	37.4	104.4	27.5	25.8
DesignQueue:	8	24	12	9	27	7	11	52	18	11	12	2

PM Peak Hour - Future plus SSU Master Plan Buildout
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #1 R.P.X./Snyder Ln.

Cycle (sec): 100 Critical Vol./Cap. (X): 1.362
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 163.0
Optimal Cycle: 180 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 1 0 0 1			1 1 0 0 1			1 0 2 0 1			1 0 2 0 1		
Volume Module:												
Base Vol:	336	777	268	102	748	238	234	501	297	223	534	112
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	336	777	268	102	748	238	234	501	297	223	534	112
Added Vol:	0	0	-36	-16	0	0	0	-84	0	-17	-40	-8
NewSSU:	51	70	5	23	8	0	0	52	37	9	65	9
Initial Fut:	387	847	237	109	756	238	234	469	334	215	559	113
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	430	941	263	121	840	264	260	521	371	239	621	126
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	430	941	263	121	840	264	260	521	371	239	621	126
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.05	1.05	1.00	1.05	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Final Vol.:	452	988	263	127	882	264	260	547	371	239	652	126
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.98	0.98	0.85	0.99	0.99	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Lanes:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1862	1862	1615	1881	1881	1615	1805	3800	1615	1805	3800	1615
Capacity Analysis Module:												
Vol/Sat:	0.24	0.53	0.16	0.07	0.47	0.16	0.14	0.14	0.23	0.13	0.17	0.08
Crit Moves:		****			****				****	****		
Green/Cycle:	0.39	0.39	0.39	0.34	0.34	0.34	0.12	0.17	0.17	0.10	0.14	0.14
Volume/Cap:	0.62	1.36	0.42	0.20	1.36	0.47	1.19	0.85	1.36	1.36	1.19	0.54
Delay/Veh:	16.3	261	14.6	14.9	266	17.1	158.8	33.7	290.1	307.1	137	27.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	16.3	261	14.6	14.9	266	17.1	158.8	33.7	290.1	307.1	137	27.5
DesignQueue:	16	39	9	5	37	10	13	26	28	12	32	6

AM Peak Hour - Future plus SSU Master Plan Buildout mitigated
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #1 R.P.X./Snyder Ln.

Cycle (sec):	100	Critical Vol./Cap. (X):	0.745
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	21.5
Optimal Cycle:	90	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	2 0	1	1 0	2 0	1	1 0	2 0	1	1 0	2 0	1
Volume Module: 7:45 - 8:45 a.m.												
Base Vol:	166	474	261	127	540	168	245	936	346	237	293	49
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	166	474	261	127	540	168	245	936	346	237	293	49
Added Vol:	0	0	-6	-2	0	0	0	-18	0	-35	-96	-12
NewSSU:	5	6	10	69	5	0	0	119	45	1	6	1
Initial Fut:	171	480	265	194	545	168	245	1037	391	203	203	38
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	190	533	294	216	606	187	272	1152	434	226	226	42
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	190	533	294	216	606	187	272	1152	434	226	226	42
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Final Vol.:	190	560	294	216	636	187	272	1210	434	226	237	42
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	0.95	1.00	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1805	3800	1615	1805	3800	1615	1805	3800	1615	1805	3800	1615
Capacity Analysis Module:												
Vol/Sat:	0.11	0.15	0.18	0.12	0.17	0.12	0.15	0.32	0.27	0.13	0.06	0.03
Crit Moves:			****	****				****		****		
Green/Cycle:	0.16	0.24	0.24	0.16	0.25	0.25	0.42	0.43	0.43	0.17	0.17	0.17
Volume/Cap:	0.67	0.60	0.75	0.75	0.67	0.47	0.36	0.75	0.63	0.75	0.36	0.15
Delay/Veh:	29.9	22.5	27.7	32.7	23.2	21.3	12.9	16.9	15.8	32.1	23.6	22.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	29.9	22.5	27.7	32.7	23.2	21.3	12.9	16.9	15.8	32.1	23.6	22.6
DesignQueue:	9	24	13	20	28	8	9	40	15	11	11	2

PM Peak Hour - Future plus SSU Master Plan Buildout mitigated
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #1 R.P.X./Snyder Ln.

Cycle (sec):	100	Critical Vol./Cap. (X):	0.832
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	23.2
Optimal Cycle:	136	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	2 0	1	1 0	2 0	1	1 0	2 0	1	1 0	2 0	1
Volume Module:												
Base Vol:	336	777	268	102	748	238	234	501	297	223	534	112
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	336	777	268	102	748	238	234	501	297	223	534	112
Added Vol:	0	0	-36	-16	0	0	0	-84	0	-17	-40	-8
NewSSU:	51	70	5	23	8	0	0	52	37	9	65	9
Initial Fut:	387	847	237	109	756	238	234	469	334	215	559	113
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	430	941	263	121	840	264	260	521	371	239	621	126
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	430	941	263	121	840	264	260	521	371	239	621	126
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Final Vol.:	430	989	263	121	882	264	260	547	371	239	652	126
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	0.95	1.00	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1805	3800	1615	1805	3800	1615	1805	3800	1615	1805	3800	1615
Capacity Analysis Module:												
Vol/Sat:	0.24	0.26	0.16	0.07	0.23	0.16	0.14	0.14	0.23	0.13	0.17	0.08
Crit Moves:	****				****				****	****		
Green/Cycle:	0.29	0.45	0.45	0.12	0.28	0.28	0.20	0.28	0.28	0.16	0.24	0.24
Volume/Cap:	0.83	0.58	0.36	0.58	0.83	0.59	0.73	0.52	0.83	0.83	0.73	0.33
Delay/Veh:	29.3	13.6	11.8	29.9	26.0	21.5	29.1	20.2	30.8	39.0	24.8	20.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	29.3	13.6	11.8	29.9	26.0	21.5	29.1	20.2	30.8	39.0	24.8	20.5
DesignQueue:	18	32	8	6	38	11	12	23	16	12	29	5

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-------------------------------------------------------------------------------
              AM Peak Hour - Future plus SSU Master Plan Buildout
                     SSU Master Plan EIR Traffic Analysis
                              County of Sonoma
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
          1994 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #2 RPK/North SSU Entrance
*******************************************************************************
Average Delay (sec/veh):    310.3        Worst Case Level Of Service:        F
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        1  0  0  1  0   1  0  0  1  0   1  0  0  1  0   1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      15    0     7   350    0    72    66  351    97    29  233   357
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   15    0     7   350    0    72    66  351    97    29  233   357
Added Vol:      0    0     0     0    0     0     0  -91     0     0  -17     0
NewSSU:         6    2     3     0   25     0     0  120    25    15    1     0
Initial Fut:   21    2    10   350   25    72    66  380   122    44  217   357
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    23    2    11   389   28    80    73  422   136    49  241   397
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    23    2    11   389   28    80    73  422   136    49  241   397
Adjusted Volume Module:
Grade:            0%              0%              0%              0%
% Cycle/Cars:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
% Truck/Comb:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
PCE Adj:     1.10 1.10  1.10  1.10 1.10  1.10  1.10 1.00  1.00  1.10 1.00  1.00
Cycl/Car PCE:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
Trck/Cmb PCE:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
Adj Vol.:      26    2    12   428   31    88    81  422   136    54  241   397
Critical Gap Module:
MoveUp Time:  3.4  3.3   2.6   3.4  3.3   2.6   2.1 xxxx xxxxx   2.1 xxxx xxxxx
Critical Gp:  6.5  6.0   5.5   6.5  6.0   5.5   5.0 xxxx xxxxx   5.0 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1106 1250   490  1058 1119   439   638 xxxx xxxxx   558 xxxx xxxxx
Potent Cap.:  242  241   782   258  282   829   851 xxxx xxxxx   930 xxxx xxxxx
Adj Cap:     0.72 0.85  1.00  0.87 0.85  1.00  1.00 xxxx xxxxx  1.00 xxxx xxxxx
Move Cap.:    174  205   782   223  241   829   851 xxxx xxxxx   930 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del: 23.9 17.7   4.7  1385 15.9   4.8   4.6 xxxx xxxxx   4.1 xxxx xxxxx
LOS by Move:    D    *     *     F    *     *     A    *     *     A    *     *
Movement:      LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx   533  xxxx xxxx   509  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx   6.8 xxxxx xxxx   7.9 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     B     *    *     B     *    *     *     *    *     *
ApproachDel:        17.7          1086.2             0.6              0.3
```

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```
-------------------------------------------------------------------------------
              PM Peak Hour - Future plus SSU Master Plan Buildout
                     SSU Master Plan EIR Traffic Analysis
                              County of Sonoma
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
          1994 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #2 RPK/North SSU Entrance
*******************************************************************************
Average Delay (sec/veh):    513.6        Worst Case Level Of Service:        F
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        1  0  0  1  0   1  0  0  1  0   1  0  0  1  0   1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     181    0    43   357    0    66    72  296    49    24  355   350
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  181    0    43   357    0    66    72  296    49    24  355   350
Added Vol:      0    0     0     0    0     0     0  -43     0     0  -91     0
NewSSU:        79   23    23     0   13     0     0   53    13    13    9     0
Initial Fut:  260   23    66   357   13    66    72  306    62    37  273   350
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:   289   26    73   397   14    73    80  340    69    41  303   389
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:   289   26    73   397   14    73    80  340    69    41  303   389
Adjusted Volume Module:
Grade:            0%              0%              0%              0%
% Cycle/Cars:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
% Truck/Comb:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
PCE Adj:     1.10 1.10  1.10  1.10 1.10  1.10  1.10 1.00  1.00  1.10 1.00  1.00
Cycl/Car PCE:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
Trck/Cmb PCE:   xxxx  xxxx       xxxx  xxxx       xxxx  xxxx       xxxx  xxxx
Adj Vol.:     318   28    81   436   16    81    88  340    69    45  303   389
Critical Gap Module:
MoveUp Time:  3.4  3.3   2.6   3.4  3.3   2.6   2.1 xxxx xxxxx   2.1 xxxx xxxxx
Critical Gp:  6.5  6.0   5.5   6.5  6.0   5.5   5.0 xxxx xxxxx   5.0 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1037 1188   374  1043 1028   498   692 xxxx xxxxx   409 xxxx xxxxx
Potent Cap.:  266  260   895   264  315   775   802 xxxx xxxxx  1095 xxxx xxxxx
Adj Cap:     0.76 0.85  1.00  0.73 0.85  1.00  1.00 xxxx xxxxx  1.00 xxxx xxxxx
Move Cap.:    202  222   895   193  269   775   802 xxxx xxxxx  1095 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:848.7 18.4   4.4  1960 14.1   5.1   5.0 xxxx xxxxx   3.4 xxxx xxxxx
LOS by Move:    F    *     *     F    *     *     A    *     *     A    *     *
Movement:      LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx   501  xxxx xxxx   592  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx   8.0 xxxxx xxxx   6.6 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     B     *    *     B     *    *     *     *    *     *
ApproachDel:       634.3          1605.7             0.9              0.2
```

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AM Peak Hour - Future plus SSU Master Plan Buildout mitigated
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #2 RPK/North SSU Entrance

Cycle (sec):	100	Critical Vol./Cap. (X):	0.561
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	12.9
Optimal Cycle:	42	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	15	0	7	350	0	72	66	351	97	29	233	357
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	15	0	7	350	0	72	66	351	97	29	233	357
Added Vol:	0	0	0	0	0	0	0	-91	0	0	-17	0
NewSSU:	6	2	3	0	25	0	0	120	25	15	1	0
Initial Fut:	21	2	10	350	25	72	66	380	122	44	217	357
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	23	2	11	389	28	80	73	422	136	49	241	397
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	23	2	11	389	28	80	73	422	136	49	241	397
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	23	2	11	389	28	80	73	422	136	49	241	397
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.62	0.87	0.87	0.90	0.89	0.89	0.95	0.96	0.96	0.95	1.00	0.85
Lanes:	1.00	0.15	0.85	1.00	0.26	0.74	1.00	0.76	0.24	1.00	1.00	1.00
Final Sat.:	1178	254	1399	1710	438	1253	1805	1379	445	1805	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.02	0.01	0.01	0.23	0.06	0.06	0.04	0.31	0.31	0.03	0.13	0.25
Crit Moves:				****				****		****		
Green/Cycle:	0.41	0.41	0.41	0.41	0.41	0.41	0.08	0.55	0.55	0.05	0.51	0.51
Volume/Cap:	0.05	0.02	0.02	0.56	0.16	0.16	0.48	0.56	0.56	0.56	0.25	0.48
Delay/Veh:	11.6	11.5	11.5	15.5	12.2	12.2	30.1	10.2	10.2	35.7	9.9	10.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	11.6	11.5	11.5	15.5	12.2	12.2	30.1	10.2	10.2	35.7	9.9	10.6
DesignQueue:	1	0	0	14	1	3	4	12	4	3	7	11

PM Peak Hour - Future plus SSU Master Plan Buildout mitigated
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #2 RPK/North SSU Entrance

Cycle (sec):	100	Critical Vol./Cap. (X):	0.597
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	14.0
Optimal Cycle:	46	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	181	0	43	357	0	66	72	296	49	24	355	350
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	181	0	43	357	0	66	72	296	49	24	355	350
Added Vol:	0	0	0	0	0	0	0	-43	0	0	-91	0
NewSSU:	79	23	23	0	13	0	0	53	13	13	9	0
Initial Fut:	260	23	66	357	13	66	72	306	62	37	273	350
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	289	26	73	397	14	73	80	340	69	41	303	389
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	289	26	73	397	14	73	80	340	69	41	303	389
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	289	26	73	397	14	73	80	340	69	41	303	389
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.69	0.89	0.89	0.67	0.87	0.87	0.95	0.97	0.97	0.95	1.00	0.85
Lanes:	1.00	0.26	0.74	1.00	0.16	0.84	1.00	0.83	0.17	1.00	1.00	1.00
Final Sat.:	1312	444	1247	1273	266	1387	1805	1532	311	1805	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.22	0.06	0.06	0.31	0.05	0.05	0.04	0.22	0.22	0.02	0.16	0.24
Crit Moves:				****			****					****
Green/Cycle:	0.52	0.52	0.52	0.52	0.52	0.52	0.07	0.43	0.43	0.04	0.40	0.40
Volume/Cap:	0.42	0.11	0.11	0.60	0.10	0.10	0.60	0.51	0.51	0.51	0.40	0.60
Delay/Veh:	9.7	7.8	7.8	11.8	7.8	7.8	33.9	13.8	13.8	34.5	13.9	16.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.7	7.8	7.8	11.8	7.8	7.8	33.9	13.8	13.8	34.5	13.9	16.2
DesignQueue:	9	1	2	11	0	2	4	11	2	2	10	14

SSU MASTER PLAN TRAFFIC ANALYSIS - AM FUTURE PLUS SSU BUILDOUT * N-AMFUTP
Rohnert Park Expressway/Future North Entrance
Intersection ID: 1
Roundabout

Table S.15 - CAPACITY AND LEVEL OF SERVICE (HCM STYLE)

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS
West: Eastbound RP Expressway						
12	LTR	631	933	0.676*	6.3	B
		631	933	0.676	6.3	B
South: Northbound SSU North						
32	LTR	39	532	0.073	6.8	B
		39	532	0.073	6.8	B
East: Westbound RP Expressway						
22	LT	290	730	0.397	0.4	A
23	R	397	999	0.397	0.4	A
		687	1729	0.397	0.4	A
North: Southbound Eleanor Drive						
42	LT	417	986	0.423	2.0	B
43	R	80	189	0.423	2.0	B
		497	1175	0.423	2.0	B
ALL VEHICLES:		1854	4369	0.676	3.0	B
INTERSECTION:		1854	4369	0.676	3.0	B

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria),
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in
the SIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

SSU MASTER PLAN TRAFFIC ANALYSIS - PM FUTURE PLUS SSU BUILDOUT * N-PMFUTP
Rohnert Park Expressway/Future North Entrance
Intersection ID: 1
Roundabout

Table S.15 - CAPACITY AND LEVEL OF SERVICE (HCM STYLE)

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS
West: Eastbound RP Expressway						
12	LTR	489	897	0.545	4.2	B
		489	897	0.545	4.2	B
South: Northbound SSU North						
32	LTR	388	608	0.638	12.2	C
		388	608	0.638	12.2	C
East: Westbound RP Expressway						
22	LT	344	484	0.711*	5.3	B
23	R	389	548	0.710	5.3	B
		733	1032	0.711	5.3	B
North: Southbound Eleanor Drive						
42	LT	412	678	0.608	7.7	B
43	R	73	120	0.608	7.7	B
		485	798	0.608	7.7	B
ALL VEHICLES:		2095	3336	0.711	6.9	B
INTERSECTION:		2095	3336	0.711	6.9	B

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria),
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in
the SIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

AM Peak Hour - Future plus SSU Master Plan Buildout
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #3 R.P.K./Petaluma Hill Rd.

Cycle (sec): 100   Critical Vol./Cap. (X): 1.516
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 327.0
Optimal Cycle: 180   Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 1 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 0 0 0		
Volume Module:												
Base Vol:	371	1255	0	0	973	65	51	0	680	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	371	1255	0	0	973	65	51	0	680	0	0	0
Added Vol:	-15	0	0	0	0	-2	-9	0	-82	0	0	0
NewSSU:	11	3	0	0	40	5	1	0	122	0	0	0
Initial Fut:	367	1258	0	0	1013	68	43	0	720	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	408	1398	0	0	1126	76	48	0	800	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	408	1398	0	0	1126	76	48	0	800	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	408	1398	0	0	1126	76	48	0	800	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	1.00	1.00	0.89	0.89	0.77	1.00	0.77	1.00	1.00	1.00
Lanes:	1.00	1.00	0.00	0.00	0.94	0.06	0.06	0.00	0.94	0.00	0.00	0.00
Final Sat.:	1805	1900	0	0	1584	107	83	0	1380	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.23	0.74	0.00	0.00	0.71	0.71	0.58	0.00	0.58	0.00	0.00	0.00
Crit Moves:	****				****		****					
Green/Cycle:	0.15	0.62	0.00	0.00	0.47	0.47	0.38	0.00	0.38	0.00	0.00	0.00
Volume/Cap:	1.52	1.19	0.00	0.00	1.52	1.52	1.52	0.00	1.52	0.00	0.00	0.00
Delay/Veh:	470.7	116	0.0	0.0	440	439.5	447.0	0.0	447.0	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	470.7	116	0.0	0.0	440	439.5	447.0	0.0	447.0	0.0	0.0	0.0
DesignQueue:	20	37	0	0	40	3	2	0	31	0	0	0

PM Peak Hour - Future plus SSU Master Plan Buildout
SSU Master Plan EIR Traffic Analysis
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Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #3 R.P.K./Petaluma Hill Rd.

Cycle (sec): 100   Critical Vol./Cap. (X): 1.717
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 546.1
Optimal Cycle: 180   Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 1 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 0 0 0		
Volume Module:												
Base Vol:	666	1060	0	0	1024	91	185	0	611	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	666	1060	0	0	1024	91	185	0	611	0	0	0
Added Vol:	-68	0	0	0	0	-23	-11	0	-32	0	0	0
NewSSU:	17	46	0	0	8	5	23	0	53	0	0	0
Initial Fut:	615	1106	0	0	1032	73	197	0	632	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	683	1229	0	0	1147	81	219	0	702	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	683	1229	0	0	1147	81	219	0	702	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	683	1229	0	0	1147	81	219	0	702	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	1.00	1.00	0.89	0.89	0.79	1.00	0.79	1.00	1.00	1.00
Lanes:	1.00	1.00	0.00	0.00	0.93	0.07	0.24	0.00	0.76	0.00	0.00	0.00
Final Sat.:	1805	1900	0	0	1579	112	358	0	1147	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.38	0.65	0.00	0.00	0.73	0.73	0.61	0.00	0.61	0.00	0.00	0.00
Crit Moves:	****				****		****					
Green/Cycle:	0.22	0.64	0.00	0.00	0.42	0.42	0.36	0.00	0.36	0.00	0.00	0.00
Volume/Cap:	1.72	1.01	0.00	0.00	1.72	1.72	1.72	0.00	1.72	0.00	0.00	0.00
Delay/Veh:	779.6	32.5	0.0	0.0	763	762.7	769.2	0.0	769.2	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	779.6	32.5	0.0	0.0	763	762.7	769.2	0.0	769.2	0.0	0.0	0.0
DesignQueue:	33	29	0	0	44	3	9	0	29	0	0	0

AM Peak Hour - Future plus SSU Master Plan Buildout (mitigated)
SSU Master Plan EIR Traffic Analysis
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Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #3 R.P.K./Petaluma Hill Rd.

Cycle (sec):	100	Critical Vol./Cap. (X):	0.831
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	14.7
Optimal Cycle:	135	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Ovl			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 2 0 0			0 0 1 1 0			1 0 0 0 1			0 0 0 0 0		
Volume Module:												
Base Vol:	371	1255	0	0	973	65	51	0	680	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	371	1255	0	0	973	65	51	0	680	0	0	0
Added Vol:	-15	0	0	0	0	-2	-9	0	-82	0	0	0
NewSSU:	11	3	0	0	40	5	1	0	122	0	0	0
Initial Fut:	367	1258	0	0	1013	68	43	0	720	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	408	1398	0	0	1126	76	48	0	800	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	408	1398	0	0	1126	76	48	0	800	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.05	1.00	1.00	1.05	1.05	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	408	1468	0	0	1182	79	48	0	800	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	1.00	1.00	0.99	0.99	0.95	1.00	0.85	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.87	0.13	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	1805	3800	0	0	3526	236	1805	0	1615	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.23	0.39	0.00	0.00	0.34	0.34	0.03	0.00	0.50	0.00	0.00	0.00
Crit Moves:	****				****				****			
Green/Cycle:	0.27	0.68	0.00	0.00	0.40	0.40	0.32	0.00	0.60	0.00	0.00	0.00
Volume/Cap:	0.83	0.57	0.00	0.00	0.83	0.83	0.08	0.00	0.83	0.00	0.00	0.00
Delay/Veh:	30.1	5.8	0.0	0.0	20.2	20.2	15.2	0.0	14.8	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	30.1	5.8	0.0	0.0	20.2	20.2	15.2	0.0	14.8	0.0	0.0	0.0
DesignQueue:	17	29	0	0	43	3	2	0	20	0	0	0

PM Peak Hour - Future plus SSU Master Plan Buildout (mitigated)
SSU Master Plan EIR Traffic Analysis
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Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #3 R.P.K./Petaluma Hill Rd.

Cycle (sec):	100	Critical Vol./Cap. (X):	0.842
Loss Time (sec):	0 (Y+R = 4 sec)	Average Delay (sec/veh):	14.2
Optimal Cycle:	145	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Ovl			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 2 0 0			0 0 1 1 0			1 0 0 0 1			0 0 0 0 0		
Volume Module:												
Base Vol:	666	1060	0	0	1024	91	185	0	611	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	666	1060	0	0	1024	91	185	0	611	0	0	0
Added Vol:	-68	0	0	0	0	-23	-11	0	-32	0	0	0
NewSSU:	17	46	0	0	8	5	23	0	53	0	0	0
Initial Fut:	615	1106	0	0	1032	73	197	0	632	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	683	1229	0	0	1147	81	219	0	702	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	683	1229	0	0	1147	81	219	0	702	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.05	1.00	1.00	1.05	1.05	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	683	1290	0	0	1204	85	219	0	702	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	1.00	1.00	0.99	0.99	0.95	1.00	0.85	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.87	0.13	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	1805	3800	0	0	3514	248	1805	0	1615	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.38	0.34	0.00	0.00	0.34	0.34	0.12	0.00	0.43	0.00	0.00	0.00
Crit Moves:	****				****		****					
Green/Cycle:	0.45	0.86	0.00	0.00	0.41	0.41	0.14	0.00	0.59	0.00	0.00	0.00
Volume/Cap:	0.84	0.40	0.00	0.00	0.84	0.84	0.84	0.00	0.73	0.00	0.00	0.00
Delay/Veh:	21.4	1.1	0.0	0.0	20.5	20.5	41.6	0.0	11.5	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	21.4	1.1	0.0	0.0	20.5	20.5	41.6	0.0	11.5	0.0	0.0	0.0
DesignQueue:	23	11	0	0	44	3	11	0	18	0	0	0

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------------------------------------------------------------------------------
           AM Peak Hour - Future plus SSU Master Plan Buildout
                 SSU Master Plan EIR Traffic Analysis
                           County of Sonoma
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                 Level Of Service Computation Report
         1994 HCM Unsignalized Method  Future Volume Alternative
******************************************************************************
Intersection #4 Laurel Drive/Petaluma Hill Rd.
******************************************************************************
Average Delay (sec/veh):      0.2          Worst Case Level Of Service:     C
******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------ ---------------||---------------||---------------||---------------
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:         1  0  1  0  0    0  0  0  1  0    0  0  0  0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       17 1539     0     0 1419   168     0    0     3     0    0     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    17 1539     0     0 1419   168     0    0     3     0    0     0
Added Vol:       0  -15     0     0  -82     0     0    0     0     0    0     0
NewSSU:         15   15     0     0   87    74     0    0     1     0    0     0
Initial Fut:    32 1539     0     0 1424   242     0    0     4     0    0     0
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     36 1710     0     0 1582   269     0    0     4     0    0     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     36 1710     0     0 1582   269     0    0     4     0    0     0
Adjusted Volume Module:
Grade:             0%               0%               0%               0%
% Cycle/Cars:   xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
% Truck/Comb:   xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
PCE Adj:      1.10 1.00  1.00  1.10 1.00  1.00  1.10 1.10  1.10  1.10 1.10  1.10
Cycl/Car PCE:   xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
Trck/Cmb PCE:   xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
Adj Vol.:       39 1710     0     0 1582   269     0    0     5     0    0     0
Critical Gap Module:
MoveUp Time:   2.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   2.6 xxxxx xxxx xxxxx
Critical Gp:   5.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   5.5 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1851 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx  1717  xxxx xxxx xxxxx
Potent Cap.:  225 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   187  xxxx xxxx xxxxx
Adj Cap:     1.00 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx  1.00  xxxx xxxx xxxxx
Move Cap.:    225 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   187  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del: 19.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  19.7 xxxxx xxxx xxxxx
LOS by Move:    C    *     *     *    *     *     *    *     C     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:        0.4              0.0             19.7              0.0
```



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------------------------------------------------------------------------------
           PM Peak Hour - Future plus SSU Master Plan Buildout
                 SSU Master Plan EIR Traffic Analysis
                           County of Sonoma
------------------------------------------------------------------------------

                 Level Of Service Computation Report
         1994 HCM Unsignalized Method (Future Volume Alternative
******************************************************************************
Intersection #4 Laurel Drive/Petaluma Hill Rd.
******************************************************************************
Average Delay (sec/veh):      0.3          Worst Case Level Of Service:     D
******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------| ---------------  ---------------|---------------
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:         1  0  1  0  0    0  0  0  1  0    0  0  0  0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        8 1712     0     0 1586    48     0    0    17     0    0     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     8 1712     0     0 1586    48     0    0    17     0    0     0
Added Vol:       0  -68     0     0  -32     0     0    0     0     0    0     0
NewSSU:          5   64     0     0   35    26     0    0    14     0    0     0
Initial Fut:    13 1708     0     0 1589    74     0    0    31     0    0     0
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     14 1898     0     0 1766    82     0    0    34     0    0     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     14 1898     0     0 1766    82     0    0    34     0    0     0
Adjusted Volume Module:
Grade:             0%               0%               0%               0%
% Cycle/Cars:   xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
% Truck/Comb:   xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
PCE Adj:      1.10 1.00  1.00  1.10 1.00  1.00  1.10 1.10  1.10  1.10 1.10  1.10
Cycl/Car PCE:   xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
Trck/Cmb PCE:   xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
Adj Vol.:       16 1898     0     0 1766    82     0    0    38     0    0     0
Critical Gap Module:
MoveUp Time:   2.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   2.6 xxxxx xxxx xxxxx
Critical Gp:   5.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   5.5 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1848 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx  1807  xxxx xxxx xxxxx
Potent Cap.:  226 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   168  xxxx xxxx xxxxx
Adj Cap:     1.00 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx  1.00  xxxx xxxx xxxxx
Move Cap.:    226 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   168  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del: 17.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  26.9 xxxxx xxxx xxxxx
LOS by Move:    C    *     *     *    *     *     *    *     D     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:        0.1              0.0             26.9              0.0
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           AM Peak Hour - Future plus SSU Master Plan Buildout
                   SSU Master Plan EIR Traffic Analysis
                            County of Sonoma
---------------------------------------------------------------------------------
                   Level Of Service Computation Report
          1994 HCM Operations Method (Future Volume Alternative)
*********************************************************************************
Intersection #5 E. Cotati Ave./Petaluma Hill Rd.
*********************************************************************************
Cycle (sec):          100              Critical Vol./Cap. (X):        1.198
Loss Time (sec):        0 (Y+R = 4 sec) Average Delay (sec/veh):       84.6
Optimal Cycle:        180              Level Of Service:                  F
*********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
-------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:         1  0  1  0  0    0  0  1  0  1    0  0  1! 0  0    0  0  0  0  0
-------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      287 1003     0     0 1046   353   430     0   189     0     0     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   287 1003     0     0 1046   353   430     0   189     0     0     0
Added Vol:       0  -15     0     0  -82     0     0     0     0     0     0     0
NewSSU:         25   25     0     0    4    84     5     0     3     0     0     0
Initial Fut:   312 1013     0     0  968   437   435     0   192     0     0     0
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    347 1126     0     0 1076   486   483     0   213     0     0     0
Reduct Vol:      0    0     0     0    0     0     0     0     0     0     0     0
Reduced Vol:   347 1126     0     0 1076   486   493     0   213     0     0     0
PCE Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    347 1126     0     0 1076   486   483     0   213     0     0     0
-------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:   0.95 1.00  1.00  1.00 1.00  0.85  0.83 1.00  0.83  1.00 1.00  1.00
Lanes:        1.00 1.00  0.00  0.00 1.00  1.00  0.69 0.00  0.31  0.00 0.00  0.00
Final Sat.:   1805 1900     0     0 1900  1615  1100     0   485     0     0     0
-------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.19 0.59  0.00  0.00 0.57  0.30  0.44 0.00  0.44  0.00 0.00  0.00
Crit Moves:   ****                  ****                    ****
Green/Cycle:  0.16 0.63  0.00  0.00 0.47  0.47  0.37 0.00  0.37  0.00 0.00  0.00
Volume/Cap:   1.20 0.94  0.00  0.00 1.20  0.64  1.20 0.00  1.20  0.00 0.00  0.00
Delay/Veh:   156.7 20.4   0.0   0.0  127  14.1 136.1  0.0 136.1   0.0  0.0   0.0
User DelAdj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  156.7 20.4   0.0   0.0  127  14.1 136.1  0.0 136.1   0.0  0.0   0.0
DesignQueue:    17   27     0     0   37    15    19     0     8     0     0     0
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---------------------------------------------------------------------------------
           PM Peak Hour - Future plus SSU Master Plan Buildout
                   SSU Master Plan EIR Traffic Analysis
                            County of Sonoma
---------------------------------------------------------------------------------
                   Level Of Service Computation Report
          1994 HCM Operations Method (Future Volume Alternative)
*********************************************************************************
Intersection #5 E. Cotati Ave./Petaluma Hill Rd.
*********************************************************************************
Cycle (sec):          100              Critical Vol./Cap. (X):        1.498
Loss Time (sec):        0 (Y+R = 4 sec) Average Delay (sec/veh):      304.1
Optimal Cycle:        180              Level Of Service:                  F
*********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
-------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:         1  0  1  0  0    0  0  1  0  1    0  0  1! 0  0    0  0  0  0  0
-------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      240 1433     0     0 1365   287   301     0   375     0     0     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   240 1433     0     0 1365   287   301     0   375     0     0     0
Added Vol:       0  -68     0     0  -32     0     0     0     0     0     0     0
NewSSU:         13   13     0     0   28    21    56     0    28     0     0     0
Initial Fut:   253 1378     0     0 1361   308   357     0   403     0     0     0
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:    281 1531     0     0 1512   342   397     0   448     0     0     0
Reduct Vol:      0    0     0     0    0     0     0     0     0     0     0     0
Reduced Vol:   281 1531     0     0 1512   342   397     0   448     0     0     0
PCE Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    281 1531     0     0 1512   342   397     0   448     0     0     0
-------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:   0.95 1.00  1.00  1.00 1.00  0.85  0.81 1.00  0.81  1.00 1.00  1.00
Lanes:        1.00 1.00  0.00  0.00 1.00  1.00  0.47 0.00  0.53  0.00 0.00  0.00
Final Sat.:   1805 1900     0     0 1900  1615   726     0   819     0     0     0
-------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.16 0.81  0.00  0.00 0.80  0.21  0.55 0.00  0.55  0.00 0.00  0.00
Crit Moves:   ****                  ****                    ****
Green/Cycle:  0.10 0.64  0.00  0.00 0.53  0.53  0.36 0.00  0.36  0.00 0.00  0.00
Volume/Cap:   1.50 1.27  0.00  0.00 1.50  0.40  1.50 0.00  1.50  0.00 0.00  0.00
Delay/Veh:   460.6  170   0.0   0.0  411   9.2 423.4  0.0 423.4   0.0  0.0   0.0
User DelAdj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  460.6  170   0.0   0.0  411   9.2 423.4  0.0 423.4   0.0  0.0   0.0
DesignQueue:    15   39     0     0   50     9    16     0    18     0     0     0
*********************************************************************************
```

AM Peak Hour - Future plus SSU Master Plan Buildout mitigated
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method Future Volume Alternative

Intersection #5 E. Cotati Ave./Petaluma Hill Rd.

Cycle (sec): 100 Critical Vol./Cap. (X): 0.757
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 16.0
Optimal Cycle: 94 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	2 0	0	0 0	2 0	1	1 0	0 0	1	0 0	0 0	0
Volume Module:												
Base Vol:	287	1003	0	0	1046	353	430	0	199	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	287	1003	0	0	1046	353	430	0	189	0	0	0
Added Vol:	0	-15	0	0	-82	0	0	0	0	0	0	0
NewSSU:	25	25	0	0	4	84	5	0	3	0	0	0
Initial Fut:	312	1013	0	0	969	437	435	0	192	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	347	1126	0	0	1076	486	483	0	213	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	347	1126	0	0	1076	486	483	0	213	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	347	1182	0	0	1129	486	483	0	213	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	1.00	1.00	1.00	0.85	0.95	1.00	0.85	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	2.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	1805	3800	0	0	3800	1615	1805	0	1615	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.19	0.31	0.00	0.00	0.30	0.30	0.27	0.00	0.13	0.00	0.00	0.00
Crit Moves:	****				****		****					
Green/Cycle:	0.25	0.65	0.00	0.00	0.39	0.39	0.35	0.00	0.35	0.00	0.00	0.00
Volume/Cap:	0.76	0.48	0.00	0.00	0.76	0.77	0.76	0.00	0.37	0.00	0.00	0.00
Delay/Veh:	27.1	6.0	0.0	0.0	18.6	20.9	22.0	0.0	15.7	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	27.1	6.0	0.0	0.0	18.6	20.9	22.0	0.0	15.7	0.0	0.0	0.0
DesignQueue:	15	25	0	0	41	18	19	0	8	0	0	0

PM Peak Hour - Future plus SSU Master Plan Buildout mitigated
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #5 E. Cotati Ave./Petaluma Hill Rd.

Cycle (sec): 100 Critical Vol./Cap. (X): 0.851
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 15.7
Optimal Cycle: 153 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	2 0	0	0 0	2 0	1	1 0	0 0	1	0 0	0 0	0
Volume Module:												
Base Vol:	240	1433	0	0	1365	287	301	0	375	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	240	1433	0	0	1365	287	301	0	375	0	0	0
Added Vol:	0	-68	0	0	-32	0	0	0	0	0	0	0
NewSSU:	13	13	0	0	28	21	56	0	28	0	0	0
Initial Fut:	253	1378	0	0	1361	308	357	0	403	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	281	1531	0	0	1512	342	397	0	448	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	281	1531	0	0	1512	342	397	0	448	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	281	1608	0	0	1588	342	397	0	448	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	1.00	1.00	1.00	0.85	0.95	1.00	0.85	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	2.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	1805	3800	0	0	3800	1615	1805	0	1615	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.16	0.42	0.00	0.00	0.42	0.21	0.22	0.00	0.28	0.00	0.00	0.00
Crit Moves:	****				****				****			
Green/Cycle:	0.18	0.67	0.00	0.00	0.49	0.49	0.33	0.00	0.33	0.00	0.00	0.00
Volume/Cap:	0.85	0.63	0.00	0.00	0.85	0.43	0.67	0.00	0.85	0.00	0.00	0.00
Delay/Veh:	38.4	6.3	0.0	0.0	17.2	10.9	20.9	0.0	29.1	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	38.4	6.3	0.0	0.0	17.2	10.9	20.9	0.0	29.1	0.0	0.0	0.0
DesignQueue:	13	33	0	0	50	10	16	0	19	0	0	0

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AM Future plus Buildout     Mon Oct 11, 1999 14:30:29               Page 9-1
------------------------------------------------------------------------------
                AM Peak Hour - Future plus SSU Master Plan Buildout
                      SSU Master Plan EIR Traffic Analysis
                               County of Sonoma
------------------------------------------------------------------------------
                      Level Of Service Computation Report
          1994 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #6 E. Cotati Ave./Cypress Dr.
******************************************************************************
Average Delay (sec/veh):        0.4         Worst Case Level Of Service:     B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0    0  0  0  0  1    0  1  0  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     0    0     8    15  448     0     0  615    12
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     0    0     8    15  448     0     0  615    12
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
NewSSU:         0    0     0     0    0     7    40    8     0     0   69    40
Initial Fut:    0    0     0     0    0    15    55  456     0     0  684    52
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     0    0     0     0    0    17    61  507     0     0  760    58
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0    0     0     0    0    17    61  507     0     0  760    58
Adjusted Volume Module:
Grade:            0%               0%               0%               0%
% Cycle/Cars:   xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
% Truck/Comb:   xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
PCE Adj:     1.10 1.10  1.10  1.10 1.10  1.10  1.10 1.00  1.00  1.10 1.00  1.00
Cycl/Car PCE:   xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
Trck/Cmb PCE:   xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
Adj Vol.:       0    0     0     0    0    18    67  507     0     0  760    58
Critical Gap Module:
MoveUp Time:xxxxx xxxx xxxxx xxxxx xxxx   2.6   2.1 xxxx xxxxx xxxxx xxxx xxxxx
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx   5.5   5.0 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx   789   818 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx   552   699 xxxx xxxxx  xxxx xxxx xxxxx
Adj Cap:     xxxx xxxx xxxxx  xxxx xxxx  1.00  1.00 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx   552   699 xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx   6.7   5.6 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     B     B    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:        0.0              6.7              0.7              0.0

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PM Future plus Buildout     Mon Oct 11, 1999 14:31:12               Page 11-1
------------------------------------------------------------------------------
                PM Peak Hour - Future plus SSU Master Plan Buildout
                      SSU Master Plan EIR Traffic Analysis
                               County of Sonoma
------------------------------------------------------------------------------
                      Level Of Service Computation Report
          1994 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #6 E. Cotati Ave./Cypress Dr.
******************************************************************************
Average Delay (sec/veh):        5.2         Worst Case Level Of Service:     D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  0    0  0  1! 0  0    0  1  0  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    60    0   109     3  624     0     0  541    11
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    60    0   109     3  624     0     0  541    11
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
NewSSU:         0    0     0    28    0    70    23   56     0     0   23    10
Initial Fut:    0    0     0    88    0   179    26  680     0     0  564    21
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90  0.90 0.90  0.90
PHF Volume:     0    0     0    98    0   199    29  756     0     0  627    23
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0    0     0    98    0   199    29  756     0     0  627    23
Adjusted Volume Module:
Grade:            0%               0%               0%               0%
% Cycle/Cars:   xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
% Truck/Comb:   xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
PCE Adj:     1.10 1.10  1.10  1.10 1.10  1.10  1.10 1.00  1.00  1.10 1.00  1.00
Cycl/Car PCE:   xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
Trck/Cmb PCE:   xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
Adj Vol.:       0    0     0   108    0   219    32  756     0     0  627    23
Critical Gap Module:
MoveUp Time:xxxxx xxxx xxxxx   3.4 xxxx   2.6   2.1 xxxx xxxxx xxxxx xxxx xxxxx
Critical Gp:xxxxx xxxx xxxxx   6.5 xxxx   5.5   5.0 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1423 xxxx   638   650 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   159 xxxx   658   840 xxxx xxxxx  xxxx xxxx xxxxx
Adj Cap:     xxxx xxxx xxxxx  0.93 xxxx  1.00  1.00 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   148 xxxx   658   840 xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx  68.5 xxxx   7.8   4.4 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  308 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx 27.8 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    D     *     *    *     *     *    *     *
ApproachDel:        0.0             27.8              0.2              0.0

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--------------------------------------------------------------------------------
            AM Peak Hour - Future plus SSU Master Plan Buildout
                    SSU Master Plan EIR Traffic Analysis
                             County of Sonoma
--------------------------------------------------------------------------------
                   Level Of Service Computation Report
          1994 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #7 E. Cotati Ave./Sequoia Way
********************************************************************************
Average Delay (sec/veh):       1.1         Worst Case Level Of Service:      E
********************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:         0  0  0  0  0    1  0  0  0  1    1  0  1  0  0    0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: 7:15 - 8:15 a.m.
Base Vol:       0    0    0     8    0   14    78  553    0     0  450  155
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    0    0    0     8    0   14    78  553    0     0  450  155
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
NewSSU:         0    0    0     6    0    9    69   41    0     0   22   55
Initial Fut:    0    0    0    14    0   23   147  594    0     0  472  210
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:     0    0    0    16    0   26   163  660    0     0  524  233
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:     0    0    0    16    0   26   163  660    0     0  524  233
Adjusted Volume Module:
Grade:            0%               0%               0%               0%
% Cycle/Cars:  xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
% Truck/Comb:  xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
PCE Adj:     1.10 1.10 1.10  1.10 1.10 1.10  1.10 1.00 1.00  1.10 1.00 1.00
Cycl/Car PCE:  xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
Trck/Cmb PCE:  xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
Adj Vol.:       0    0    0    17    0   28   180  660    0     0  524  233
Critical Gap Module:
MoveUp Time:xxxxx xxxx xxxxx   3.4 xxxx  2.6   2.1 xxxx xxxxx xxxxx xxxx xxxxx
Critical Gp:xxxxx xxxx xxxxx   6.5 xxxx  5.5   5.0 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1348 xxxx  524   758 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   176 xxxx  751   746 xxxx xxxxx  xxxx xxxx xxxxx
Adj Cap:     xxxx xxxx xxxxx  0.76 xxxx 1.00  1.00 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   133 xxxx  751   746 xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx  30.6 xxxx  5.0   6.2 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *    *     E    *    A     B    *    *     *    *    *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *    *     *    *    *     *    *    *     *    *    *
ApproachDel:       0.0             14.7              1.3              0.0
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--------------------------------------------------------------------------------
            PM Peak Hour - Future plus SSU Master Plan Buildout
                    SSU Master Plan EIR Traffic Analysis
                             County of Sonoma
--------------------------------------------------------------------------------
                   Level Of Service Computation Report
          1994 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #7 E. Cotati Ave./Sequoia Way
********************************************************************************
Average Delay (sec/veh):      56.5         Worst Case Level Of Service:      F
********************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:         0  0  0  0  0    1  0  0  0  1    1  0  1  0  0    0  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0    0   102    0  152    65  526    0     0  588   43
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    0    0    0   102    0  152    65  526    0     0  588   43
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
NewSSU:         0    0    0    32    0   97    50   47    0     0   75   18
Initial Fut:    0    0    0   134    0  249   115  573    0     0  663   61
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90  0.90 0.90 0.90
PHF Volume:     0    0    0   149    0  277   128  637    0     0  737   68
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:     0    0    0   149    0  277   128  637    0     0  737   68
Adjusted Volume Module:
Grade:            0%               0%               0%               0%
% Cycle/Cars:  xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
% Truck/Comb:  xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
PCE Adj:     1.10 1.10 1.10  1.10 1.10 1.10  1.10 1.00 1.00  1.10 1.00 1.00
Cycl/Car PCE:  xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
Trck/Cmb PCE:  xxxx xxxx        xxxx xxxx        xxxx xxxx        xxxx xxxx
Adj Vol.:       0    0    0   164    0  304   141  637    0     0  737   68
Critical Gap Module:
MoveUp Time:xxxxx xxxx xxxxx   3.4 xxxx  2.6   2.1 xxxx xxxxx xxxxx xxxx xxxxx
Critical Gp:xxxxx xxxx xxxxx   6.5 xxxx  5.5   5.0 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1501 xxxx  737   804 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   143 xxxx  586   709 xxxx xxxxx  xxxx xxxx xxxxx
Adj Cap:     xxxx xxxx xxxxx  0.80 xxxx 1.00  1.00 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx   115 xxxx  586   709 xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx 680.3 xxxx 11.6   6.2 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *    *     F    *    C     B    *    *     *    *    *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *    *     *    *    *     *    *    *     *    *    *
ApproachDel:       0.0            245.6              1.1              0.0
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AM Peak Hour - Future plus SSU Master Plan Buildout (mitigated)
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #7 E. Cotati Ave./Sequoia Way

Cycle (sec): 100 Critical Vol./Cap. (X): 0.382
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 4.5
Optimal Cycle: 37 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 0 0 0			1 0 0 0 1			1 0 1 0 0			0 0 1 0 1		
Volume Module: 7:15 - 8:15 a.m.												
Base Vol:	0	0	0	8	0	14	78	553	0	0	450	155
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	8	0	14	78	553	0	0	450	155
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
NewSSU:	0	0	0	6	0	9	69	41	0	0	22	55
Initial Fut:	0	0	0	14	0	23	147	594	0	0	472	210
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	0	0	0	16	0	26	163	660	0	0	524	233
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	16	0	26	163	660	0	0	524	233
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	0	0	0	16	0	26	163	660	0	0	524	233
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	1.00	1.00	1.00	1.00	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	1805	0	1615	1805	1900	0	0	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.01	0.00	0.02	0.09	0.35	0.00	0.00	0.28	0.14
Crit Moves:						****	****				****	
Green/Cycle:	0.00	0.00	0.00	0.04	0.00	0.04	0.24	0.96	0.00	0.00	0.72	0.72
Volume/Cap:	0.00	0.00	0.00	0.21	0.00	0.38	0.38	0.36	0.00	0.00	0.38	0.20
Delay/Veh:	0.0	0.0	0.0	30.1	0.0	31.9	21.0	0.1	0.0	0.0	3.5	2.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	30.1	0.0	31.9	21.0	0.1	0.0	0.0	3.5	2.9
DesignQueue:	0	0	0	1	0	1	7	2	0	0	9	4

PM Peak Hour - Future plus SSU Master Plan Buildout (mitigated)
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #7 E. Cotati Ave./Sequoia Way

Cycle (sec): 100 Critical Vol./Cap. (X): 0.630
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 11.1
Optimal Cycle: 62 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 0 0 0			1 0 0 0 1			1 0 1 0 0			0 0 1 0 1		
Volume Module:												
Base Vol:	0	0	0	102	0	152	65	526	0	0	588	43
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	102	0	152	65	526	0	0	588	43
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
NewSSU:	0	0	0	32	0	97	50	47	0	0	75	18
Initial Fut:	0	0	0	134	0	249	115	573	0	0	663	61
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	0	0	0	149	0	277	128	637	0	0	737	68
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	149	0	277	128	637	0	0	737	68
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	0	0	0	149	0	277	128	637	0	0	737	68
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	1.00	1.00	1.00	1.00	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	1805	0	1615	1805	1900	0	0	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.08	0.00	0.17	0.07	0.34	0.00	0.00	0.39	0.04
Crit Moves:						****	****				****	
Green/Cycle:	0.00	0.00	0.00	0.27	0.00	0.27	0.11	0.73	0.00	0.00	0.62	0.62
Volume/Cap:	0.00	0.00	0.00	0.30	0.00	0.63	0.63	0.46	0.00	0.00	0.63	0.07
Delay/Veh:	0.0	0.0	0.0	18.8	0.0	22.7	31.6	3.8	0.0	0.0	8.6	5.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	18.8	0.0	22.7	31.6	3.8	0.0	0.0	8.6	5.0
DesignQueue:	0	0	0	6	0	12	6	11	0	0	18	1

SSU MASTER PLAN TRAFFIC ANALYSIS - AM FUTURE PLUS SSU BUILDOUT * S-AMFUTP
East Cotati Avenue/Sequoia Way
Intersection ID: 1
Roundabout

Table S.15 - CAPACITY AND LEVEL OF SERVICE (HCM STYLE)

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS
West: Eastbound E Cotati Avenue						
12	LT	823	1874	0.439	0.1	A
		823	1874	0.439	0.1	A
East: Westbound E Cotati Avenue						
22	T	524	1136	0.461	0.8	B
23	R	234	507	0.462*	0.8	B
		758	1643	0.462	0.8	B
North: Southbound Sequoia Way						
42	L	16	322	0.050	2.9	B
43	R	26	523	0.050	2.9	B
		42	845	0.050	2.9	B
ALL VEHICLES:		1623	4362	0.462	0.5	A
INTERSECTION:		1623	4362	0.462	0.5	A

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria),
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in
the SIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

SSU MASTER PLAN TRAFFIC ANALYSIS - PM FUTURE PLUS SSU BUILDOUT * S-PMFUTP
East Cotati Avenue/Sequoia Way
Intersection ID: 1
Roundabout

Table S.15 - CAPACITY AND LEVEL OF SERVICE (HCM STYLE)

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS
West: Eastbound E Cotati Avenue						
12	LT	765	1596	0.479	0.7	B
		765	1596	0.479	0.7	B
East: Westbound E Cotati Avenue						
22	T	737	1548	0.476	0.6	B
23	R	67	141	0.475	0.6	B
		804	1689	0.476	0.6	B
North: Southbound Sequoia Way						
42	L	149	251	0.594*	9.2	B
43	R	277	466	0.594*	9.2	B
		426	717	0.594	9.2	B
ALL VEHICLES:		1995	4001	0.594	2.5	B
INTERSECTION:		1995	4001	0.594	2.5	B

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria),
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in
the SIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

AM Peak Hour - Future plus SSU Master Plan Buildout
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #8 E. Cotati Ave./Bodway Pkwy.

Cycle (sec): 100   Critical Vol./Cap. (X): 0.588
Loss Time (sec): 0 (Y+R = 4 sec)   Average Delay (sec/veh): 13.3
Optimal Cycle: 45   Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 1 0 1			0 1 0 0 1			1 0 1 1 0			1 0 0 1 0		
Volume Module:												
Base Vol:	302	25	115	8	0	25	266	468	162	16	240	41
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	302	25	115	8	0	25	266	468	162	16	240	41
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
NewSSU:	0	5	0	2	1	5	64	104	0	0	16	15
Initial Fut:	302	30	115	10	1	30	330	572	162	16	256	56
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	336	33	128	11	1	33	367	636	180	18	284	62
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	336	33	128	11	1	33	367	636	180	18	284	62
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.05	1.05	1.00	1.00	1.00
Final Vol.:	336	33	128	11	1	33	367	667	189	18	284	62
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.90	1.00	0.85	0.93	0.93	0.85	0.95	0.97	0.97	0.95	0.97	0.97
Lanes:	1.00	1.00	1.00	0.92	0.08	1.00	1.00	1.56	0.44	1.00	0.82	0.18
Final Sat.:	1710	1900	1615	1620	147	1615	1805	2872	814	1805	1513	330
Capacity Analysis Module:												
Vol/Sat:	0.20	0.02	0.08	0.01	0.01	0.02	0.20	0.23	0.23	0.01	0.19	0.19
Crit Moves:	****						****				****	
Green/Cycle:	0.33	0.33	0.33	0.33	0.33	0.33	0.35	0.64	0.64	0.03	0.32	0.32
Volume/Cap:	0.59	0.05	0.24	0.02	0.02	0.06	0.59	0.36	0.36	0.36	0.59	0.59
Delay/Veh:	19.0	14.6	15.6	14.4	14.4	14.6	18.4	5.6	5.6	32.8	19.5	19.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	19.0	14.6	15.6	14.4	14.4	14.6	18.4	5.6	5.6	32.8	19.5	19.5
DesignQueue:	13	1	5	0	0	1	14	14	4	1	11	2

PM Peak Hour - Future plus SSU Master Plan Buildout
SSU Master Plan EIR Traffic Analysis
County of Sonoma

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #8 E. Cotati Ave./Bodway Pkwy.

Cycle (sec): 100   Critical Vol./Cap. (X): 0.858
Loss Time (sec): 0 (Y+R = 4 sec)   Average Delay (sec/veh): 19.3
Optimal Cycle: 131   Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 1 0 1			0 1 0 0 1			1 0 1 1 0			1 0 0 1 0		
Volume Module:												
Base Vol:	320	27	20	8	18	136	140	344	180	85	641	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	320	27	20	8	18	136	140	344	180	85	641	10
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
NewSSU:	0	10	0	23	9	51	44	73	0	0	167	5
Initial Fut:	320	37	20	31	27	187	184	417	180	85	808	15
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	356	41	22	34	30	208	204	463	200	94	898	17
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	356	41	22	34	30	208	204	463	200	94	898	17
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.05	1.05	1.00	1.00	1.00
Final Vol.:	356	41	22	34	30	208	204	487	210	94	898	17
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.71	1.00	0.85	0.92	0.92	0.85	0.95	0.96	0.96	0.95	1.00	1.00
Lanes:	1.00	1.00	1.00	0.53	0.47	1.00	1.00	1.40	0.60	1.00	0.98	0.02
Final Sat.:	1349	1900	1615	929	819	1615	1805	2549	1099	1805	1865	35
Capacity Analysis Module:												
Vol/Sat:	0.26	0.02	0.01	0.04	0.04	0.13	0.11	0.19	0.19	0.05	0.48	0.48
Crit Moves:	****						****				****	
Green/Cycle:	0.31	0.31	0.31	0.31	0.31	0.31	0.13	0.54	0.54	0.15	0.56	0.56
Volume/Cap:	0.86	0.07	0.04	0.12	0.12	0.42	0.86	0.35	0.35	0.35	0.86	0.86
Delay/Veh:	32.4	15.8	15.7	16.1	16.1	18.1	45.0	8.3	8.3	25.1	17.1	17.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	32.4	15.8	15.7	16.1	16.1	18.1	45.0	8.3	8.3	25.1	17.1	17.1
DesignQueue:	14	2	1	1	1	8	10	13	6	5	25	0

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-------------------------------------------------------------------------------
                AM Peak Hour - Future plus SSU Master Plan Buildout
                      SSU Master Plan EIR Traffic Analysis
                               County of Sonoma
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
          1994 HCM Operations Method (Future Volume Alternative)
*******************************************************************************
Intersection #9 E. Cotati Ave./Snyder-Maurice
*******************************************************************************
Cycle (sec):         100              Critical Vol./Cap. (X):         0.764
Loss Time (sec):       0 (Y+R =  4 sec) Average Delay (sec/veh):       20.3
Optimal Cycle:        97              Level Of Service:                   C
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        1  0  1  1  0   1  0  1  0  1   1  0  2  0  1   1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: 7:15 - 8:15 a.m.
Base Vol:      91   197    41   268   130   515   419   430    17    15   168   158
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:   91   197    41   268   130   515   419   430    17    15   168   158
Added Vol:      0    -2     0     0    -9   -26    -5     0     0     0     0     0
NewSSU:         0     0     0    55     0     0     0   119     0     0     9    12
Initial Fut:   91   195    41   323   121   489   414   549    17    15   177   170
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90
PHF Volume:   101   217    46   359   134   543   460   610    19    17   197   189
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:  101   217    46   359   134   543   460   610    19    17   197   189
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.05  1.05  1.00  1.00  1.00  1.00  1.05  1.00  1.00  1.05  1.00
Final Vol.:   101   228    48   359   134   543   460   641    19    17   207   189
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  0.95  0.97  0.97  0.95  1.00  0.85  0.95  1.00  0.85  0.95  1.00  0.85
Lanes:       1.00  1.65  0.35  1.00  1.00  1.00  1.00  2.00  1.00  1.00  2.00  1.00
Final Sat.:  1805  3045   641  1805  1900  1615  1805  3800  1615  1805  3800  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06  0.07  0.07  0.20  0.07  0.34  0.25  0.17  0.01  0.01  0.05  0.12
Crit Moves:  ****                          ****  ****                          ****
Green/Cycle: 0.07  0.14  0.14  0.37  0.44  0.44  0.33  0.46  0.46  0.03  0.15  0.15
Volume/Cap:  0.76  0.53  0.53  0.53  0.16  0.76  0.76  0.37  0.03  0.37  0.36  0.76
Delay/Veh:   44.4  26.7  26.7  16.5  10.9  18.7  23.3  11.3   9.5  33.1  24.7  35.1
User DelAdj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:  44.4  26.7  26.7  16.5  10.9  18.7  23.3  11.3   9.5  33.1  24.7  35.1
DesignQueue:    5    11     2    13     4    18    18    20     1     1    10     9
*******************************************************************************
```



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-------------------------------------------------------------------------------
                PM Peak Hour - Future plus SSU Master Plan Buildout
                      SSU Master Plan EIR Traffic Analysis
                               County of Sonoma
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
          1994 HCM Operations Method (Future Volume Alternative)
*******************************************************************************
Intersection #9 E. Cotati Ave./Snyder-Maurice
*******************************************************************************
Cycle (sec):         100              Critical Vol./Cap. (X):         1.019
Loss Time (sec):       0 (Y+R =  4 sec) Average Delay (sec/veh):       36.8
Optimal Cycle:       180              Level Of Service:                   D
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        1  0  1  1  0   1  0  1  0  1   1  0  2  0  1   1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      69   155    18   207   200   468   623   419    69    45   450   296
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:   69   155    18   207   200   468   623   419    69    45   450   296
Added Vol:      0    -9     0     0    -4   -13   -27     0     0     0     0     0
NewSSU:         0     0     0    52     0     0     0    65     0     0    84   135
Initial Fut:   69   146    18   259   196   455   596   484    69    45   534   431
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90  0.90
PHF Volume:    77   162    20   288   218   506   662   538    77    50   593   479
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   77   162    20   288   218   506   662   538    77    50   593   479
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.05  1.05  1.00  1.00  1.00  1.00  1.05  1.00  1.00  1.05  1.00
Final Vol.:    77   170    21   288   218   506   662   565    77    50   623   479
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  0.95  0.98  0.98  0.95  1.00  0.85  0.95  1.00  0.85  0.95  1.00  0.85
Lanes:       1.00  1.78  0.22  1.00  1.00  1.00  1.00  2.00  1.00  1.00  2.00  1.00
Final Sat.:  1805  3315   409  1805  1900  1615  1805  3800  1615  1805  3800  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04  0.05  0.05  0.16  0.11  0.31  0.37  0.15  0.05  0.03  0.16  0.30
Crit Moves:  ****                          ****  ****                          ****
Green/Cycle: 0.04  0.08  0.08  0.26  0.31  0.31  0.36  0.55  0.55  0.10  0.29  0.29
Volume/Cap:  1.02  0.60  0.60  0.60  0.37  1.02  1.02  0.27  0.09  0.27  0.56  1.02
Delay/Veh:  118.0  30.8  30.8  22.4  17.7  58.6  52.8   7.7   6.9  27.0  19.9  60.0
User DelAdj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh: 118.0  30.8  30.8  22.4  17.7  58.6  52.8   7.7   6.9  27.0  19.9  60.0
DesignQueue:    4     9     1    12     9    21    26    15     2     3    26    20
*******************************************************************************
```