

APPLIED MATERIALS
ARQUES CAMPUS SPECIFIC PLAN EIR

RESPONSES TO COMMENTS

CITY OF SUNNYVALE
DEPARTMENT OF COMMUNITY DEVELOPMENT

JUNE 1999



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Table of Contents

1	INTRODUCTION	1-1
1.1	Background.....	1-1
1.2	How to Use this Report	1-1
2	LIST OF COMMENTORS	2-1
3	COMMENTS AND RESPONSES	3-1
4	TEXT CHANGES TO THE DRAFT EIR	4-1
4.1	Introduction	4-1
4.2	Text Changes in Response to Comments	4-1
4.3	Staff-Initiated Text Changes.....	4-1

Section 1

Introduction

1.1 BACKGROUND

In accordance with the California Environmental Quality Act (CEQA), the City of Sunnyvale prepared a Draft Environmental Impact Report (Draft EIR) to disclose potential environmental effects of the proposed Applied Materials Arques Campus Specific Plan. The Draft EIR included a description of the proposed changes to the project site, an assessment of potential effects from development, a description of possible measures to mitigate significant effects identified in the Draft EIR, and a consideration of alternatives that could address potential impacts. As required by CEQA, the Draft EIR was distributed for public review and comments.

The public review period for the Draft EIR began April 2, 1999 and ended May 17, 1999. During this time, the document was reviewed by various state and local agencies, as well as by interested organizations and individuals. Written comments were received from three public agencies and one individual.

This Responses to Comments document addresses comments on the Draft EIR raised during the public review period. The responses in this document do not introduce any new substantial environmental impacts, increase the severity of an impact identified earlier, or propose new feasible alternatives or mitigation measures that have been rejected by the project applicant. Together, the Draft EIR and the Responses to Comments constitute the Final Environmental Impact Report (Final EIR) for the Arques Campus Specific Plan. The City of Sunnyvale must certify the Final EIR before the Specific Plan can be approved. Certification requires that the City Council make findings that the Final EIR complies with CEQA and state guidelines.

Because the Draft EIR reported unavoidable significant impacts even after implementation of the identified mitigation measures, the City of Sunnyvale must also adopt a Statement of Overriding Considerations if it wishes to approve the project. CEQA requires decision-makers to balance the economic, legal, social, technological, and other benefits of a proposed project against its unavoidable environmental risks when determining whether to approve a project. If such benefits outweigh the unavoidable adverse environmental effects, the adverse effects may be considered "acceptable."

1.2 HOW TO USE THIS REPORT

This document addresses substantive comments received during the public review period. It consists of four sections: (1) Introduction, (2) List of Commentors, (3) Responses to Comments, and (4) Text Changes to the Draft EIR. Section 1, Introduction, reviews the purpose and contents of this Response to Comments document. Section 2 lists the agencies and individuals who submitted comments regarding the Draft EIR. Section 3 contains the comment letters and presents responses to them. Section 4 sets forth text changes to the Draft EIR. These changes arise from either the comments and correct or clarify information already presented in the Draft EIR, or minor editorial revisions initiated by the EIR preparers.

Section 2

List of Commentors

Agencies and individuals submitting comments on the Arques Campus Specific Plan Draft EIR are identified below. Their comments, and responses to their comments, are provided in Section 3.

1. Harry Y. Yahata, District Director, California Department of Transportation, District 4
2. Roy Molseed, Senior Environmental Analyst, Santa Clara Valley Transportation Authority
3. Raluca Nitescu, Project Engineer, County of Santa Clara Roads and Airports Department
4. Megan Satterlee, City of Sunnyvale Planning Commission

Section 3

Comments and Responses

This section responds to the comments received on the Arques Campus Specific Plan Draft EIR. Comment letters are reproduced in this section, and responses follow each comment letter. Discrete comments within each comment letter are identified and numbered. Responses are enumerated to correspond to the comment number. Where appropriate, revisions to the Draft EIR are noted. New text added to the Draft EIR is indicated with underlining, and deleted text is indicated with ~~overstriking~~.

DEPARTMENT OF TRANSPORTATION

P. O. BOX 23660
OAKLAND, CALIFORNIA 94623-0660
TELEPHONE (510) 286-4444
FAX (510) 286-5513

RECEIVED

MAY 17 1999



PLANNING DIVISION

May 12, 1999

SCL-101-43.90
SCH #99042008
SCL101611

Ms. Gail Price, AICP
City of Sunnyvale
Department of Community Development
P.O. Box 3707
Sunnyvale, CA 94088-3706

MAY 20 1999

Dear Ms. Price:

Applied Materials Arques Campus Specific Plan Draft Environmental Impact Report.

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the Applied Materials Arquez Campus project. We have examined the above-mentioned Draft Environmental Impact Report (DEIR) and would like to offer the following comments:

- 1.1 a. Based on annual congestion monitoring of the Bay Area freeways, the level-of-service (LOS) on the freeway segments in the vicinity of the project are worse than what is shown in Table 3.4-3 on Page 3.4-9. The reason for this inconsistency may be the use of existing traffic volumes instead of traffic demand in calculating the LOS. Please clarify the methodologies and assumptions used in developing these calculations and adjust them as necessary.
- 1.2 b. Due to the fact that this project would have a negative impact to traffic on State Route 87 (SR 87) and U.S. 101, we recommend that a fair-share monetary contribution be made for the auxiliary lane project on northbound U.S. 101 from SR 87 to San Thomas Expressway.
- 1.3 c. The City of Sunnyvale is proposing a new signalized intersection along Lawrence Expressway at Wildwood Avenue near the U.S. 101 on-and off-ramps. Lawrence Expressway is currently operating at or near capacity in this vicinity and the proposed signalization has the potential to increase delays to an even greater degree. Therefore, the LOS figures for Lawrence Expressway shown in Table 3.4-2 on Page 3.4-7 may be inaccurate.

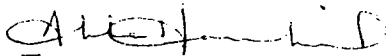
- 1.4 d. One step that Applied Materials can take to reduce fifteen percent (15%) of the auto trips would be to eliminate free parking at the project site. The area is adequately served by a variety of transit options which makes charging for parking or parking cash-out programs a viable incentive to use public transit. This strategy could be considered under the Transportation Demand Management (TDM) program.

We appreciate the opportunity to work with you on this project and look forward to continuing our involvement in it. Please send us the final environmental document and conditions of approval as they become available. In the meantime, if you have any questions or concerns, please contact Abbe Hoenscheid of my staff at (510) 622-1643.

Sincerely,

HARRY Y. YAHATA
District Director

By:



For:
JEAN C.R. FINNEY
District Branch Chief
IGR/CEQA

c: MBoyd, SCH

Response to Harry Y. Yahata, California Department of Transportation

- 1.1. The Santa Clara Valley Transportation Authority (VTA), in its *Transportation Impact Analysis Guidelines* adopted May 7, 1998, prescribes a methodology for calculating freeway segment level of service (LOS) in Santa Clara County. For purposes of VTA's Congestion Management Program, the analysis of freeway segments is based on procedures in the *1994 Highway Capacity Manual*. The LOS criteria are based on the *1994 Highway Capacity Manual*, except that the LOS D upper threshold is 46.0 vehicles per mile per lane and the LOS E upper threshold is 55.0 vehicles per mile per lane. For existing conditions (Draft EIR Table 3.4-3, page 3.4-9), traffic densities, peak hour volumes, number of lanes, and average travel speed for each directional freeway segment are byproducts of VTA's annual Congestion Management Plan monitoring reporting process.
- 1.2. The impact analysis (Draft EIR page 3.4-23) indicates that the project would result in a significant impact on the northbound U.S. 101 freeway segment between Mathilda Avenue and State Route 237 during the PM peak hour. On southbound U.S. 101, the project would significantly affect freeway segments between Great America Parkway and Montague Expressway. Congestion at locations downstream of U.S. 101 southbound (i.e., at State Route 87) is discussed (Draft EIR page 3.4-25), and current improvements already under construction along State Route 87 are noted. In keeping with CEQA's guidance to focus on potentially significant impacts, the EIR concentrates on those freeway segments where the proposed project would be expected to add traffic equal to at least one percent of the freeway segment's capacity (Draft EIR page 3.4-8). The northbound U.S. 101 segment from State Route 87 to San Thomas Expressway does not satisfy this criterion; therefore, no mitigation is identified.
- 1.3. Table 3.4-2 (Draft EIR page 3.4-7) appropriately reflects existing traffic conditions. The proposed traffic signal at the Lawrence Expressway and Wildwood Avenue does not exist now; therefore, it is not included as an existing condition. However, because the signal is anticipated to be installed in the future, the analysis includes signalization in all scenarios except existing conditions (i.e., background conditions, project conditions, and cumulative conditions). In this way, the analysis accounts for any delay resulting from the signalization of this intersection. Recognition of this future signalized intersection is documented in endnote 3 on Draft EIR page 3.4-38.
- 1.4. Mitigation Measure 3.4.2-3 (Draft EIR pages S-15 and 3.4-26) would require Applied Materials to reduce by 15% the number of automobile trips its operations generate. Applied Materials would be able to select from among any number of Transportation Demand Management techniques to accomplish this goal. Mitigation Measure 3.4.2-3 lists various possibilities without necessarily requiring them or precluding other options. Eliminating free parking at the Arques Campus is an option not specifically called out in the Draft EIR, but it could facilitate the attainment of the 15% vehicle trip reduction goal. To ensure its consideration among the options available, the third sentence of Mitigation Measure 3.4.2-3 (Draft EIR pages S-15 and 3.4-26) is revised as follows (also see the revision on page 3-8 of this section):

Techniques that can be continued, enhanced, or initiated include informing employees of transit options, eliminating free parking or implementing parking cash-out at the Arques

Campus, subsidizing transit passes, providing shuttle services to bus and rail stops and transit centers, vanpooling and ridersharing, and promoting bicycle use.

Comment Letter #2



May 17, 1999

City of Sunnyvale
Community Development
P.O. Box 3707
Sunnyvale, CA 94088-3707

Attention: Gail Price

Subject: Arques Campus Specific Plan

Dear Ms. Price:

Santa Clara Valley Transportation Authority (VTA) staff have reviewed the Draft EIR for the project referenced above to develop an additional 593,000 gross square feet of office and R & D space on a 35.46-acre site on the south side of Arques Avenue, north of Central Expressway. VTA comments follow and are separated into *Transit Service* and *Congestion Management Program (CMP)* issues to reflect our dual role in reviewing this project.

Transit Service

Eco Pass Program

- 2.1 Because there are several bus lines that service the site and shuttle service will be provided to light rail, we recommend participation in VTA's Eco Pass program. This program has been a major incentive for increased transit use by employees of participating employers in Santa Clara County. Eco Pass is an annual transit pass that employers purchase for all their employees at deeply discounted rates. With the Eco Pass, employees may ride any VTA bus or light rail line seven days a week. This program could provide highly effective mitigation for traffic and air quality impacts at a very reasonable cost.

Bus Service

- 2.2 VTA provides bus service along Arques Avenue adjacent to the project site. In order to provide convenient access to the existing bus stops, VTA staff recommend that the City condition the developer to provide continuous sidewalks along the project frontage and wheelchair curb ramps at all street and driveway intersections, in compliance with *Americans with Disabilities Act (ADA)* pedestrian access standards.

Congestion Management Program (CMP)

- 2.3 VTA supports the recommendation that the project sponsor make monetary contributions to the SR 85/US 101 interchange improvement project and to the I-880 improvement project as mitigation measures for project impacts to freeway segments on US 101. VTA suggests that the project sponsor coordinate directly with the County and VTA in determining a fair share contribution.

3-6

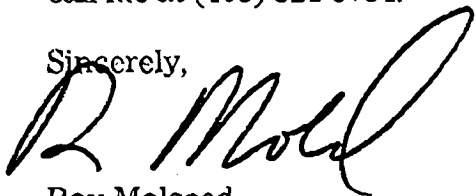
City of Sunnyvale

Page 2

May 17, 1999

Thank you for the opportunity to review this project. If you have any questions, please call me at (408) 321-5784.

Sincerely,

A handwritten signature in black ink, appearing to read "Roy Molseed". The signature is fluid and cursive, with a large loop at the end.

Roy Molseed
Senior Environmental Analyst

RM:kh

Response to Roy Molseed, Santa Clara Valley Transportation Authority

- 2.1. Mitigation Measure 3.4.2-3 (Draft EIR pages S-15 and 3.4-26) would require Applied Materials to reduce by 15% the number of automobile trips its operations generate. Applied Materials would be able to select from among any number of Transportation Demand Management techniques to accomplish this goal. Mitigation Measure 3.4.2-3 lists various possibilities without necessarily requiring them or precluding other options. Participation in the Eco Pass program is an option not specifically called out in the Draft EIR, but it could facilitate the attainment of the 15% vehicle trip reduction goal. To ensure its consideration among the options available, the third sentence of Mitigation Measure 3.4.2-3 (Draft EIR pages S-15 and 3.4-26) is revised as follows (also see the revision on page 3-4 of this section):

Techniques that can be continued, enhanced, or initiated include informing employees of transit options; subsidizing transit passes; participating in VTA's Eco Pass program, commuter checks, or other alternative mode subsidies; providing shuttle services to bus and rail stops and transit centers; vanpooling and ridersharings; and promoting bicycle use.

- 2.2. The EIR evaluates the significant environmental impacts of the project and identifies mitigation measures to address these impacts. The focus of the EIR on physical environmental issues does not diminish the importance of other issues, such as wheelchair access for persons with disabilities. As stated in the discussion of Impact 3.4.5 (Draft EIR page 3.4-28), the proposed project would not modify or eliminate any existing pedestrian facilities. The Draft EIR (page 3.4-29) assumes that new sidewalks and curbs installed as part of the proposed project would, at a minimum, be designed to comply with legal requirements, including any applicable requirements of the Americans with Disabilities Act. A requirement to provide continuous sidewalks along the project frontage, and wheelchair ramps at street and driveway intersections, would not address a significant environmental impact; however, the suggestion may be considered outside the CEQA process by project decision-makers as a condition of project approval during the project review process.
- 2.3. Mitigation Measure 3.4.2-2 (Draft EIR pages S-14 and 3.4-25) would require Applied Materials to make a fair share monetary contribution to the Valley Transportation Authority (VTA) Congestion Management Program through the City of Sunnyvale Community Development Department. VTA's support for this measure is noted. The contribution would be 1.9% of the unfunded portion of the SR 85/U.S. 101 improvement project. The freeway widening and intersection improvements funded by this contribution would mitigate the project's effect on northbound U.S. 101 traffic.

County of Santa Clara

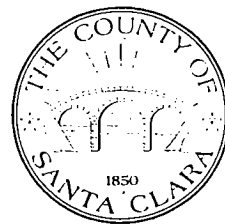
Roads and Airports Department
Land Development Services

101 Skyport Drive
San Jose, California 95110-1302

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APR 19 1999

PLANNING DIVISION



April 15 1999

Ms. Gail Price
Planning Division
City of Sunnyvale
P. O. Box 3707
Sunnyvale, CA 94088

Subject: Notice of Completion for the Draft Environmental Impact
Report for Applied Materials Arques Campus Specific Plan

Dear Ms. Price:

Your April 2, 1999 letter along with the Draft Environmental Impact Report have been reviewed.
Our comments are as follows;

- 3.1 1. The traffic impact analysis should be analyzed using 1998 data rather than 1997 data.
- 3.2 2. Some of the 1997 Level of Service (LOS) reported are inaccurate. The 1997 LOS for Lawrence Expressway at Reed Street is Level L "E" during PM peak not Level "D"; at Homestead Road is Level "E" not Level "D".
- 3.3 3. LOS calculation sheets are not included in the report. Please provide them for our review.

Thank you for the opportunity to review and comment on this matter. Please call me at 573-2464 if you have any questions.

Sincerely,

Raluca Nitescu
Project Engineer

RN:rtj

cc: S. Kandah, File

Board of Supervisors: Donald F. Gage, Blanca Alvarado, Pete McHugh, James T. Beall, Jr., S. Joseph Simitian
County Executive: Richard Wittenberg

7-005

Response to Raluca Nitescu, County Roads and Airports Department

3.1. The *Applied Materials Arques Campus Specific Plan Transportation Impact Analysis* was initiated in fall/winter 1997. At that time, turning movement counts, where available, were obtained from City of Sunnyvale and the Santa Clara County Roads and Airports Department. In February 1998, new counts were conducted where needed to supplement the 1997 counts. The use of late 1997 turning movement counts is consistent with the Santa Clara Valley Transportation Authority (VTA) *Transportation Impact Analysis Guidelines* (as adopted May 7, 1998), which requires traffic volume data to be collected within two years prior to completing an analysis.

3.2. The levels of service reported in Table 3.4-2 (Draft EIR page 3.4-6) are correct. Traffic volumes were obtained from the 1997 Congestion Management Program (CMP) LOS Monitoring Program.

The LOS calculations for the intersection of Lawrence Expressway at Reed Avenue were adjusted to reflect the ability of the westbound right turn movement to operate as a “free” right turn when the opposing eastbound left turns from Reed Avenue onto Lawrence Expressway are operational. The user adjustment factor for the westbound right turns was reduced to reflect the volume of traffic able to proceed in parallel with the eastbound left turn traffic. The HOV lane on Lawrence Expressway acts as a receiving lane for the right turn traffic from westbound Reed Avenue.

3.3. As requested, Barton-Aschman Associates provided a copy of the *Applied Materials Arques Campus Specific Plan Transportation Impact Analysis* (April 1999) to the Santa Clara County Roads and Airports Department for review on May 10, 1999.

From: MEGAN SATTERLEE@HP-Cupertino-om9.om.hp.com [SMTP:MEGAN SATTERLEE@HP-Cupertino-om9.om.hp.com]

Sent: Monday, May 17, 1999 5:09 PM

To: gprice@ci.sunnyvale.ca.us

Subject: DEIR

Hi Gail,

4.1 | Just one question regarding the Arques DEIR. Why was there no examination of the impacts on the Commercial street off-ramp from Central Expressway?

Thanks,

Megan Satterlee

Response to Megan Satterlee, City of Sunnyvale Planning Commission

- 4.1. The selection of the 27 study intersections was made in conjunction with City of Sunnyvale staff using the methodology approved by the Congestion Management Program. The intersections were selected based on an analysis of where the proposed project could be expected to add 10 or more peak hour vehicles per lane to any intersection movement. The Congestion Management Program established this "ten trips per approach lane" criterion, and the City of Sunnyvale adopted it as being an appropriate selection criterion. The Central Expressway and Commercial Street interchange did not meet this criterion.

In assessing potential project-related traffic impacts at this location, it should be noted that the junction of Central Expressway at Commercial Street forms a "T" intersection allowing only right turns onto Commercial Street from westbound Central Expressway and right turns out onto westbound Central Expressway. The project site cannot be accessed from eastbound Central Expressway at Commercial Street.

Existing traffic volumes from the westbound Central Expressway off-ramp onto Commercial Street during the AM peak hour are minimal. Existing volumes on northbound Commercial Street from westbound Central Expressway are 195 vehicles in the AM peak hour and 65 vehicles in the PM peak hour. The project itself, adds approximately 42 trips to this off ramp during the AM peak hour (less than 5% of the total AM peak hour project trips) and 9 trips in the PM peak hour. The addition of the project related trips to this off-ramp does not create a significant impact under project or cumulative scenario conditions.

Section 4

Text Changes to the Draft EIR

4.1 INTRODUCTION

This section sets forth changes to the Draft EIR text. These changes arise from either comments received on the Draft EIR and correct or clarify information already presented in the Draft EIR, or minor editorial revisions initiated by the EIR preparers. New text added to the Draft EIR is indicated with underlining, and deleted text is indicated with ~~overstriking~~.

4.2 TEXT CHANGES IN RESPONSE TO COMMENTS

The following text changes arise from responses to comments, as stated in Section 3.

Page S-15, Mitigation Measure 3.4.2-3, third sentence (also see the revision on page 4-2 of this section):

Techniques that can be continued, enhanced, or initiated include informing employees of transit options; eliminating free parking or implementing parking cash-out at the Arques Campus; subsidizing transit passes; participating in VTA's Eco Pass program, commuter checks, or other alternative mode subsidies; providing shuttle services to bus and rail stops and transit centers; vanpooling and ridersharing; and promoting bicycle use.

Page 3.4-26, first paragraph, third sentence (also see the revision on page 4-4 of this section):

Techniques that can be continued, enhanced, or initiated include informing employees of transit options; eliminating free parking or implementing parking cash-out at the Arques Campus; subsidizing transit passes; participating in VTA's Eco Pass program, commuter checks, or other alternative mode subsidies; providing shuttle services to bus and rail stops and transit centers; vanpooling and ridersharing; and promoting bicycle use.

4.3 STAFF-INITIATED TEXT CHANGES

The following changes have been initiated by the report preparers. They are intended to clarify the text of the Draft EIR, and they include several minor editorial revisions.

Page S-1, third paragraph, fifth sentence:

It would involve demolishing all or part of at least two of the six existing buildings on site (demolition of another building has already been approved) and constructing at least four new buildings, including three ~~two~~ new office/prototype lab buildings and a parking garage.

Page S-4, fourth full paragraph, last two sentences:

The existing wastewater lines in Arques Avenue are adequate to accommodate the proposed future flows from the service area only if the discharge of heating, ventilation, and air conditioning system (HVAC blowdown) and process wastewater from the Arques Campus at

buildout were restricted during the morning peak flow period. The While the City of Sunnyvale has increased the capacity of the Lawrence Expressway sewer trunk line by diverting flows to the Borregas sewer trunk line; capacity in the Lawrence Expressway sewer trunk line would not be is adequate to serve the project site unless the Fair Oaks Sanitary Sewer Extension were constructed.

Page S-12, Mitigation Measure 3.4.2-1, fourth sentence:

At Project Study Report prepared for Caltrans indicates the need to include improvements to adjacent upstream and downstream interchanges and connections that are affected by the SR 85/U.S. 101 interchange.

Page S-13, second full paragraph, last sentence:

The project sponsor should make a monetary contribution of 1.9 percent of the unfunded portion of the SR 85/U.S. 101 improvement project to the City of Sunnyvale (for the VTA Congestion Management Program) as mitigation of its impacts on this segment of U.S. 101.

Page S-15, Mitigation Measure 3.4.2-3, third sentence (also see the revision on page 4-1 of this section):

Techniques that can be continued, enhanced, or initiated include informing employees of transit options, subsidizing transit passes, providing shuttle services to bus and rail stops and transit centers, promoting vanpooling and riderssharing, and promoting bicycle use.

Page S-16, Mitigation Measure 3.4.3-1, last sentence:

~~Responsibilities for implementing this improvement, timing and phasing of construction, and payment by Applied Materials to the City will be specified in a Development Agreement, pursuant to Government Code Section 65864 et seq., to be entered into between Applied Materials and the City of Sunnyvale.~~

Page S-18, Mitigation Measure 3.4.10-1, last sentence:

~~The amount, method of payment, timing of payment shall be specified in a Development Agreement, pursuant to Government Code Section 65864 et seq., to be entered into between Applied Materials and the City of Sunnyvale.~~

Page S-19, Mitigation Measure 3.5.2-1, last sentence:

Such measures could include vanpools, subsidized transit passes, staggereding work hours to reduce travel during the peak commute hours, and shuttles to transit stops and centers.

Pages S-19 and S-20, Mitigation Measure 3.5.3-1:

Applied Materials will implement on-site measures for dust control during construction:

- a. provide temporary erosion protection with mulches, fiber mats, dust palliatives, etc.,
- b. schedule timely plantings to permanently abate wind erosion

- c. washing or sweeping the access roadways and preventing mud from accumulating on the streets of the area during construction
- d. when there is a substantial amount of exposed earth, have on site a water truck or other means of readily watering exposed surfaces.

Page S-21, Impact 3.6.2:

The proposed project would generate peak wastewater flows that, when combined with existing flows, would consume more than 90% of available capacity of the Arques Avenue Collector Sewer Main.

Page S-21, Mitigation Measure 3.6.2-1:

Applied Materials shall conduct its industrial processes such that release of industrial wastewater does not coincide with weekday peak flows in the Lawrence trunk sewer, from 8 6 AM to 10:00 AM.

Page S-22, Mitigation Measure 3.6.2-2:

Applied Materials shall contribute funds to the City to make available capacity improvements to the 10-inch sewer ~~capacity~~ line in Arques Avenue, the sewer force main diversion facilities, the proposed Fair Oaks Avenue sanitary sewer extension ~~diversion facility~~, or other facilities, as determined appropriate by the City Public Works Department, to mitigate the peak flow impacts from buildout of the Arques Campus. The payment shall be determined based on the basis of the equivalent cost for on-site storage of a volume equal to four hours of the differential between the peak flow at buildout and the peak flow from the existing facility, including the Technology Center. ~~proportional share of Applied Materials Arques Campus peak flow to total peak flow in the Arques line. The method and timing of payment shall be specified in a Development Agreement, pursuant to Government Code Section 65864 et seq, to be entered into between Applied Materials and the City of Sunnyvale.~~

Page S-22, Mitigation Measure 3.6.2-3:

~~3.6.2.3 Onsite Retention.~~

~~As an option to, or perhaps in combination with, Mitigation Measure 2.2, Applied Materials can develop onsite storage facilities that will enable wastewater to be detained on site for discharge into the collection system during non peak periods. The design, storage capacity, and discharge schedule will be subject to review and approval by the City Public Works Department, and the size, phasing, and operations of the facility shall be specified in a Development Agreement, pursuant to Government Code Section 65864 et seq), to be entered into between Applied Materials and the City of Sunnyvale.~~

Page S-23, first partial sentence (continuing Mitigation Measure 3.6.2-3):

~~... phasing, and operations of the facility shall be specified in a Development Agreement, pursuant to Government Code Section 65864 et seq), to be entered into between Applied Materials and the City of Sunnyvale.~~

Page S-26, Mitigation Measure 3.8.3-1, last sentence:

Health and safety measures to address possible building contaminants discovered through this process will be incorporated into the revised, updated, or amended Environmental Safety and Health Plan described in Mitigation Measure 3.8.1-1 ~~4-1~~, or into a new plan implemented to address these issues.

Page 2-17, first full paragraph, second and third sentences:

If the Specific Plan were approved, construction of new buildings at the project site, including building remodels and expansions, would be subject to review and approval of ~~Miscellaneous Permits~~ by the City of Sunnyvale ~~Director of Community Development~~ in accordance with the plan. Building designs would be subject to design review and approval at public hearings of the Planning Commission. Other elements of site plan review would be submitted to the Director of Community Development for administrative review and approval prior to the issuance of building permits. ~~Permits for Miscellaneous Permits would conform to the submittal requirements of the City of Sunnyvale and be reviewed in accordance with the review procedures in place at the time that any such submittals were made.~~

Page 3.2-8, Significance Criteria:

The proposed project would result in significant land use and planning impacts if the proposed Specific Plan were to:

- ~~Substantially alters~~ the type or intensity of land use on the proposed site, causing it to be incompatible with surrounding land uses or the overall character of the surrounding neighborhoods; or
- ~~Conflicts~~ with applicable, adopted environmental plans and goals.

Page 3.4-25, first full sentence:

~~At~~ Project Study Report prepared for Caltrans indicates the need to include improvements to adjacent upstream and downstream interchanges and connections that are affected by the SR 85/U.S. 101 interchange.

Page 3.4-25, second full paragraph, last sentence:

The project sponsor should make a monetary contribution of 1.9 percent of the unfunded portion of the SR 85/U.S. 101 improvement project to the City of Sunnyvale (for the VTA Congestion Management Program) as mitigation of its impacts on this segment of U.S. 101.

Page 3.4-26, first paragraph, third sentence (also see the revision on page 4.1 of this section):

Techniques that can be continued, enhanced, or initiated include informing employees of transit options, subsidizing transit passes, providing shuttle services to bus and rail stops and transit centers, promoting vanpooling and ~~riders~~sharing, and promoting bicycle use.

Page 3.4-28, Mitigation Measure 3.1, last sentence:

~~Responsibilities for implementing this improvement, timing and phasing of construction, and payment by Applied Materials to the City will be specified in a Development Agreement, pursuant to Government Code Section 65864 et seq., to be entered into between Applied Materials and the City of Sunnyvale.~~

Pages 3.4-37 and 3.4-38, Mitigation Measure 10.1, last sentence:

~~The amount, method of payment, timing of payment shall be specified in a Development Agreement, pursuant to Government Code Section 65864 et seq., to be entered into between Applied Materials and the City of Sunnyvale.~~

Page 3.5-11, Mitigation Measure 2.1, last sentence:

Such measures could include vanpools, subsidized transit passes, staggered work hours to reduce travel during the peak commute hours, and shuttles to transit stops and centers.

Page 3.5-12, Mitigation Measure 3.1:

Applied Materials will implement on-site measures for dust control during construction:

- a. provide temporary erosion protection with mulches, fiber mats, dust palliatives, etc.,
- b. schedule timely plantings to permanently abate wind erosion
- c. washing or sweeping the access roadways and preventing mud from accumulating on the streets of the area during construction
- d. when there is a substantial amount of exposed earth, have on site a water truck or other means of readily watering exposed surfaces.

Page 3.6-1, third paragraph:

Wastewater from the project site is collected in a 10-inch collector sewer main in Arques Avenue, which then flows to and then pumped into the Lawrence Trunk Sewer to be conveyed to the Sunnyvale WPCP. Current design capacity in the Arques line is 0.8 mgd (or about 560 gallons per minute (gpm), a metric that is conventionally used to describe peak flows). The City has estimated that peak flows in the Arques line total 360 gpm, including 180 gpm from the Applied Materials Arques Campus and 180 gpm from other sources. Accordingly, the available capacity in the Arques line is 200 gpm. The Lawrence Trunk Sewer is already near capacity during peak periods of the day (~~8~~ 6:00 AM to 10:00 AM weekdays). In general, the City seeks to operate the sewer system so that flow depth is no more than 80% of the pipe diameter at peak flows. This results in pipe loadings of 93% of maximum capacity maintain a 10% margin of available capacity in existing wastewater lines to provide a “safety” margin for peak flows.

Page 3.6-1, fourth paragraph, last sentence:

The resulting peak flow from the Arques Campus would be 203 gpm. Combined with the 180 gpm from other sources, the Arques line will have baseline wastewater flows of 384 gpm, and

available remaining capacity of 177 gpm for Specific Plan development and other developments on Arques Avenue.

Page 3.6-2, first partial paragraph, last sentence:

These improvements are anticipated to provide sufficient capacity to accommodate the Technology Center and other facilities approved for the Arques Campus in 1997 as far as impacts to the Lawrence trunk sewer are concerned. However, the remaining capacity of the Arques collector sewer will be unaffected by these improvements.

Page 3.6-3, first full paragraph, second and third sentences:

At buildout, the Arques Campus is projected to accommodate 2,800 employees and 280 visitors per day. At 25 gallons of wastewater per capita per day for employees and 10 gallons per capita per day for visitors, domestic wastewater flows would total 72,800 gpd.

Page 3.6-3, Impact 2:

The proposed project would generate peak wastewater flows that, when combined with existing flows, would consume more than 90% of available capacity of the Arques Avenue Collector Sewer Main. (S)

Page 3.6-3, second full paragraph, last four sentences:

Assuming industrial wastewater generation increases proportionately with developed floor space ~~and using a peak factor of 1.25,~~ the industrial wastewater flow at buildout would be 304,100 gpd. The combined wastewater flow from the Arques Campus totals 376,950 gpd, for a net increase over baseline conditions of about 195,800 gpd, or 212 gpm at peak flow. This flow rate of wastewater would exceed the remaining capacity in the Arques line and result in a significant impact on the local collection system unless the discharge of heating, ventilation, and air conditioning system (HVAC blowdown) and process wastewater from the Arques Campus at buildout were restricted during the morning peak flow period. The planned diversion of wastewater from the Lawrence Trunk Sewer to the Borregas Sewer would provide sufficient capacity in the Lawrence Trunk Sewer to accommodate the projected growth at the Applied Materials Arques Campus, provided that the proposed Fair Oaks Sewer Extension is constructed, but it would not increase the capacity of the Arques collector sewer.

Page 3.6-3, last paragraph:

MITIGATION MEASURES. The following mitigation measures would reduce the significant wastewater collection impacts of the proposed project to less than significant. ~~Mitigation Measures 2.2 and 2.3, below, are options and either can be implemented in combination with Mitigation Measure 2.1 to effectively minimize the impact.~~

Page 3.6-4, first full sentence:

Applied Materials shall conduct its industrial processes such that release of industrial wastewater does not coincide with weekday peak flows in the Lawrence trunk sewer, from 8 6 AM to 10:00 AM.

Page 3.6-4, Mitigation Measure 2.2:

Applied Materials shall contribute funds to the City to make available capacity improvements to the 10-inch sewer ~~capacity~~ line in Arques Avenue, the sewer force main diversion facilities, the proposed Fair Oaks Avenue sanitary sewer extension ~~diversion~~ facility, or other facilities, as determined appropriate by the City Public Works Department, to mitigate the peak flow impacts from buildout of the Arques Campus. The payment shall be determined based on the basis of the equivalent cost for on-site storage of a volume equal to four hours of the differential between the peak flow at buildout and the peak flow from the existing facility, including the Technology Center. ~~proportional share of Applied Materials Arques Campus peak flow to total peak flow in the Arques line. The method and timing of payment shall be specified in a Development Agreement, pursuant to Government Code Section 65864 et seq, to be entered into between Applied Materials and the City of Sunnyvale.~~

Page 3.6-4, Mitigation Measure 2.3:

~~2.3 Onsite Retention. As an option to, or perhaps in combination with, Mitigation Measure 2.2, Applied Materials can develop onsite storage facilities that will enable wastewater to be detained on site for discharge into the collection system during non peak periods. The design, storage capacity, and discharge schedule will be subject to review and approval by the City Public Works Department, and the size, phasing, and operations of the facility shall be specified in a Development Agreement, pursuant to Government Code Section 65864 et seq), to be entered into between Applied Materials and the City of Sunnyvale.~~

Page 4-5, first full sentence:

This is less than the 30,000 tons per year available for the proposed project and other development.

APPLIED MATERIALS
ARQUES CAMPUS SPECIFIC PLAN EIR

DRAFT

CITY OF SUNNYVALE
DEPARTMENT OF COMMUNITY DEVELOPMENT

APRIL 1999



APPLIED MATERIALS ARQUES CAMPUS SPECIFIC PLAN EIR

CITY OF SUNNYVALE

DEPARTMENT OF COMMUNITY DEVELOPMENT

APRIL 1999



Table of Contents

SUMMARY	S-1
1 INTRODUCTION	1-1
1.1 EIR Purpose and Intended Use	1-1
1.2 Environmental Review Process.....	1-2
1.3 Scope of this EIR	1-2
1.4 Report Organization and Content	1-3
2 PROJECT DESCRIPTION	2-1
2.1 Project Location	2-1
2.2 Project Overview.....	2-1
2.3 Project Characteristics	2-4
2.4 Project Phasing	2-16
2.5 Project Approvals	2-17
3 ENVIRONMENTAL ANALYSIS	3-1
3.1 Introduction	3.1-1
3.2 Land Use	3.2-1
3.3 Aesthetics	3.3-1
3.4 Transportation	3.4-1
3.5 Air Quality	3.5-1
3.6 Wastewater Services	3.6-1
3.7 Hydrology and Water Quality	3.7-1
3.8 Health and Safety	3.8-1
4 OTHER CEQA TOPICS	4-1
4.1 Significant Unavoidable Environmental Effects.....	4-1
4.2 Significant Irreversible Environmental Changes	4-1
4.3 Growth-Inducing Impacts.....	4-1
4.4 Cumulative Impacts.....	4-3
4.5 Effects Found Not to be Significant	4-3

Table of Contents (continued)

5	PROJECT ALTERNATIVES	5-1
5.1	Introduction	5-1
5.2	Alternatives Descriptions and Rationales	5-1
5.3	Comparative Analysis of Environmental Impacts	5-7
5.4	Comparative Analysis of Attainment of Project Objectives	5-17
5.5	Environmentally Superior Alternative	5-24
6	AGENCIES AND PERSONS CONTACTED	6-1
7	LIST OF PREPARERS	7-1

List of Figures

Figure Number		Page Number
2-1	Project Location	2-2
2-2	Existing Arques Campus Site Plan	2-5
2-3	Conceptual Site Plan	2-7
2-4	Vehicular and Pedestrian Circulation	2-9
2-5	Conceptual Office/Prototype Lab Building Design Guidelines	2-11
2-6	Conceptual Amenities Building	2-13
2-7	Landscape Concept Plan	2-15
3.2-1	Primary Land Use Map	3.2-2
3.2-2	Views of Office/Light Industrial and Commercial Uses	3.2-3
3.2-3	Views of Retail Uses	3.2-4
3.2-4	Zoning District Map	3.2-6
3.3-1	Views from the North Side of Arques Avenue onto the Project Site	3.3-3
3.3-2	Views from the South Side of Central Expressway onto the Project Site	3.3-5
3.3-3	Views of Surrounding Development	3.3-11
3.3-4	Additional Views of Surrounding Development	3.3-12
3.4-1	Project Vicinity Roadways and Study Intersections	3.4-2
3.4-2	Existing Transit Service	3.4-10
3.4-3	Approved Background Developments	3.4-14
3.4-4	Trip Distribution Pattern	3.4-19
3.4-5	Project Trip Assignment (Net Added Trips)	3.4-20
3.4-6	Peak Hour Project Traffic Assignment at Site Access Driveways	3.4-31
3.8-1	Approximate Boundaries of Soil and Groundwater Operable Units	3.8-3
5-1	Off-Site Development Alternative Location	5-6

List of Tables

Table Number		Page Number
S-1	Summary of Impacts and Mitigation Measures.....	S-10
2-1	Estimated Existing and Proposed Floor Area at the Arques Campus.....	2-6
2-2	Comparison of City and Specific Plan Development Standards.....	2-6
2-3	Phasing of Arques Campus Development	2-16
3.4-1	Intersection Level of Service Definitions Using Average Stopped Vehicular Delay.....	3.4-4

3.4-2	Existing and Background Intersection Levels of Service	3.4-6
3.4-3	Freeway Segment Analysis Determination – Summary	3.4-9
3.4-4	City of Sunnyvale Approved Background Developments	3.4-15
3.4-5	Project Trip Generation Estimates – Net Added	3.4-18
3.4-6	Background and Project Intersection Levels of Service	3.4-21
3.4-7	Freeway Segment Analysis Determination	3.4-24
3.4-8	Left Turn Design Queue Analysis Determination – Summary	3.4-27
3.4-9	Bus Service Characteristics – Peak Hour	3.4-29
3.4-10	Intersection Levels of Service under Cumulative Conditions	3.4-34
3.5-1	Historical Air Monitoring Data, 1990-1997	3.5-2
3.5-2	Santa Clara County Air Emissions, 1995	3.5-5
3.5-3	Ambient Air Quality Standards	3.5-7
3.5-4	Local Carbon Monoxide Concentrations With and Without the Proposed Project	3.5-10
3.5-5	Proposed Project Vehicular Air Emissions, Year 2003	3.5-11
5-1	Project Alternatives Development Programs	5-2
5-2	Project Alternatives Trip Generation Estimates – Net Added	5-9
5-3	Alternatives Analysis – Satisfaction of Project Objectives	5-22

Summary

S.1 PROJECT LOCATION

Applied Materials has prepared a Specific Plan for its 35.46-acre Arques Campus site in Sunnyvale, California. The site is at 974 East Arques Avenue (Assessor's Parcels 205-36-006, 205-36-007, and 205-36-008), one-quarter mile west of Lawrence Expressway, east of downtown Sunnyvale, immediately north of the Central Expressway, and south of U.S. 101.

S.2 PROJECT OVERVIEW

Applied Materials supplies wafer fabrication systems, processes, and services to the semiconductor industry. Applied Materials researches and develops future chip-making technologies to support high-volume semiconductor manufacturing. The Arques Campus is home to multiple Applied Materials' product business groups. Applied Materials' Etch Division, for example, develops refined and new tools for wafer fabrication.

The proposed project is a Specific Plan to guide future development at the Applied Materials Arques Campus. A specific plan, as defined in the California Government Code, is a planning document that contains specific regulations, programs, and legislation to implement a jurisdiction's adopted General Plan. The Specific Plan for the Arques Campus would accommodate an expansion of Applied Materials' existing research and development operations by increasing the building floor area on site from about 521,000 gross square feet (gsf) to about 1,114,600 gsf. The proposed development would include new space for offices, research, prototype labs, tool testing and demonstrations, a larger cafeteria, a larger recreation center, a conference center, and training rooms. It would involve demolishing all or part of at least two of the six existing buildings on site (demolition of another building has already been approved) and constructing at least four new buildings, including two new office/prototype lab buildings and a parking garage. Landscaping and utility improvements are also proposed.

S.3 PROJECT OBJECTIVES

The primary goal of the Arques Campus Specific Plan is to facilitate the transformation of the project site from an older, traditional, light industrial cluster of buildings to a coordinated research and development campus for the semiconductor industry. The Specific Plan provides guidelines for the integrated development of new buildings, circulation, and amenities around a campus theme. Objectives of the plan, as identified by the project sponsors, include:

1. Transforming a loose configuration of poorly organized work spaces, originally designed for light industrial use, into an integrated, high-technology research and development campus that sets a standard for design quality and workplace environment;
2. Facilitating the phased expansion of existing research and development operations to an ultimate size of approximately 1.1 million gross square feet of floor space;

3. Providing a state-of-the-art facility to attract and retain highly qualified personnel in the semiconductor industry;
4. Providing for increased employment activity in the proximity of regional vehicular and rail transportation corridors, but separated from residential neighborhoods;
5. Consolidating within a single-use campus workplaces that would otherwise be scattered throughout the community;
6. Optimizing site accessibility and minimizing project-related traffic on surrounding roadways in accordance with Valley Transportation Authority standards;
7. Providing a self-mitigating specific plan, whereby any significant environmental impacts are minimized to the extent feasible;
8. Taking advantage of the size and configuration of the project site to provide on-site amenities (e.g., conference center, cafeteria, recreation center, central commons) not economically feasible for smaller, scattered facilities;
9. Providing adequate office, laboratory, and support space to house the anticipated 2,800 employees necessary to (a) support the growth in Applied Materials' business projected to occur within the next 5 to 10 years and (b) make full use of the tool testing and demonstration capacity that the recently completed Technology Center is designed to accommodate;
10. Providing the office, laboratory, and support space necessary to research, design, and develop equipment prototypes for testing and demonstration in the Technology Center;
11. Providing a campus anchor on Arques Avenue to provide a distinguishing presence on the east side of the City of Sunnyvale;
12. Implementing a design strategy that establishes a consistent architectural and landscape theme, tying the campus together in terms of both its internal relationships among facilities and its external compatibility with the surrounding community;
13. Maximizing open space by using structured parking and multistory buildings; and
14. Employing a phasing strategy, with mitigation if necessary, whereby each increment of development maintains the coherence of the campus environment and functions on a stand-alone basis.

S.4 PROJECT CHARACTERISTICS

Site Plan and Development Program

Existing facilities house office, research and development, utility support, and process equipment and tool demonstration activities. Recently completed development aims to expand the research and development uses at the site:

- a 100,300 gsf Technology Center designed to showcase emerging technologies occupies the southwestern portion of the site;
- a 16,900 gsf central utility building has been constructed to support the Technology Center;
- a 4,000 gsf recreation center and various utilities, including a 115 kV electrical substation; and
- a new six-story parking garage that accommodates up to 1,300 vehicles.

With this new development, the Arques Campus has a total of 521,000 gsf of building area and 2,025 parking spaces.

The Arques Campus Specific Plan would accommodate an expansion of the existing floor area on site from a current 521,000 gsf to approximately 1,114,600 gsf. The floor area ratio (FAR) — the ratio of built, developed space to the total site area — allowed on site would increase to 0.72 from the 0.35 FAR that City zoning presently allows without a use permit. This increase would accommodate a buildout population of approximately 2,800 employees and 280 visitors, an increase of about 1,300 employees and 130 visitors over the roughly 1,500 employees and 150 visitors accommodated by existing facilities, including the newly constructed facilities. Proposed development would include new space for offices, research, prototype labs, tool testing and demonstrations, a larger cafeteria, a larger recreation center, a conference center, and training rooms. The campus buildings and facilities would surround a 1.3-acre central commons.

Design Guidelines and Development Standards

The Arques Campus Specific Plan establishes guidelines for the architecture of the proposed campus that are consistent with the City of Sunnyvale's Industrial Design Guidelines. The guidelines promote on-site development compatible with the existing two- to three-story buildings adjacent to the campus edges. There would be five basic space and building types at the Arques Campus: Technology Center, office/prototype lab buildings, amenity features, support facilities, and parking structures. Taller structures would be oriented toward the interior of the site, organized around the central commons. The one- to two-story scale would be re-established along the central commons by amenity buildings (e.g., recreation center, cafeteria, and conference center, ground-level gathering and dining spaces), providing a transition from the interior work areas to the outdoor relaxation and recreation areas.

The facilities would be constructed using colors and materials that are compatible with the predominantly neutral tone (white, green, and gray) of the newly constructed Technology Center and parking garage, thereby defining a consistent theme of color, texture, and scale for the entire site. Landscaping would complement the architecture and provide a natural counterpoint to the built environment. The proposed landscape concept would integrate a formal and informal planting approach that reflects the hierarchy of outdoor spaces established by the buildings and their uses. The landscaping would incorporate existing trees to the extent possible.

Circulation and Parking

The primary access to the site is from the site's northern perimeter along Arques Avenue, where there are two employee/service entrances and one visitor entrance. Additionally, an employee/service entrance at California Street receives westbound traffic from Central Expressway. A private, internal loop road

surrounds the existing buildings, providing access to on-site parking areas and drop-off points. Under the Arques Campus Specific Plan, the proposed visitor entrance drive would be set back at least 125 feet into the site and include a guard station. The other employee/service entrances and guard stations along Arques Avenue would also be set back 125 feet from Arques Avenue. As with the Arques Avenue entrances, the California Street entrance would have a guard station, but no queuing area would be provided. Visitor parking would be located along the Arques Avenue frontage, within the Arques Campus but outside the security gates.

Currently, there are 2,025 parking spaces on site for employees and visitors. Development under the Arques Campus Specific Plan would result in a net increase of 950 parking spaces (1,300 spaces would be added and 350 existing surface parking spaces would be eliminated) for a total of 2,975 parking spaces at buildout. Of the total parking spaces, 2,600 spaces would be in parking structures and 375 spaces would be in surface lots.

Pedestrian circulation would be organized through a network of walkways tying into the central commons. The pedestrian circulation system would feature a wide, major pedestrian "spine" that connects the entry plaza near Arques Avenue with the Technology Center to the south. As part of the overall circulation plan, bicycle racks would be installed at strategic locations throughout the campus. Employees would have access to on-site showers and other facilities to encourage bicycle use.

The Arques Campus Specific Plan incorporates a Transportation Demand Management program that includes a range of measures to reduce single-occupant vehicle use, including but not limited to carpooling, vanpooling, public and private transit, bicycling, walk-to-work, alternative hours, and telecommuting. Applied Materials operates an intercampus shuttle and provides shuttle service between the Arques Campus and nearby Caltrain and Valley Transportation Authority light rail transit stations. Applied Materials also provides incentives to its employees who rely on public transportation to get to work, such as a guaranteed ride-home program.

Infrastructure and Utility Improvements

The project site is within the City of Sunnyvale water service area. City waterlines in Arques Avenue and California Street would continue to supply domestic and industrial water. Project wastewater would be treated at the City of Sunnyvale Water Pollution Control Plant. On-site wastewater lines would be designed with adequate capacity to accommodate full project buildout. The existing wastewater lines in Arques Avenue are adequate to accommodate the proposed future flows from the service area. The City of Sunnyvale has increased the capacity of the Lawrence Expressway sewer trunk line by diverting flows to the Borregas sewer trunk line; capacity is adequate to serve the project site.

A storm water drainage plan for the project calls for the collection and transportation of storm water in a manner that complies with National Pollutant Discharge Elimination System requirements and City of Sunnyvale standards. The drainage system on site would be privately maintained. Applied Materials would prepare a Storm Water Pollution Prevention Plan prior to any grading or construction pursuant to the Arques Campus Specific Plan.

Project Phasing

Development under the Arques Campus Specific Plan would occur in stages. To accommodate the market uncertainties of the high-technology industry, the timing of the project would remain flexible. Stage I development is anticipated to involve constructing one of the three proposed new office/prototype lab buildings. This would trigger development of the major pedestrian walkways, about half of the central commons, and landscaping improvements to the Arques Avenue frontage. Stage I would also include the relocation and enlargement of the cafeteria. Stage II is expected to involve constructing the other two office/prototype lab buildings, which in turn would trigger the partial demolition of the existing office/prototype lab building to make way for the proposed parking garage and training rooms. The recreation center and conference center could be completed in either Stage I or Stage II, depending on which of the three office/prototype lab buildings was constructed in Stage I. All other site improvements would be completed in Stage II.

S.5 ENVIRONMENTAL ANALYSIS

Based on a preliminary environmental analysis by City staff, the proposed project was expected to result in potentially significant impacts that warranted further exploration in this EIR in land use, aesthetics, transportation, air quality, wastewater services, hydrology and water quality, and health and safety. All other environmental issues were reviewed by City staff and determined not to have significant effects. Table S-1 describes the impacts of the proposed project and the level of significance for each impact before and after the adoption of mitigation measures.

Mitigation measures identified in this EIR would effectively reduce potentially significant impacts to an insignificant level in almost all cases. Of the environmental issues analyzed, regional air emissions are projected to remain significant after implementation of the proposed mitigation measures. Freeway traffic impacts would be projected to remain potentially significant after implementation of the proposed mitigation measures. A mitigation fee would represent the project's fair share of the costs of the freeway improvements required to mitigate project impacts, but a potential for significant impacts would continue to exist until the roadway improvements are actually constructed.

S.6 AREAS OF CONTROVERSY

The Sunnyvale community has discussed issues that relate to the Applied Materials Arques Campus Specific Plan. Concerns include:

- the effect of increasing the density of development beyond the current 0.35 maximum FAR in the industrial-service zoning district on Sunnyvale's economic prosperity and diversity, and the quality of life in Sunnyvale.
- the effect of increasing traffic on local intersections and roadways.

S.7 ISSUES TO BE RESOLVED

During the preparation of this EIR and discussions with Sunnyvale staff, several issues have arisen that remain to be resolved. These issues, as well as others that may be raised during public review of and comment on the Draft EIR, will be discussed by the Planning Commission and City Council.

- Amount of total floor area to be developed at the Applied Materials Arques Campus.
- Adoption of the Specific Plan.
- Preparation of a Development Agreement to detail and express commitment to several of the proposed mitigation measures in this EIR.

S.8 ALTERNATIVES

Description of Project Alternatives

The EIR evaluates a range of alternatives to the proposed project to explore ways to minimize or avoid potentially significant impacts of the proposed project. The alternatives include (1) No Project, (2) Reduced Development, (3) Stage I Development, and (4) Off-Site Development. The No Project alternative essentially maintains the status quo; the Reduced Development alternative examines less intensive development of the site (about 66% of the net new construction envisioned by the Specific Plan); the Stage I Development alternative includes only Stage I of the proposed project (about 42% of the net new construction envisioned by the Specific Plan) and no subsequent development; and the Off-Site Development alternative considers development at a location other than the project site, assuming that an appropriate site is available.

No Project. The No Project alternative would result in no net increase in development at the site. The Arques Campus FAR would remain at about 0.34. The on-site population would remain at about 1,500 employees.

Reduced Development. Whereas the project would increase the allowed FAR from 0.35 to 0.72 at the Arques Campus, the Reduced Development alternative proposes an FAR of 0.59. This increase in FAR would permit a total of 911,500 square feet, or about 82% of the floor area proposed for the project. Under this alternative, the Arques Campus would be designed in a manner similar to the proposed project. The same demolition would occur, and new buildings would be sited in roughly the same locations and building footprints as proposed for the project. Because less space would be developed, however, the new space would consist of three 2-story office/prototype lab buildings, as opposed to 5-story structures as proposed for the project. The 2-story buildings would stand about 30 feet tall. This alternative would support an increase in employment of about 916, from the existing 1,500 to a total population of about 2,416 at buildout. With this scenario, the parking garage is estimated to require five levels (standing about 55 feet tall), as opposed to 7 levels with the proposed project.

Stage I Development. The Stage I Development alternative would cap development at the Arques Campus at Stage I of the proposed development and include no subsequent development. Under this scenario, the allowed FAR would increase from 0.35 to about 0.50. This would permit a total of 770,200 square feet, or about 69% of the floor area proposed for the project. The majority of the new space would be office/prototype lab space, assumed to be accommodated in two 2-story structures (as opposed to one 5-story building under the proposed project).

This alternative could involve demolishing the existing cafeteria and recreation center, and replacing these buildings with new and larger facilities. Applied Materials would also construct a new conference center. The space allotted for amenities could be less than with the proposed project if not adequately supported by the reduced level of development of Stage I. As a result of the Stage I Development site plan, the proposed central commons would be roughly half the size of that proposed for the project. Stage I Development would not involve demolishing any portion of the existing office/prototype lab building, which is necessary under the proposed project to create space for the second garage. Therefore, under this alternative, no new parking garage would be constructed. The existing number of parking spaces on site (2,025) would adequately accommodate the roughly 300 new employees associated with Stage I Development.

Off-Site Development. With the Off-Site alternative, no changes would be made to the Arques Campus. Instead, Applied Materials would construct about the same amount of net new space as proposed for the project (593,600 square feet) at a different location. For analysis purposes, this location would be at 1155 and 1175 Aster Avenue, a site bounded by Aster Avenue to the south, a residential complex to the west, the Caltrain tracks to the north, and Lawrence Expressway to the east. Applied Materials would need to acquire this 32.6-acre site, which is not presently on the market. The site is currently occupied by Peninsula Materials Hardware and Calstone Company, which manufacture and store brick, concrete, and other construction materials. The existing FAR is about 0.02. The new FAR would be about 0.42.

The site is zoned ITR, Industrial to Residential. This zone is intended to allow industrial, office, commercial and residential uses to exist within the same zoning district, and to allow industrial, office, or commercial uses to gradually convert to residential use. Light industrial development lies to the south across Aster Avenue, and multifamily residential development lies west and southwest of the site.

With the Off-Site alternative, Applied Materials would remove the existing structures at the Aster Avenue site before constructing its new facilities. There would be three office/prototype lab buildings and some amenities. The result would be about 593,600 square feet of new space at this off-site location. The three buildings are estimated to be about five stories (about 75 feet) tall. The 1,500 employees currently at the Arques Campus would remain there, and the population at the Off-Site Development site would be about 1,300. About 1,300 parking spaces would be provided in a 7-level parking garage (about 75 feet), as proposed for the project.

Alternatives Analysis

Land Use. No significant land use impacts (e.g., land use conflicts) were identified for the proposed project or any of the alternatives. The Off-Site Development alternative would, however, involve the construction of an Applied Materials campus in an area zoned for gradual conversion to residential uses.

Aesthetics. No significant aesthetic impacts were identified for the proposed project or any of the alternatives. The No Project, Reduced Development, and Stage I Development alternatives would involve less intense development, with less height and less bulk, than the proposed project. The Off-Site Development alternative would also be somewhat less dense than the proposed project (lower FAR) because developed floor area would be spread over a larger site than the Arques Campus site.

Transportation. Whereas the project would significantly affect three nearby freeway segments, the No Project and Stage I Development alternatives would not. The Reduced Development alternative would adversely affect two of the same freeway segments, and the Off-Site Development alternative would affect the same local freeway segments as the proposed project. Congestion at the south approach to the Lawrence Expressway/Arques Avenue intersection would require the extension of left turn lanes from 320 feet to 560 feet with the proposed project, to 520 feet with the Reduced Development Alternative, and to 480 feet with the Stage I Development alternative. The No Project and Off-Site Development alternatives would avoid impacts to this intersection. The Off-Site Development alternative would require a 100-foot extension of left turn lanes at the west approach to Wolf Avenue/Reed Avenue and a 250-foot extension of both left turn lanes at the east approach to Lawrence Expressway and Reed Avenue. No significant transit or parking impacts were identified for the proposed project or any of the alternatives. The Off-Site Development alternative could significantly affect the roadbed in the vicinity of the alternative location. Although Applied Materials could be required to pay its fair share toward implementing traffic mitigation for alternatives with significant impacts, the potential traffic impacts could be unavoidably significant until such measures are implemented.

Air Quality. The project would significantly contribute to regional nitrogen oxide emissions. In contrast, the No Project, Reduced Development, and Stage I Development alternatives would not. The Off-Site Development alternative would emit an amount of nitrogen oxides similar to the proposed project, thereby also resulting in a significant impact. With the exception of the No Project Alternative, which would not involve any demolition or construction, each of the alternatives could emit particulate emissions as a result of construction activities. Mitigation measures identified for the proposed project would address potentially significant impacts related to particulate emissions, but the nitrogen oxide emissions of the proposed project and the Off-Site Development alternative would probably be unavoidably significant.

Wastewater Services. The City of Sunnyvale Water Pollution Control Plant has adequate capacity to serve the project or any of the alternatives. Both the proposed project and the Off-Site Development alternative would generate similar quantities of wastewater and exceed the capacity of the existing Arques sewer line to serve their wastewater discharges. The No Project, Reduced Development, and Stage I Development alternatives would reduce wastewater generation to levels where project-related wastewater could be accommodated. However, like the proposed project, the Off-Site Development and Reduced Development alternatives could contribute to cumulatively significant demands on the wastewater sewer system. Mitigation measures identified for the proposed project would address the significant impacts of the project and alternatives. Applied Materials could pay its fair share toward implementing these measures.

Hydrology and Water Quality. The proposed project could adversely affect water quality by increasing runoff from landscaped areas treated with pesticides, herbicides, and fertilizers. The same would be true of all but the No Project alternative. The Stage I Development alternative could also

significantly affect storm water quality by increasing discharges of oil, grease, and other automobile-related fluids. Mitigation measures identified for the proposed project would address potentially significant water quality impacts of these alternatives.

Health and Safety. The proposed project could pose significant impacts related to earth-moving activities (affecting existing soil and groundwater contamination) and demolition of existing structures potentially containing hazardous building components, such as asbestos. Each of the alternatives, except for the No Project alternative, could pose the same types of impacts. Soil and groundwater at the Off-Site Development location are not known to be contaminated, but site conditions would need to be fully characterized to preclude the potential for a significant impact. In the case of each alternative, mitigation measures identified for the proposed project would address these potentially significant impacts.

Environmentally Superior Alternative

CEQA requires that an EIR identify an environmentally superior alternative. When the No Project Alternative appears to pose the least adverse impact on the environment of all the alternatives, as it does in this case, another alternative must be selected. Therefore, the Stage I Development alternative is considered the environmentally superior alternative. However, this alternative may not meet several of the objectives of the proposed project.

**Table S-1
Summary of Impacts and Mitigation Measures**

	Impacts	Potential Significance Without Mitigation	Mitigation Measures	Potential Significance With Mitigation
3.2	LAND USE			
3.2.1	Construction-related impacts would be a nuisance for on-site and nearby uses. Since they would be temporary, construction-period effects would not be considered significant.	I	None Required.	
3.2.2	The proposed project would not result in land use conflicts with adjacent development because of the industrial nature of surrounding development and the location of the project site, between two arterial roadways.	I	None Required.	
3.2.3	The proposed project appears to be consistent with policies and goals of the City of Sunnyvale General Plan.			
3.2.4	Land use effects related to development at the Arques Campus would be unlikely to combine with those of other developments to pose substantial cumulative effects.	I	None Required.	
3.3	AESTHETICS			
3.3.1	The proposed project would not substantially adversely affect a scenic vista.	I	None Required.	

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Table S-1
Summary of Impacts and Mitigation Measures

	Impacts	Potential Significance Without Mitigation	Mitigation Measures	Potential Significance With Mitigation
3.3.2	The proposed project would not substantially detract from scenic resources, such as heritage resources or protected trees.	I	None Required.	
3.3.3	The proposed project would not substantially degrade the existing visual character or quality of the site and its surroundings.	I	None Required.	
3.3.4	The proposed project would not create a new source of substantial light or glare that adversely affects day or nighttime views in the area.	I	None Required.	
3.3.5	The proposed project appears to be consistent with the Land Use and Transportation Element, as well as the Community Sub-Element as expressed in the Industrial Design Guidelines.			
3.3.6	The proposed development envisioned by the Arques Campus Specific Plan would not combine with other nearby development to cumulatively result in significant changes to the visual setting.	I	None Required.	

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Table S-1
Summary of Impacts and Mitigation Measures

Impacts		Potential Significance Without Mitigation	Mitigation Measures	Potential Significance With Mitigation
3.4	TRANSPORTATION			
3.4.1	The proposed project would increase average delays at intersections surrounding the project site; however, none of the changes is considered to add significantly to background levels of congestion.	I	None Required.	
3.4.2	The proposed project would significantly affect three freeway segments along U.S. 101 during the PM peak hour.	S	<i>3.4.2-1 Contributions to Northbound U.S. 101 Traffic Improvements.</i> On northbound U.S. 101, the project was found to significantly affect the freeway segment between Mathilda Avenue and State Route 237 during the PM peak hour. This segment experiences spillback traffic delays from downstream congestion in the vicinity of the State Route 85 interchange (junction) with U.S. 101. The Santa Clara County Transportation Advisory Measure A passed by voters on November 5, 1996, identifies the need for interchange improvements at this location. At Project Study Report prepared for Caltrans indicates the need to include improvements to adjacent upstream and downstream interchanges and connections that are affected by the SR 85/U.S. 101 interchange. Santa Clara County Sales Tax Measure B, passed by voters on November 5, 1996, will provide the vast majority of funding required to implement these	U

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Table S-1
Summary of Impacts and Mitigation Measures

Impacts	Potential Significance Without Mitigation	Mitigation Measures	Potential Significance With Mitigation
		improvements. Funding shortfalls are currently anticipated however. To address this funding shortfall, currently estimated at 11% for the highway program, additional state and federal funding may be sought, reductions in the scope of the highway projects may be identified, and/or traffic mitigation fees may be assessed (or contributions sought) for land development proposals. While a final Measure B implementation plan has yet to be developed, and appropriate shortfall funding mechanisms established, the project sponsor should provide a project-specific financial contribution based on its fair share of traffic contribution. One estimate for this fair share contribution is derived as follows. For the segment in question, the proposed project would contribute 78 trips during the PM peak hour to the exiting volume of 4110 vehicles per hour (1.9 percent). The project sponsor should make a monetary contribution of 1.9 percent of the unfunded portion of the SR 85/U.S. 101 improvement project to the VTA congestion Management Program as mitigation of its impacts on this segment of U.S. 101.	

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Table S-1
Summary of Impacts and Mitigation Measures

Impacts	Potential Significance Without Mitigation	Mitigation Measures	Potential Significance With Mitigation
		<i>3.4.2-2 Contribution to Southbound U.S. 101 Traffic Improvements.</i> On southbound U.S. 101, the project was found to significantly affect the freeway segments between Great America Parkway to Montague Expressway. As was the case for northbound traffic, these segments experience spillback traffic delays from downstream congestion beginning at the U.S. 101/I-880 Interchange exacerbated by traffic exiting to the SR 87 Guadalupe Parkway. In the latter case, traffic spills back from the SR 87/Airport Parkway intersection onto southbound U.S. 101, thereby blocking the right hand auxiliary and through traffic lanes. Transportation improvement projects are under construction and programmed to relieve these traffic bottlenecks. SR 87 is being upgraded to a freeway from U.S. 101 to downtown San Jose. This project is under construction and is expected to eliminate the traffic spillback that currently exists in the right hand traffic lanes. Widening I-880 to six lanes north of U.S. 101 and adding auxiliary lanes south of U.S. 101 to First Street should help to reduce traffic spillback onto U.S. 101 from this interchange. These improvements are programmed to be funded by Measure B and a funding shortfall of	

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Table S-1
Summary of Impacts and Mitigation Measures

Impacts	Potential Significance Without Mitigation	Mitigation Measures	Potential Significance With Mitigation
		\$3 million is anticipated, based on the assumptions noted above. For the U.S. 101 freeway segments that approach this interchange, the proposed project would contribute 3% of the mainline traffic volumes. To mitigate its impact on these segments of southbound U.S. 101, the project sponsor should make a monetary contribution to the VTA Congestion Management Program, earmarked for the I-880 widening project (which affects the performance of U.S. 101). <i>3.4.2-3 Transportation Demand Management.</i> Efforts by Applied Materials to reduce automobile trips would reduce impacts on the regional transportation system. Applied Materials will implement measures to achieve a minimum 15% reduction of automobile trips. Techniques that can be continued, enhanced, or initiated include informing employees of transit options, subsidizing transit passes, providing shuttle services to bus and rail stops and transit centers, vanpooling and ridersharing, and promoting bicycle use. Applied Materials will submit reports to the City to document its semi-annual progress. A 15% trip reduction would lessen project trips on U.S. 101, but all freeway segments would still be expected to accommodate a greater number of trips than the significance threshold of 69 additional trips.	

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Table S-1
Summary of Impacts and Mitigation Measures

Impacts	Potential Significance Without Mitigation	Mitigation Measures	Potential Significance With Mitigation
		Accordingly, this measure by itself would almost avoid the impact on the U.S. 101 between Mathilda Avenue and SR 237 (reducing project added trips to 70-71) but would leave the other two segments significantly affected.	
3.4.3 Development associated with the proposed project would result in significant queuing impacts at the intersection of Lawrence Expressway and Arques Avenue.	S	3.4.3-1 <i>Lawrence Expressway and Arques Avenue Intersection Improvements.</i> The project sponsor will contribute funds to the City to lengthen the northbound dual left-turn lanes from approximately 320 feet to approximately 560 feet. This action will increase left turn storage capacity to 46 cars, the design queue identified for the project condition. This extension will require modifications to the median in Lawrence Expressway, but no additional right-of-way will be required. Responsibilities for implementing this improvement, timing and phasing of construction, and payment by Applied Materials to the City will be specified in a Development Agreement, pursuant to Government Code Section 65864 <i>et seq.</i>, to be entered into between Applied Materials and the City of Sunnyvale.	I

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Table S-1
Summary of Impacts and Mitigation Measures

	Impacts	Potential Significance Without Mitigation	Mitigation Measures	Potential Significance With Mitigation
3.4.4	The proposed project would likely increase demand for transit services, but there is available capacity to accommodate additional patrons and transit service would not be adversely affected.	I	None Required.	
3.4.5	The proposed project would not modify or eliminate existing or planned bicycle or pedestrian facilities.	I	None Required.	
3.4.6	The design of the proposed project's accessways would not adversely affect local circulation along Arques Avenue or California Street.	I	None Required.	
3.4.7	The proposed project would include sufficient on-site parking spaces to satisfy anticipated parking requirements.	I	None Required.	
3.4.8	Construction activity associated with the Arques Campus Specific Plan is not expected to significantly affect the local circulation network.	I	None Required.	
3.4.9	Near-term cumulative growth in the year 2003 would not result in any unacceptable service levels at study intersections.	I	None Required.	

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Summary of Impacts and Mitigation Measures

Impacts		Potential Significance Without Mitigation	Mitigation Measures	Potential Significance With Mitigation
3.4.10	Compared to the project condition scenario (representing 1998 existing plus background plus project-generated traffic), traffic operations under far-term cumulative conditions (year 2015) would worsen along Wolfe Road and Lawrence Expressway.	S	<i>3.4.10-1 Fair Share Contribution for Lawrence Expressway and Duane Avenue Improvements.</i> The City of Sunnyvale's General Plan Circulation Element identifies the need to construct a grade separation (urban traffic interchange) at the intersection of Lawrence Expressway with Duane Avenue to mitigate far-term cumulative traffic conditions. The proposed project would contribute 305 trips to this intersection during the PM peak hour, representing 3.25 percent (308/9,371) of the total traffic volume forecast for 2015. To mitigate the traffic impacts associated with the proposed project, the project sponsor shall make a monetary contribution to the City of Sunnyvale to finance its fair share portion of this urban interchange. The amount, method of payment, and timing of payment shall be specified in a Development Agreement, pursuant to Government Code Section 65864 <i>et seq.</i>, to be entered into between Applied Materials and the City of Sunnyvale.	I
3.5	AIR QUALITY			
3.5.1	Project-generated traffic would not result in local carbon monoxide concentrations that would exceed the state or federal standards for ambient air quality.	I	None Required.	

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Table S-1
Summary of Impacts and Mitigation Measures

Impacts		Potential Significance Without Mitigation	Mitigation Measures	Potential Significance With Mitigation
3.5.2	Project-generated increases in emissions of certain criteria pollutants would adversely affect regional air quality.	S	<i>3.5.2-1 Vehicular Trip Reduction Measures.</i> The Applied Materials Arques Campus Specific Plan incorporates vehicular trip reduction measures that are credited with achieving a 5% reduction in total trip generation and that are described in Section 3.4, Transportation. The emissions estimates in Table 3.5-5 incorporate the estimated trip reduction that would be brought about by these measures. To achieve greater emissions reduction, Applied Materials will develop their Transportation Demand Management Strategy to achieve a 15 percent reduction in total trip generation. Applied Materials shall employ a variety of techniques to accomplish this trip reduction. Such measures could include vanpools, subsidized transit passes, staggering work hours to reduce travel during the peak commute hours, and shuttles to transit stops and centers.	U
3.5.3	Emissions of particulate matter during construction could bring about locally poor air quality.	PS	<i>3.5.3-1 Construction Best Management Practices.</i> Applied Materials will implement on-site measures for dust control during construction: a. temporary erosion protection with mulches, fiber mats, dust palliatives, etc., b. timely plantings to permanently abate wind erosion	I

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Summary of Impacts and Mitigation Measures

Impacts	Potential Significance Without Mitigation	Mitigation Measures	Potential Significance With Mitigation
		c. washing or sweeping the access roadways and preventing mud from accumulating on the streets of the area during construction d. when there is a substantial amount of exposed earth, have on site a water truck or other means of readily watering exposed surfaces. The following other measures or conditions would have a favorable effect on dust and could be performed instead of watering some portions of the site during some phases of construction: (1) seed and water inactive portions of the site until grass growth has taken hold; (2) refrain from grading, earth-moving or excavation activities during periods of high winds unless the earth is too damp to give off dust that could become airborne; (3) cover, in some way, piles of loose material that could blow away in the wind; (4) cover the beds of trucks hauling any sands or soils; and (5) provide stations for washing truck wheels and for wetting down truck beds. It is difficult to quantify the effects of such mitigation measures on 'fugitive' emissions of PM10, but it is reasonable estimate a 50% reduction rate in PM10, mainly due to	

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Summary of Impacts and Mitigation Measures

Impacts		Potential Significance Without Mitigation	Mitigation Measures	Potential Significance With Mitigation
			watering loose earth and washing or sweeping streets.	
3.5.4	Cumulative development, along with the proposed project, in the near-term and far-term scenarios would not result in significant local carbon monoxide concentrations in excess of state or federal ambient air quality standards.	I	None Required.	
3.6	WASTEWATER SERVICES			
3.6.1	Buildout of the proposed project would generate average dry weather flows of about 376,900 gpd (or about 0.4 mgd). This increase over baseline flows would not create a significant impact on the treatment capacity of the WPCP.	I	None Required.	
3.6.2	The proposed project would generate peak wastewater flows that would consume more than 90% of available capacity of the Arques Avenue Collector Sewer Main.	S	3.6.2-1 Regulation of Industrial Processes. Applied Materials shall conduct its industrial processes such that release of industrial wastewater does not coincide with weekday peak flows in the Lawrence trunk sewer, from 8 AM to 10:00 AM.	I

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Summary of Impacts and Mitigation Measures

Impacts	Potential Significance Without Mitigation	Mitigation Measures	Potential Significance With Mitigation
		<i>3.6.2-2 Collection System Upgrade.</i> Applied Materials shall contribute funds to the City to make improvements to the 10-inch sewer capacity line in Arques Avenue, the sewer force main diversion facilities, the proposed Fair Oaks Avenue diversion facility, or other facilities, as determined appropriate by the City Public Works Department, to mitigate the peak flow impacts from buildout of the Arques Campus. The payment shall be determined based on the proportional share of Applied Materials Arques Campus peak flow to total peak flow in the Arques line. The method and timing of payment shall be specified in a Development Agreement, pursuant to Government Code Section 65864 et seq, to be entered into between Applied Materials and the City of Sunnyvale.	
		<i>3.6.2-3 Onsite Retention.</i> As an option to, or perhaps in combination with, Mitigation Measure 2.2, Applied Materials can develop onsite storage facilities that will enable wastewater to be detained on site for discharge into the collection system during non-peak periods. The design, storage capacity, and discharge schedule will be subject to review and approval by the City Public Works Department, and the size,	

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Summary of Impacts and Mitigation Measures

Impacts		Potential Significance Without Mitigation	Mitigation Measures	Potential Significance With Mitigation
			phasing, and operations of the facility shall be specified in a Development Agreement, pursuant to Government Code Section 65864 et seq), to be entered into between Applied Materials and the City of Sunnyvale.	
3.6.3	The proposed development envisioned by the Arques Campus Specific Plan, in combination with other nearby development, would result in significant cumulative wastewater effects.	S	See Mitigation Measures 3.6.2-1 through 3.6.2-3.	I
3.7	HYDROLOGY AND WATER QUALITY			
3.7.1	The proposed project would not substantially alter runoff rates or volumes into Calabazas Creek.	I	None Required.	
3.7.2	Grading and construction activities associated with the Arques Campus Specific Plan could create short-term increases in erosion and sedimentation due to non-point source pollution.	PS	3.7.2-1 <i>Preparation of SWPPP.</i> Applied Materials shall be responsible for having the construction Storm Water Pollution Prevention Plan (SWPPP) prepared by, or under the direction of, an individual who is qualified as a Certified Professional in Erosion and Sediment Control or a Registered Civil Engineer.	I

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Table S-1
Summary of Impacts and Mitigation Measures

Impacts	Potential Significance Without Mitigation	Mitigation Measures	Potential Significance With Mitigation
		<i>3.7.2-2 Review and Approval of SWPPP.</i> The exact locations, extent, nature and details of erosion controls and Best Management Practices (BMP) shall be developed in consultation with the City of Sunnyvale. The SWPPP shall conform to City requirements for pollution prevention in construction contracts. The SWPPP shall be submitted to the City of Sunnyvale for review and approval prior to issuance of grading or construction permits.	
3.7.3 Urban runoff from impermeable surfaces associated with development pursuant to the Arques Campus Specific Plan could lower the quality of stormwater runoff entering Calabazas Creek and the Bay.	PS	<i>3.7.3-1 Minimize Use of Pesticides and Fertilizers.</i> Applied Materials shall use the minimum amount of pesticides and fertilizers necessary to properly maintain landscaping at the Arques Campus. Applied Materials shall not apply pesticides and fertilizers to its grounds if rain is imminent.	I
3.7.4 The proposed development envisioned by the Arques Campus Specific Plan would not combine with other nearby development to cumulatively result in significant stormwater flows.	I	None Required.	

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Table S-1
Summary of Impacts and Mitigation Measures

Impacts		Potential Significance Without Mitigation	Mitigation Measures	Potential Significance With Mitigation
3.8	HEALTH AND SAFETY			
3.8.1	Project-related construction could disturb existing contaminated soils or groundwater and thereby cause adverse health or safety effects.	PS	<i>3.8.1-1 Environmental Safety and Health Plan.</i> The Environmental Safety and Health Plan prepared for the construction of the new Technology Center, parking garage, and recreation center will be revised, updated, or amended to address the worker, public, and environmental health and safety issues related to the potential for project-related construction to disturb existing contamination or interfere with ongoing remediation activities. Copies of the revision, update, or amendment to the plan will be provided to the City of Sunnyvale and the San Francisco Bay Regional Water Quality Control Board prior to beginning any project-related earth-moving activities. The plan will be implemented throughout project construction.	I
3.8.2	Although the project would increase the on-site population potentially exposed to existing soil and groundwater contamination, the potential for exposure would be insufficient to pose any substantial health or safety risks.	I	None Required.	

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Table S-1
Summary of Impacts and Mitigation Measures

	Impacts	Potential Significance Without Mitigation	Mitigation Measures	Potential Significance With Mitigation
3.8.3	Project-related demolition or renovation could disturb hazardous materials in existing building components and thereby cause adverse health or safety effects.	PS	<i>3.8.3-1 Hazardous Materials Surveys.</i> Existing buildings will be inspected by a qualified environmental specialist for the presence of as yet unidentified asbestos, PCBs, mercury, lead, or other hazardous materials. If found, these materials will be managed as required by law and according to federal and state guidelines. Health and safety measures to address possible building contaminants discovered through this process will be incorporated into the revised, updated, or amended Environmental Safety and Health Plan described in Mitigation Measure 1.1, or into a new plan implemented to address these issues.	
3.8.4	Potential accidents when transporting project-related hazardous materials or wastes would be unlikely, and required packaging would minimize the potential to expose the public or the environment to health or safety risks.	I	None Required.	
3.8.5	Health and safety effects related to project activities would be unlikely to combine with those of other developments to pose any substantial cumulative effects.	I	None Required.	

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Section 1

Introduction

1.1 EIR PURPOSE AND INTENDED USE

This Environmental Impact Report (EIR) describes the environmental implications of the proposed Applied Materials Arques Campus Specific Plan. If approved, the plan would allow the expansion of Applied Materials' existing campus from about 521,000 square feet of research, testing, and support space to as much as 1,114,600 square feet. Under California law, a jurisdiction may use a specific plan to develop specific regulations, programs, and legislation to implement the jurisdiction's adopted General Plan.¹ The law requires that a Specific Plan include text and diagrams addressing the distribution, location, and intensity of land uses, including open space, within the Plan area; the distribution, location, and capacity of major infrastructure improvements, including transportation, sewage, stormwater drainage, solid waste disposal, and energy systems; standards and criteria for development and utilization of natural resources; and implementation measures, including capital improvements and financing mechanisms necessary to execute the Plan. A Specific Plan offers the opportunity to translate the community's broad policy goals and objectives set forth in the General Plan into a mechanism for controlling actual development.

Following normal development review procedures for such a project, the City of Sunnyvale is the Lead Agency² for the environmental review requirements of the Arques Campus Specific Plan. The City has prepared this EIR in accordance with state requirements set forth in the California Environmental Quality Act (CEQA). This EIR is intended to inform City decision-makers, responsible agencies, and the general public about the proposed project and its environmental consequences. Preparation and certification of this EIR are independent acts that differ from approval of the proposed project and issuance of permits and entitlements.

The EIR emphasizes environmental impacts that are expected to be significant, and defines mitigation measures that could minimize or eliminate significant adverse impacts. Such impacts and mitigation needs are discussed in this EIR at a level of detail necessary to allow reasoned decisions about the project and to support recommendations for conditions of project approval. The report also describes and evaluates a range of reasonable alternatives to the proposed project. The analysis of the environmental consequences of the alternatives allows decision-makers to consider additional approaches to mitigate potential environmental impacts.

As the Lead Agency, the City of Sunnyvale intends for this EIR to serve as the CEQA-required environmental documentation for consideration of this project by Responsible Agencies³ and Trustee Agencies,⁴ potentially including such agencies as the Santa Clara Valley Transportation Authority, the Santa Clara Valley Water District, the California Regional Water Quality Control Board (San Francisco Bay Region), and the Bay Area Air Quality Management District. The City of Sunnyvale and other agencies will consider this EIR when deciding whether to approve various permits and entitlements necessary for project implementation.

1.2 ENVIRONMENTAL REVIEW PROCESS

This EIR is a draft document and has been distributed for a 45-day public review and comment period. Readers are invited to submit written comments on the adequacy of the document in identifying and analyzing the possible environmental impacts and the proposed mitigation measures. Comments are most helpful when they suggest specific alternatives or measures that would better mitigate the significant environmental effects.

Written comments should be submitted to:

Ms. Gail Price, AICP
City of Sunnyvale
Department of Community Development
456 West Olive Avenue
Sunnyvale, CA 94088-3707

Following the close of the public review and comment period, responses will be prepared that address all substantive comments. Before taking any action on the Arques Campus Specific Plan, the City of Sunnyvale must certify that the Draft EIR and the responses to comments together fulfill the requirements of CEQA and that the environmental implications of the project have been considered.

1.3 SCOPE OF THIS EIR

The City of Sunnyvale has prepared an Initial Study to identify potential impacts needing further exploration in this EIR. Based on the Initial Study and the responses to the Notice of Preparation,⁵ the City prepared and distributed this EIR focusing on the following issues:

- Compatibility of the project with surrounding land uses and relevant adopted planning documents;
- Aesthetics related to the potential scale and bulk of the development;
- Transportation and circulation effects on nearby freeway/expressway segments and at local intersections;
- Adequacy of on-site parking to accommodate employees, visitors, and others;
- Air quality effects of increased trip generation on regional emissions and local emissions at nearby congested intersections;
- Storm water runoff, site drainage, and water quality;
- Sewer capacity and potential constraints of the Arques Avenue sewer main; and
- Health and safety issues related to existing site contamination from past land uses.

1.4 REPORT ORGANIZATION AND CONTENT

Section 2 of this EIR contains a description of the proposed project, detailing project objectives, physical characteristics, and anticipated phasing. Section 3 presents the existing environmental conditions surrounding the project and the potential impacts of the project on these conditions. For any impacts considered significant — i.e., causing a substantial, adverse change in a physical condition — mitigation measures are recommended to eliminate or reduce the effect to an insignificant level. Section 4 addresses other topics required by CEQA, such as growth-inducing effects of the project. Alternatives to the proposed project are identified and evaluated in Section 5.

Notes: Introduction

- 1 Government Code Section 65450 et. seq.
- 2 CEQA Guidelines define the “Lead Agency” as the public agency that has the principal responsibility for carrying out or approving a project.
- 3 Under CEQA Guidelines Section 15381, the term “Responsible Agency” includes all public agencies, other than the Lead Agency, which have discretionary approval power over aspects of the project for which the Lead Agency has prepared an EIR.
- 4 Under CEQA Guidelines Section 15368, the term “Trustee Agency” means a state agency having jurisdiction by law over natural resources affected by the project which are held in trust by the people of California.
- 5 The Notice of Preparation (NOP) is a brief CEQA-required notice sent by the Lead Agency to notify the Responsible Agencies, Trustee Agencies, and potentially involved federal agencies that the Lead Agency plans to prepare an EIR for the project. The NOP solicits guidance regarding the EIR scope and content. The City of Sunnyvale issued an NOP for the Arques Campus Specific Plan and received no responses.

Section 2

Project Description

2.1 PROJECT LOCATION

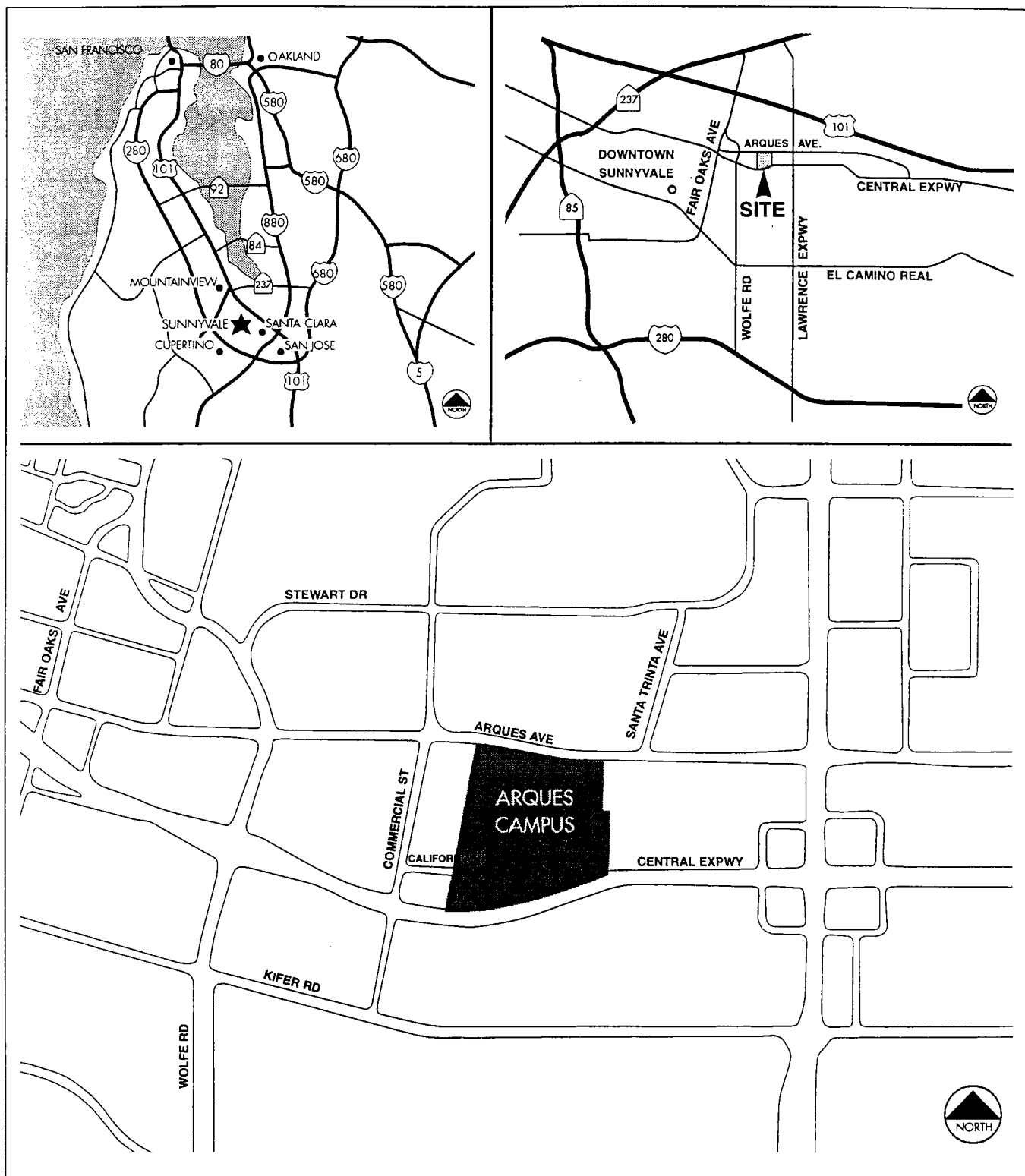
Applied Materials has prepared a Specific Plan for its 35.46-acre Arques Campus site in Sunnyvale, California (see Figure 2-1). The site is at 974 East Arques Avenue (Assessor's Parcels 205-36-006, 205-36-007, and 205-36-008), one-quarter mile west of the Lawrence Expressway, north and east of downtown Sunnyvale, immediately north of Central Expressway, and south of U.S. 101. The site borders other office, research and development, and manufacturing facilities, including three buildings to the east that are occupied by Mitsubishi Corporation and a campus to the south across Central Expressway occupied by National Semiconductor. To the north, across Arques Avenue, is a Fry's Electronics retail store. A block farther north is Advanced Micro Devices. The western edge of the site borders offices, research and development, and warehouses for various service companies.

2.2 PROJECT OVERVIEW

Development Proposal

Applied Materials supplies wafer fabrication systems, processes, and services to the semiconductor industry. Applied Materials researches and develops future chip-making technologies to support high-volume semiconductor manufacturing. Wafer fabrication systems are used to deposit extremely thin molecular films, including conducting, insulating, and partial-conducting (semiconducting) layers, on wafers. An etching process is used to remove specific portions of the layers to create the electronic circuitry used to operate these computer chips. "Dry" etching techniques, which involve the use of an electric field in the presence of a gas, have largely replaced "wet" (chemical bath) etching techniques. The Arques Campus is home to multiple Applied Materials' product business groups. The Etch Division, for example, develops refined and new tools for wafer fabrication.

The proposed project would accommodate an expansion of Applied Materials' existing research and development operations by increasing the building floor area on site from about 521,000 gross square feet (gsf) to about 1,114,600 gsf. The proposed development would include new space for offices, research, prototype labs, tool testing and demonstrations, a larger cafeteria, a larger recreation center, a conference center, and training rooms. It would involve demolishing all or part of at least two of the six existing buildings on site (demolition of another building has already been approved) and constructing at least four new buildings, including three new office/prototype lab buildings and a parking garage. Landscaping and utility improvements are also proposed.



SOURCE: NBBJ Architects

APPLIED MATERIALS ARQUES CAMPUS SPECIFIC PLAN EIR
FIGURE 2-1 PROJECT LOCATION

EIP

Project Objectives

The primary goal of the Arques Campus Specific Plan is to facilitate the transformation of the project site from an older, traditional, light industrial cluster of buildings to a coordinated research and development campus for the semiconductor industry. The Specific Plan provides guidelines for the integrated development of new buildings, circulation, and amenities around a campus theme. Objectives of the project sponsor in preparing the plan include:

1. Transforming a loose configuration of poorly organized work spaces, originally designed for light industrial use, into an integrated, high-technology research and development campus that sets a standard for design quality and workplace environment;
2. Facilitating the phased expansion of existing research and development operations to an ultimate size of approximately 1.1 million gross square feet of floor space;
3. Providing a state-of-the-art facility to attract and retain highly qualified personnel in the semiconductor industry;
4. Providing for increased employment activity in the proximity of regional vehicular and rail transportation corridors, but separated from residential neighborhoods;
5. Consolidating within a single-use campus workplaces that would otherwise be scattered throughout the community;
6. Optimizing site accessibility and minimizing project-related traffic on surrounding roadways in accordance with Valley Transportation Authority standards;
7. Providing a self-mitigating specific plan, whereby any significant environmental impacts are minimized to the extent feasible;
8. Taking advantage of the size and configuration of the project site to provide on-site amenities (e.g., conference center, cafeteria, recreation center, central commons) not economically feasible for smaller, scattered facilities;
9. Providing adequate office, laboratory, and support space to house the anticipated 2,800 employees necessary to (a) support the growth in Applied Materials' business projected to occur within the next 5 to 10 years and (b) make full use of the tool testing and demonstration capacity that the recently completed Technology Center is designed to accommodate;
10. Providing the office, laboratory, and support space necessary to research, design, and develop equipment prototypes for testing and demonstration in the Technology Center;
11. Providing a campus anchor on Arques Avenue to provide a distinguishing presence on the east side of the City of Sunnyvale;
12. Implementing a design strategy that establishes a consistent architectural and landscape theme, tying the campus together in terms of both its internal relationships among facilities and its external compatibility with the surrounding community;

13. Maximizing open space by using structured parking and multistory buildings; and
14. Employing a phasing strategy, with mitigation if necessary, whereby each increment of development maintains the coherence of the campus environment and functions on a stand-alone basis.

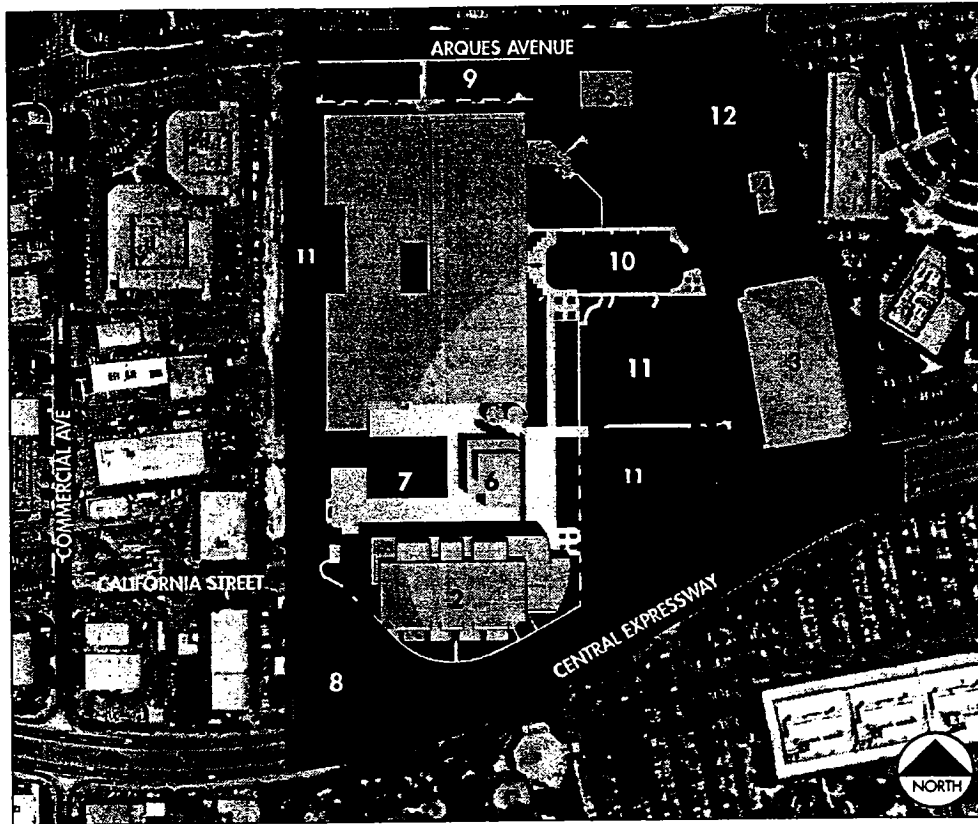
2.3 PROJECT CHARACTERISTICS

Site Plan and Development Program

The project site was originally developed for industrial use in 1967. Applied Materials acquired the property in 1995 and uses it for research and development operations within the high-technology industry. Existing facilities house office, research and development, utility support, and process equipment and tool demonstration activities (see Figure 2-2). A 30-year-old partial two-story building has been renovated for offices, prototype labs, storage space, and a cafeteria in 402,000 gsf of space. A separate 11,500 gsf building houses an obsolete conference center with parking below. This building currently contains temporary office space. The site also includes a recreation center, a service yard, surface parking, and landscaping.

Recently completed development at the project site aims to expand the research and development uses at the site. A 100,300 gsf Technology Center designed to showcase emerging technologies occupies the southwestern portion of the site. A 17,000 gsf central utility building has been constructed to support the Technology Center. There is also a 4,000 gsf recreation center and various utilities, including a 115 kV electrical substation. A new six-story parking garage accommodates up to 1,300 vehicles. With this new development, the site has a total of 521,000 gsf of building area and 2,025 parking spaces, as listed in Table 2-1.

As shown in Table 2-1, the Arques Campus Specific Plan would accommodate an expansion of the existing floor area on site from a current 521,000 gsf to approximately 1,114,600 gsf. The floor area ratio (FAR)¹ allowed on site would increase to 0.72 from the 0.35 FAR permitted by City zoning (Title 19 of the Sunnyvale Municipal Code). According to Title 19, projects exceeding 0.35 FAR require use permits. This increase in floor area, together with an expansion of on-site parking from 2,025 spaces to a maximum of 2,975 spaces, would accommodate approximately 2,800 employees and 280 visitors. The expansion would result in an increase of about 1,300 employees and 130 visitors above the roughly 1,500 employees and 150 visitors accommodated by existing facilities, including newly constructed facilities. Proposed development would include new space for offices, research, prototype labs, tool testing and demonstrations, a larger cafeteria, a larger recreation center, a conference center, and training rooms. The campus buildings and facilities would surround a 1.3-acre central commons. Figure 2-3 illustrates a conceptual site plan for proposed development under the Arques Campus Specific Plan.



Existing Arques Campus Site Plan

1. Office/Prototype Lab
2. Technology Center
3. Employee Parking Structure
4. Recreation Center
5. Obsolete Conference Center (Offices)
6. Central Utility
7. Service Yard
8. Electrical Substation Yard
9. Visitor Parking (Surface)
10. Employee Priority Parking (Surface)
11. Employee Parking (Surface)
12. Temporary Parking (Surface)

SOURCE: NBBJ Architects

APPLIED MATERIALS ARQUES CAMPUS SPECIFIC PLAN EIR

FIGURE 2-2 EXISTING ARQUES CAMPUS SITE PLAN

EIR

Table 2-1
Estimated Existing and Proposed Floor Area at the Arques Campus

Use	Existing Space (gsf)	Proposed Demolition (gsf)	Proposed Construction (gsf)	Total Space at Buildout (gsf)
Administration/ Research Office	290,000	(47,000)	399,400	642,400
Prototype Lab	126,700	(25,000)	215,000	316,700
Tool Testing/Demonstration	67,000	0	0	67,000
Central Utility	17,000	0	0	17,000
Materials Storage	6,500	0	0	6,500
Cafeteria	9,800	(9,800)	20,000	20,000
Recreation Center	4,000	(4,000)	8,000	8,000
Conference Center	0	0	30,000	30,000
Training Rooms	0	0	7,000	7,000
Total Floor Area	521,000	(85,800)	679,400	1,114,600
Floor Area Ratio	0.34			0.72
Effective Floor Area Ratio /a/	0.28			0.64

Source: Arques Campus Specific Plan

Notes:

/a/ Effective Floor Area Ratio does not include the approximately 132,000 gsf for tool testing/demonstration, cafeteria, recreation center, conference center, and training rooms in the estimate of the floor area. It reflects employee-generating space and is used by the City of Sunnyvale to assess housing development fees.

* * *

Table 2-2
Comparison of City and Specific Plan Development Standards

Development Standard	City of Sunnyvale Zoning Code	Arques Campus Specific Plan
Building Height (maximum)	8 stories, 75 ft.	7 stories, 75 ft.
Lot Coverage (maximum)	45%	45%
Floor Area Ratio (maximum)	0.35 /a/	0.72
Front Yard Building Setback (minimum)	25 ft.	75 ft.
Side Yard Building Setback (minimum)	20 ft.	40 ft. /b/
Rear Yard Building Setback (minimum)	0 ft.	40 ft. /b/
Landscaped Area (minimum)	309,000 sq. ft. /c/	325,000 sq. ft.
Parking	1,080 – 2,160 spaces /d/	2,975 spaces
Truck Loading	at least 7 spaces /e/	at least 14 spaces

Source: EIP Associates, City of Sunnyvale Municipal Code, Arques Campus Specific Plan

Notes:

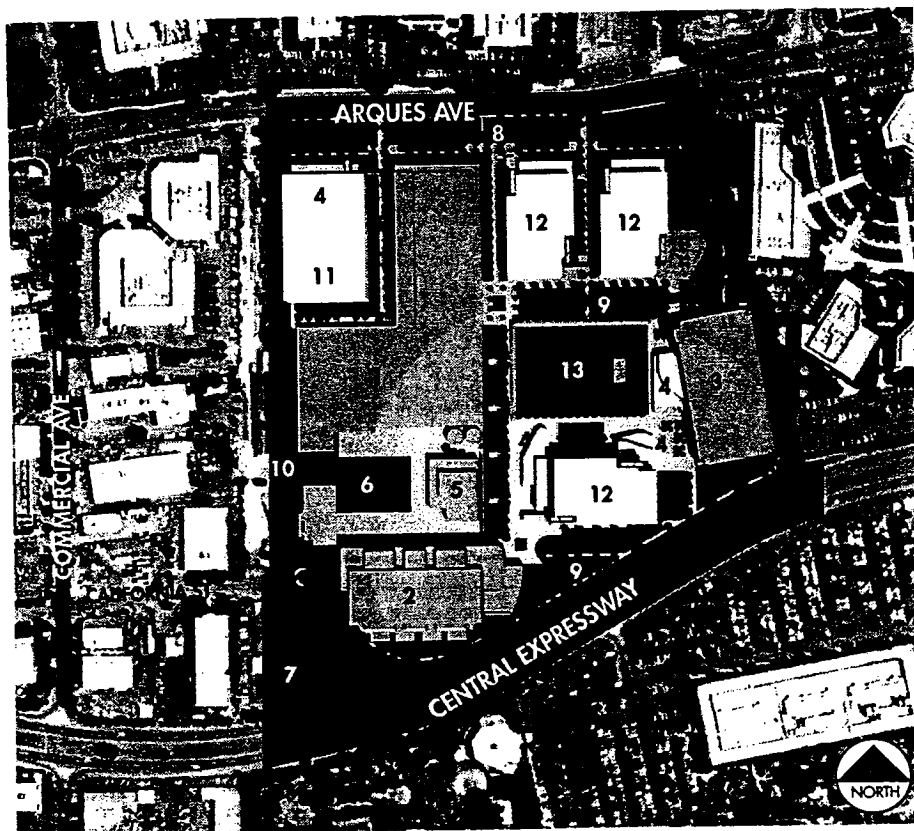
/a/ Floor area ratios greater than 35% are allowed through a use permit in accordance with Title 19 of the City of Sunnyvale Municipal Code.

/b/ The existing substation would continue to be set back 20 feet.

/c/ This value applies only to the Arques Campus and is based on the landscaped area being (1) at least 10% of the floor area, plus parking lot landscaping of at least 20% of the parking area and off-site drives, and (2) at least 20% of the net lot area, as required by the City of Sunnyvale Municipal Code.

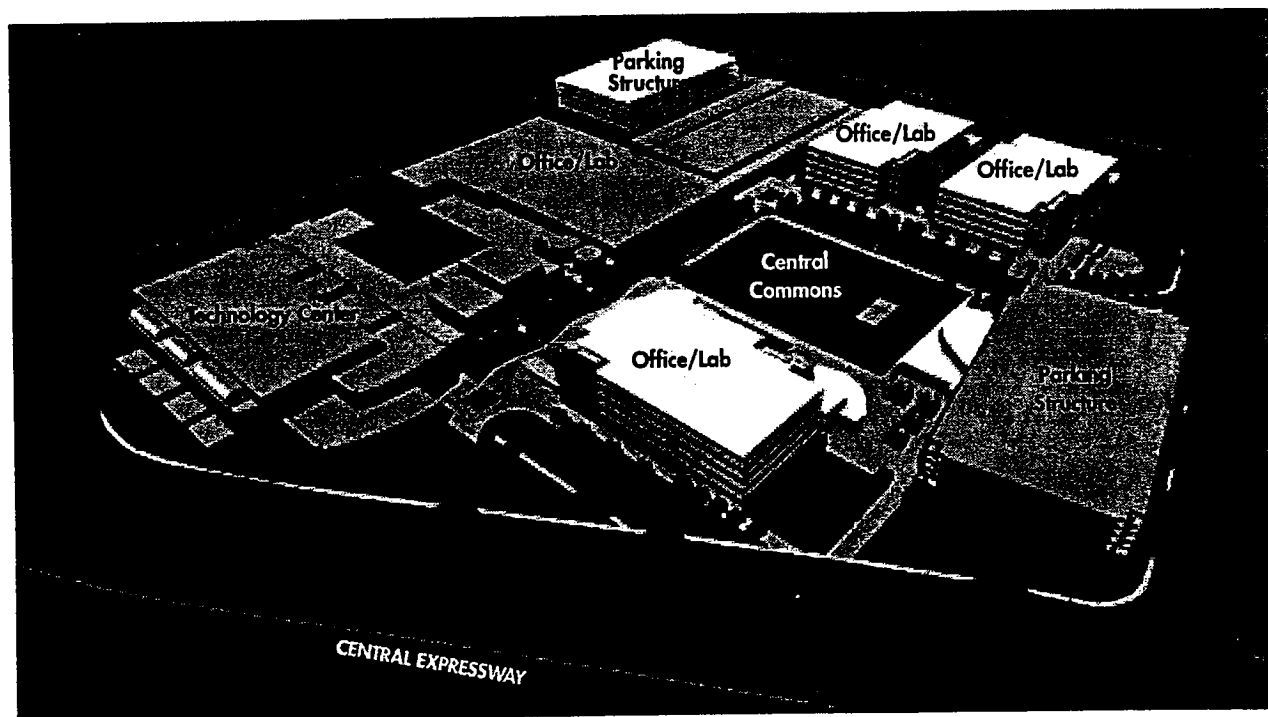
/d/ This range applies only to the Arques Campus and is based on the greatest number of spaces possible assuming a floor area ratio of 0.35 and, at the low end, one space for every 500 square feet of industrial space and, at the high end, one space for every 250 square feet of space, as required by the City of Sunnyvale Municipal Code.

/e/ This value applies only to the Arques Campus and is based on the number of spaces required assuming a floor area ratio of 0.35 and at least two spaces for the first 100,000 square feet of space and one more space for every additional 100,000 square feet of space, as required by the City of Sunnyvale Municipal Code.



Proposed Arques Campus Specific Plan

1. Office/Prototype Lab*
 2. Technology Center*
 3. Employee Parking Structure*
1300 cars/6 levels
 4. Amenity Buildings
Campus Cafeteria
Campus Recreation Center
Campus Conference Center
Campus Training Rooms
 5. Central Utility*
 6. Service Yard*
 7. Electrical Substation Yard*
 8. Visitor Parking (Surface)*
 9. Employee Priority Parking (Surface)*
 10. Employee Parking (Surface)*
 11. Employee Parking Structure
1300 cars/7 levels
 12. Office/Prototype Lab
 13. Central Commons
- * Existing Facilities



Proposed Arques Campus Plan Aerial Perspective From South Along The Central Expressway

SOURCE: NBBJ Architects

APPLIED MATERIALS ARQUES CAMPUS SPECIFIC PLAN EIR

FIGURE 2-3 CONCEPTUAL SITE PLAN

EIP

Development Standards

Development standards for the Arques Campus Specific Plan are summarized in Table 2-2. They are intended to implement the intent and purpose of the Sunnyvale General Plan.

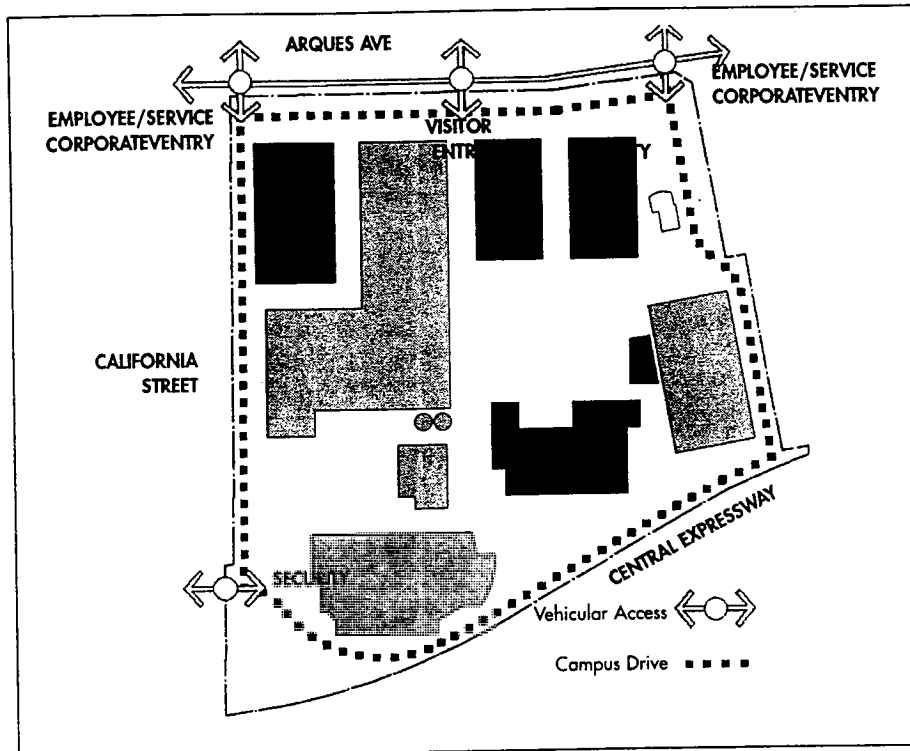
Circulation and Parking

Access. Primary access to the site is from the site's northern perimeter along Arques Avenue, where there are two employee/service entrances and one visitor entrance (see Figure 2-4). Additionally, there is an employee/service entrance at California Street that receives westbound traffic from Central Expressway. A private, internal loop road surrounds the campus, providing access to on-site parking areas and drop-off points. Under the Arques Campus Specific Plan, the proposed visitor entrance drive would be set back at least 125 feet into the site and include a guard station. The other employee/service entrances and guard stations at Arques Avenue would also be set back 125 feet from Arques Avenue. As with the Arques Avenue entrances, the California Street entrance would have a guard station, but no queuing area would be provided.

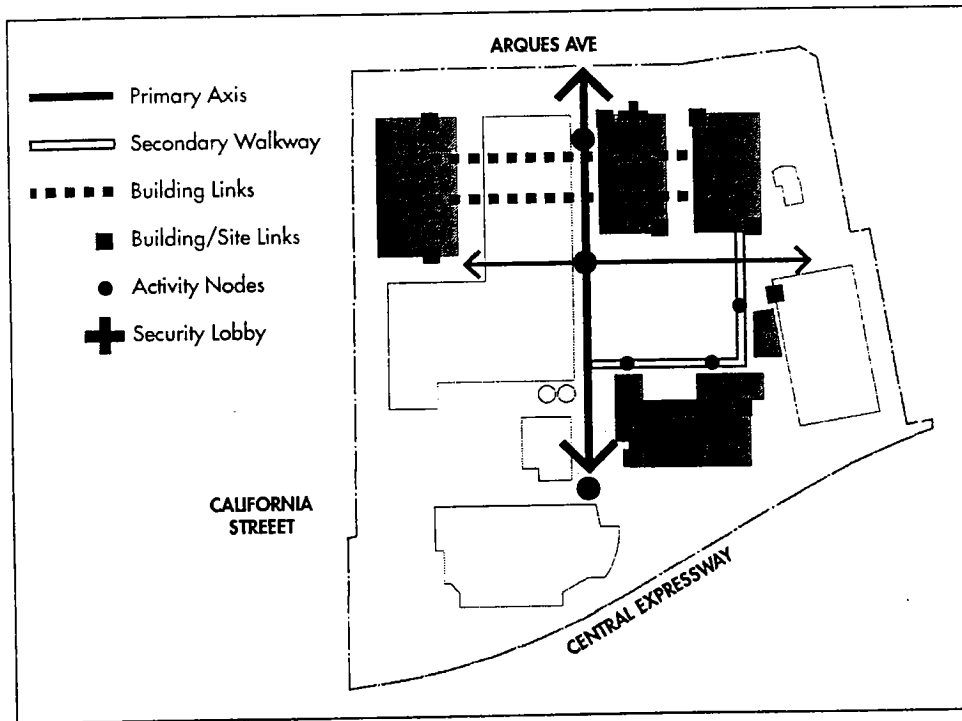
Parking. Currently, there are 2,025 parking spaces on site for employees and visitors. Development under the Arques Campus Specific Plan would result in a net increase of 950 parking spaces (1,300 spaces would be added and 350 existing spaces would be eliminated) for a total of 2,975 parking spaces at buildout. Of the total parking spaces, 2,600 spaces would be in parking structures and 375 spaces would be in surface lots.

Visitor parking would be located along the Arques Avenue frontage, within the Arques Campus but outside the security gates. Visitors would register inside a main entry lobby to be located in an office/prototype lab building. Employee parking would be distributed across the site. Most campus parking would be located in two parking structures, the existing facility with its 1,300 spaces and a new facility with 1,300 more spaces. To enhance circulation and convenience, the new parking structure would be located at the northwest corner of the campus, on the side of the site opposite the existing parking structure. This location would be intended to disperse traffic flows from the other two entries and allow queuing to occur on site. Surface parking would be evenly dispersed to provide convenient access to building entries. Surface parking spaces would conform to the City of Sunnyvale's standards for parking stall width and depth, back-up spaces, and aisle widths. Priority parking areas would continue to be provided as a benefit to employees who volunteer to be emergency response team members. Priority parking areas would be strategically located near main building entrances.

Pedestrian Connections. Pedestrian circulation would be organized through a network of walkways tying into the central commons. As illustrated on Figure 2-4, the pedestrian circulation system would feature a wide, major pedestrian "spine" that connects the entry plaza near Arques Avenue with the Technology Center to the south. Building elevator and stair lobbies would tie directly into the ground level pedestrian circulation system at building entries. As part of the overall circulation plan, bicycle racks would be installed at strategic locations throughout the campus. Employees would have access to on-site showers and other facilities to encourage bicycle use.



a. Vehicular Access Diagram



b. Pedestrian Circulation Diagram

SOURCE: NBBJ Architects

APPLIED MATERIALS ARQUES CAMPUS SPECIFIC PLAN EIR
FIGURE 2-4 VEHICULAR AND PEDESTRIAN CIRCULATION

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Transportation Demand Management. The Arques Campus Specific Plan incorporates a Transportation Demand Management program that includes a range of measures to reduce single-occupant vehicle use, including but not limited to carpooling, vanpooling, public and private transit, bicycling, walk-to-work, alternative hours, and telecommuting. Applied Materials operates an intercampus shuttle and provides shuttle service between the Arques Campus and nearby Caltrain and Valley Transportation Authority light rail transit stations. Applied Materials also provides incentives to its employees who rely on public transportation to get to work, such as a guaranteed-ride-home program. These programs would continue to exist with the proposed project.

Design Guidelines

The Arques Campus Specific Plan establishes guidelines for the architecture of the proposed campus to be consistent with the Industrial Design Guidelines adopted by the City Council on March 16, 1993. The guidelines promote on-site development that will be compatible with the existing two- to three-story buildings adjacent to the campus edges. Taller structures would be oriented toward the interior of the site, organized generally around the central commons. These taller buildings would incorporate one- to two-story amenity buildings (e.g., recreation center, cafeteria, and conference center, ground-level gathering and dining spaces) fronting onto the central commons to maintain a human scale in this area of the campus and to provide a transition from the interior work areas to the outdoor relaxation and recreation areas.

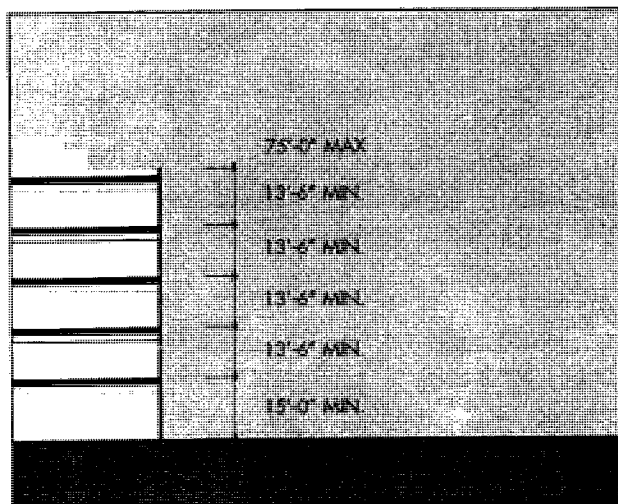
Space and Building Types. There would be five basic space and building types at the Arques Campus: Technology Center, office/prototype lab buildings, amenity features, support facilities, and parking structures.

Technology Center. The existing Technology Center is a place where equipment is tested and demonstration projects are undertaken. The 3-level, 100,300 gsf building rises about 70 feet tall. It is highly articulated and set back about 40 feet from Central Expressway.

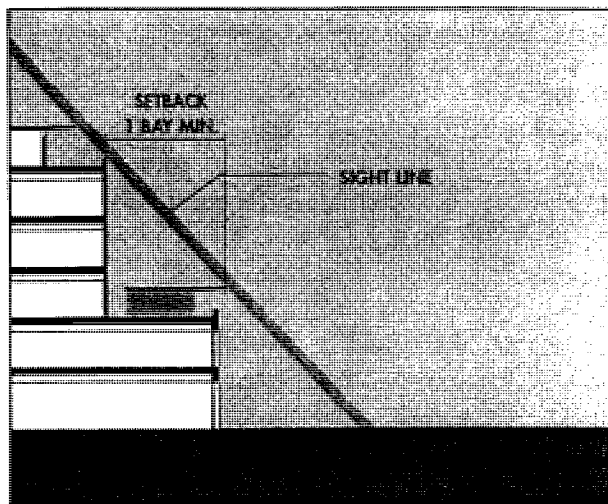
Office/Prototype Lab Buildings. Office/prototype lab buildings house engineering research and development programs. Three new office/prototype lab buildings are proposed under the Arques Campus Specific Plan. The floor plates would be sufficiently flexible to accommodate changing program needs over time.

The buildings along Arques Avenue would align with the existing office/prototype lab building on Arques Avenue. Similarly, an office/prototype lab building on the south side of the campus would align with the new Technology Center and parking garage. The maximum height of the office/prototype lab buildings would be 75 feet, as shown in Figure 2-5a. Rooftop mechanical equipment would be screened and set back from the building edge to reduce its visibility.

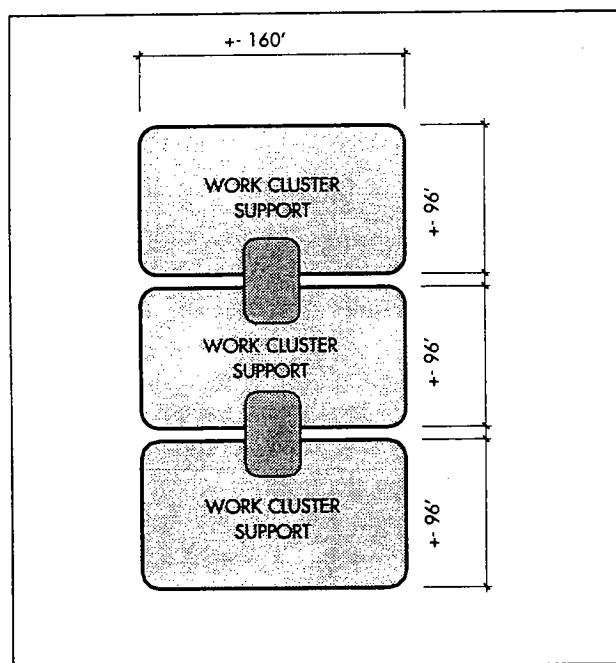
Buildings fronting Arques Avenue would include step-backs for upper floors to reduce the perceived mass of the buildings. The Arques Avenue frontage would also incorporate visually interesting architectural elements, such as recesses, balconies, porches, or distinctive openings to provide design interest and further reduce bulk and mass. Building elevations along Arques Avenue would be limited to two stories in height, stepping up to five stories, at least one structural bay back from the face of the lower level, as shown in Figure 2-5b. The southern office/prototype lab building would be limited to



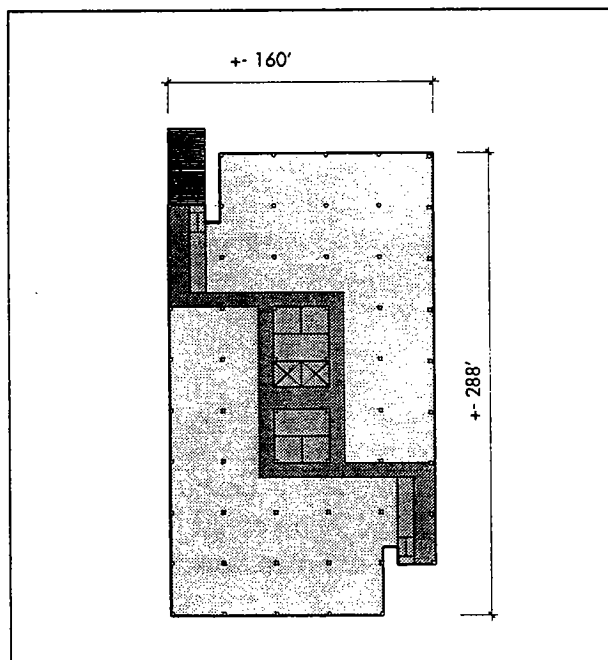
a. Office/Prototype Lab Floor-to-Floor Diagram



b. Building Step Back Diagram



c. Plan Cluster Diagram



d. Hypothetical Floor Plan Diagram

SOURCE: NBBJ Architects

APPLIED MATERIALS ARQUES CAMPUS SPECIFIC PLAN EIR
FIGURE 2-5 CONCEPTUAL OFFICE/PROTOTYPE LAB BUILDING DESIGN GUIDELINES

EIP

two stories in height along a main pedestrian walkway that would traverse the campus, stepping up to five stories, at least one structural bay back from the face of the lower level.

As shown in Figures 2-5c and 2-5d, office/prototype lab building floor plates could be as large as 50,000 gsf. The floor height at ground level would be approximately the same as the existing office/prototype lab building (about 15 feet). The floor-to-floor height above ground level would be about 13 feet 6 inches, or adequate to accommodate offices and light technology labs as intended.

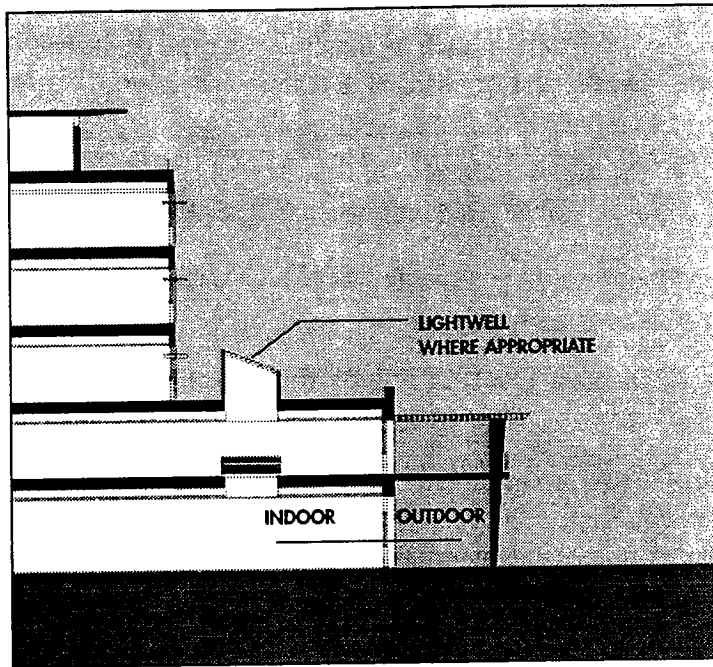
Amenity Features. Amenity features support needs outside the office/prototype lab building environment and include places for meetings, training, eating, exercising, and general recreation. Proposed campus amenity improvements include a larger cafeteria, a conference center, training rooms, a larger recreation center, and other support facilities (e.g., vending, staff services). Specific locations for these functions have not been proposed, and implementation would occur in phases as the research and development population grows.

As suggested by Figure 2-6, amenity facilities may be integrated into other buildings and distinguished architecturally so as to be recognized as special places. Although the design of the amenity facilities would be consistent with the overall campus architectural character, the facilities would also feature unique and distinctive treatments to accent their special character. Most would be located adjacent to the central commons or primary pedestrian walkways. The training rooms would be developed as part of a proposed new parking garage. Amenity facilities would occupy one or two levels and would facilitate human interaction. They would provide spaces sufficient for large gatherings and small private meetings.

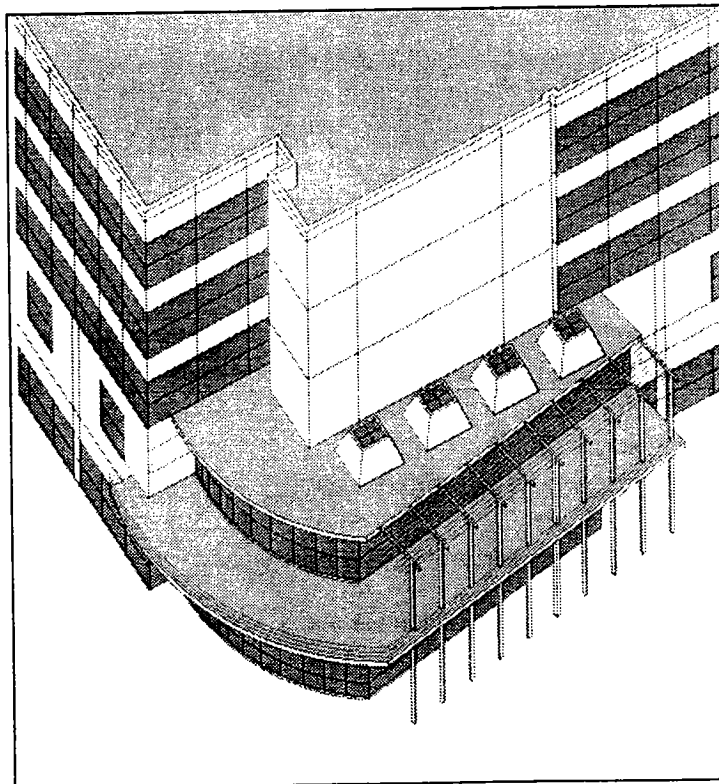
Support Facilities. Support facilities include utility yards, workshops, loading docks, central storage areas, and the electrical substation yard. The existing central utility building and electrical substation yard are fixed elements of the Arques Campus, and no modifications to these facilities are proposed. These facilities would be screened from view by the strategic location of buildings, landscaping, berms, and walls.

Parking Structures. A new parking structure would be constructed at the northwest corner of the site. The design of the proposed parking structure would be consistent with the newly completed parking structure. While the parking structure would be a different building type than the office/prototype lab buildings, the ground floor of the parking structure would be occupied by amenity uses that are supportive of the rest of the campus. For example, training rooms would be incorporated along Arques Avenue to develop a two-story scale compatible with other nearby buildings. These adjoining structures would be intended to minimize the visibility of the parking areas.

Exterior Building Materials. The facilities would be constructed using colors and materials that are compatible with the predominantly neutral tone (white, green, and gray) of the newly constructed Technology Center and parking garage, thereby defining a consistent theme of color, texture, and scale for the entire site. The Arques Campus Specific Plan describes exterior building treatments, setting forth the following guidelines regarding material, color, texture, and application:



Conceptual Building Section at an Amenity Feature



Conceptual Building Diagram at an Amenity Feature

SOURCE: NBBJ Architects

APPLIED MATERIALS ARQUES CAMPUS SPECIFIC PLAN EIR
FIGURE 2-6 CONCEPTUAL AMENITIES BUILDING

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2-13

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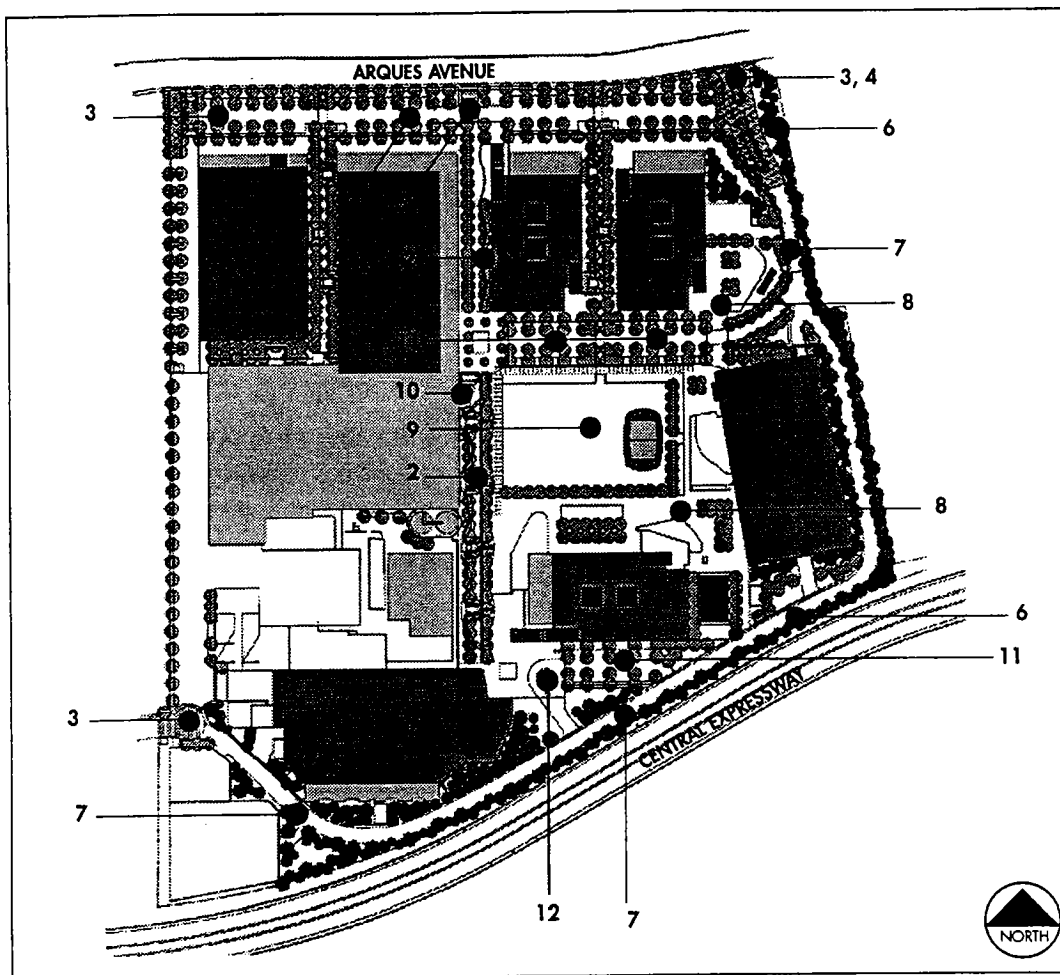
- Large expanses of smooth material, such as concrete or cement plaster, would be modulated with expansion joints, reveals, and/or changes in texture and color.
- Mirror glass and highly reflective surfaces would not be used.
- Bright, contrasting colors would be used only when balanced with large areas of neutral color.
- Exterior material and paint would be durable and of high quality to prevent degradation.
- Metal panels, siding, and exposed metal frameworks could be used, but would be of sufficient gauge to maintain a consistent plane or regular pattern. Finishes could be metallic but not polished or highly reflective.

Landscaping. Landscaping would complement the architecture at the site and provide a natural counterpoint to the built environment. The proposed landscape concept would integrate a formal and informal planting approach that reflects the hierarchy of outdoor spaces established by the buildings and their uses. Landscape plans would be prepared by a landscape architect registered in the State of California.

Specific landscape approaches would be implemented at streets and edges, campus entries, pedestrian walkways and open space, and parking areas, as shown in Figure 2-7. Landscaping along streets and edges would comply with applicable City ordinances and standards, and reflect either a formal, ordered approach consistent with the architectural treatment and reinforcement of the roadway corridor, or a more informal approach at edges where a visual buffer would be desirable. Vehicular entries along Arques Avenue would include special paving and landscaping to establish a hierarchy of gateways into the campus. The visitor entrance would be enhanced with accent trees, seasonal color, and focal elements to create a strong visual presence. Surface parking areas would receive landscape treatments that visually integrate these areas with adjacent buildings and open space. Adequate landscaping would provide a shaded, visually buffered condition.

Major pedestrian walkways would be planted with trees in regularly spaced rows or groups, to create a formal campus landscape character and to reinforce the architectural character of the site plan. Many walkways would be sheltered with arcades or trellises; others would be shaded by trees. Planting beds and ground cover may be planted in a more natural, informal manner. The central commons would be a multi-use lawn with a small surface area for outdoor gatherings. Scattered specimen trees may serve as focal elements within the large space. Special landscape treatments would be provided at entrances and amenities. Fountains or other water features may be provided.

There are currently about 446 trees of various species and sizes on site, including Canary Island Pine, Aleppo Pine, Coast Live Oaks, Chinese Elm, Coast Redwood, Plane Trees, Ash, Olives, Magnolia, and Carob. About 30 to 40 of these trees would be removed to accommodate development under the Arques Campus Specific Plan. A tree protection plan and detailed landscape plan will be submitted during the plan review process. New plants would be selected from a species list in the Specific Plan.



Proposed Arques Campus Landscape Concept Plan

1. Visitor Parking Orchard
2. Pedestrian Spine
3. Corporate Entry
4. Employee/Service Entry with Project Signage
5. Visitor Entry with Project Signage
6. Landscape Buffer
7. Campus Drive
8. Amenity Plaza
9. Central Commons
10. Typical Garden/Courtyard Area
11. Employee Priority Parking
12. Drop-Off

SOURCE: NBBJ Architects

APPLIED MATERIALS ARQUES CAMPUS SPECIFIC PLAN EIR

FIGURE 2-7 LANDSCAPE CONCEPT PLAN

EIP

Infrastructure and Utility Improvements

The project site is within the City of Sunnyvale water service area. City water lines in Arques Avenue and California Street would continue to supply domestic and industrial water. Project wastewater would be treated at the City of Sunnyvale's wastewater treatment plant. On-site wastewater lines would be designed with adequate capacity to accommodate full project buildout. The existing wastewater lines in Arques Avenue are inadequate to accommodate the proposed future flows from the service area with a 10% capacity factor of safety.

A storm water drainage plan for the project calls for the collection and transportation of storm water in a manner that complies with National Pollutant Discharge Elimination System requirements and City of Sunnyvale standards. The drainage system on site would be privately maintained. Applied Materials would prepare a Storm Water Pollution Prevention Plan prior to any grading or construction pursuant to the Arques Campus Specific Plan.

Development under Arques Campus Specific Plan would also include underground improvements to distribute electricity, natural gas, and telecommunications systems throughout the new campus facilities.

2.4 PROJECT PHASING

Development under the Arques Campus Specific Plan would occur in stages. To accommodate the market uncertainties of the high-technology industry, however, the timing of the project would remain flexible and subject to change. As indicated in Table 2-3, Stage I development would probably involve constructing one of the three proposed new office/prototype lab buildings. This construction would

Table 2-3
Phasing of Arques Campus Development

Building Type	Stage I		Stage II		Total
	Demolition (gsf)	Construction (gsf)	Demolition (gsf)	Construction (gsf)	Build-Out (gsf)
Office/Prototype Lab	0	205,000	(72,000)	409,400	542,400
Cafeteria	(9,800)	20,000	0	0	10,200
Recreation Center	0 or (4,000)	0 or 8,000	0 or (4,000)	0 or 8,000	4,000
Conference Center	0	0 or 30,000	0	0 or 30,000	30,000
Training Rooms	0	0	0	7,000	7,000
Total	(9,800) or (13,800)	225,000 to 263,000	(72,000) or (76,000)	416,400 to 454,400	593,600
Floor Area					
Parking Spaces	(350)			1,300	950

Source: Arques Campus Specific Plan

trigger development of the major pedestrian walkways, the central commons, and landscaping improvements to the Arques Avenue frontage. Stage I would also probably include the relocation of the cafeteria. Stage II would then involve constructing the other two office/prototype lab buildings, which in turn would trigger the partial demolition of the existing office/prototype lab building to make way for the proposed parking garage and training rooms. The recreation center and conference center could be completed in either Stage I or Stage II, depending on which of the three office/prototype lab buildings was constructed in Stage I. All other site improvements would probably be completed in Stage II. The phasing of development would be linked to specific mitigation measures, if necessary and appropriate.

2.5 PROJECT APPROVALS

This EIR is intended for project decision-makers to consider prior to determining whether to approve the Arques Campus Specific Plan. If the Specific Plan were approved, construction of new buildings at the project site, including building remodels and expansions, would be subject to review and approval of Miscellaneous Permits by the City of Sunnyvale Director of Community Development in accordance with the plan. Permits for Miscellaneous Permits would conform to the submittal requirements of the City of Sunnyvale and be reviewed in accordance with the review procedures in place at the time that any such submittals were made.

Applied Materials and the City may enter into a development agreement to undertake the development anticipated by the Specific Plan. The development agreement, as permitted by the State Government Code Section 65864, would be a legally binding contract vesting mutually agreed upon development rights to Applied Materials in exchange for specified site and off-site improvements. More specifically, a development agreement identifies the duration of the agreement, the permitted uses of the property, the density or intensity of use, the maximum height and size of proposed buildings, and provisions for reservation or dedication of land for public purposes. The development agreement may include conditions, terms, restrictions, and requirements for subsequent discretionary actions.

Following approval of a Miscellaneous Permit, building plans would be prepared in conformance with the Uniform Building Code as enforced by the City of Sunnyvale. The City of Sunnyvale would issue building permits when the building plans are found consistent with the Uniform Building Code. Precise improvement plans for utility and infrastructure extensions would also need to be submitted for approval by the City of Sunnyvale. Additionally, final landscape, irrigation, and lighting plans would need to be submitted to the City of Sunnyvale for approval. The Santa Clara Valley Transportation Authority will review the Specific Plan and EIR for consistency with the Congestion Management Plan. In accordance with a deed restriction applicable to the eastern portion of the project site, the Regional Water Quality Control Board, San Francisco Bay Region, would need to be notified at least 30 days before any drilling or excavation could occur on that portion of the site.

Notes: Project Description

- 1 The floor area ratio is the ratio of the total building floor space divided by the area of the parcel on which the development is constructed.

Section 3

Environmental Analysis

3.1 INTRODUCTION

Organization of this Section

This section of the Applied Materials Arques Campus Specific Plan EIR presents the environmental analysis for the seven issue areas with potentially significant effects: land use, aesthetics, transportation, air quality, wastewater services, hydrology and water quality, and health and safety. For each issue, the following information is presented:

- Existing Conditions - describes existing baseline conditions for each environmental issue.
- Impact Assessment - evaluates how the proposed project could affect baseline conditions.
- Mitigation Measures - identifies ways to eliminate or reduce impacts that could be considered significant and adverse.

Classification of Impacts

To provide a clear classification of impacts, this EIR defines four types of impacts:

1. Significant (S) impacts include effects that exceed established or defined thresholds. For example, traffic levels that exceed intersection service standards, or new land uses that pose noticeable compatibility issues with nearby existing uses, would be considered significant adverse impacts.
2. Potentially significant (PS) impacts include effects that may be significant but information is insufficient to verify the magnitude of the effect. For example, to determine hazardous materials impacts, information is needed on the types and quantities of materials present, the potential health effects of exposure to those materials, the individuals potentially exposed and their locations, transport mechanisms capable of exposing the individuals to the materials, exposure durations, and barriers present to prevent exposure. Lack of information on these details may preclude a definitive statement as to whether health and safety issues are of sufficient concern to be considered significant.
3. Insignificant (I) impacts include effects that are noticeable but do not exceed established or defined thresholds. For example, minor changes in surface water runoff volumes that would not substantially affect drainage or collection system capacity would be insignificant. Similarly, if the demand for utilities from new development could be handled by the existing supply, the effect would not be considered significant.
4. Beneficial (B) impacts include noticeable effects that either reduce existing deficiencies or improve upon an existing adverse condition. For example, a proposal to realign a roadway that would result in improved circulation would be considered a beneficial effect of that proposal.

Thresholds, or significance criteria, are defined for each environmental issue in this section. These thresholds are intended to explain to the reader the basis for characterizing the significance of an impact.

Each discrete impact in the "Impact Assessment" is numbered. For each impact identified as being significantly adverse, the EIR suggests mitigation measures to reduce or eliminate the negative effect. The mitigation measures are also numbered to correspond directly to the impacts they address. If the mitigation measures would successfully reduce the impact to less than significant levels, this is stated in the EIR. If, however the mitigation measures would not successfully reduce these effects to a less-than-significant level, the EIR classifies these impacts as "unavoidable significant effects."

Cumulative Development

To fully understand the environmental implications of the proposed project, CEQA requires that it be examined for its individual effects on the existing environment as well as its cumulative effects in conjunction with other reasonably foreseeable development. These cumulative impacts refer to two or more individual effects that, when considered together, are considerable or that compound or increase other environmental impacts.

The City of Sunnyvale maintains a list of projects that are in various stages of planning and project review (current copies are available for review at the City Community Development Department). Projects that were approved and either constructed or under construction are included as part of "background" conditions, upon which traffic and air quality baseline conditions are derived. Projects that are pending review or are in the planning stages are generally assumed to be included in growth forecasts that have been defined to account for future cumulative conditions, which evaluate potential effects of the project plus any reasonably foreseeable future projects.

Two future cumulative scenarios are examined in this EIR: a near-term future (year 2003) and a long-term future (year 2015). The expected growth for the year 2003 was calculated in consultation with the City of Sunnyvale staff and involved consideration of known pending development applications in the vicinity of the project site, application of a growth factor to background conditions, and use of the Congestion Management Plan Countywide Transportation Model and Santa Clara County Center for Urban Analysis land use projections for the year 2005.

The expected growth for the year 2015 was also developed in consultation with the City of Sunnyvale staff and involved consideration of possible future projects known to City staff and *Projections 98* by the Association of Bay Area Governments. The latter forecast is an extensive analysis of the Bay Area's regional economic and demographic conditions and is used by the Santa Clara County Center for Urban Analysis and the Congestion Management Plan Countywide Transportation Model to project traffic growth.

3.2 LAND USE AND PLANNING

Introduction

This section describes existing and proposed land use characteristics in and around the project site, the potential impacts of the project on these conditions, and suggested mitigation measures to address potentially significant adverse impacts. Site reconnaissance, the City of Sunnyvale General Plan, the Uniform Planning and Zoning Code of the City of Sunnyvale, and the Arques Campus Specific Plan serve as the basis for this land use evaluation.

Environmental Setting

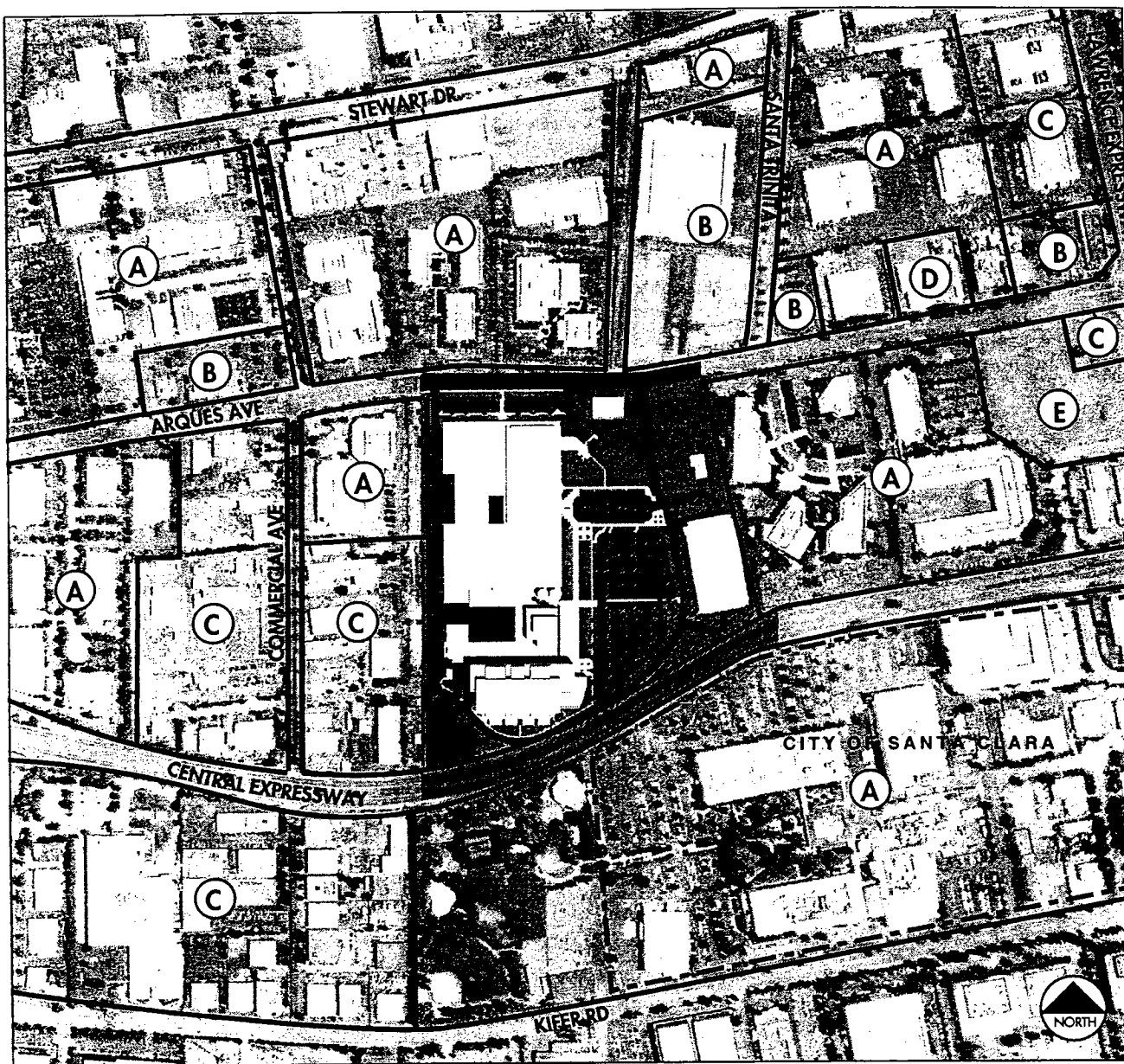
The project site is located in the eastern portion of the City of Sunnyvale. The City is a residential and business community of approximately 129,200 persons, about 24 square miles in area, and located in northwestern Santa Clara County.

Land Uses

Project Site. Originally developed for industrial use by Fairchild Semiconductor in 1967, the project site was subsequently purchased by Hewlett Packard in 1978, and acquired by Applied Materials in 1995. At the completion of current construction, the site will be a 521,000-square-foot research and development campus with parking for 2,025 vehicles. The floor area ratio (FAR) will be 34%, and lot coverage will be about 29%. As shown in Figure 2-2, the existing campus contains a six-story parking structure, a two-story central utility, an electrical substation yard, a service yard, extensive surface parking, and four buildings: two large buildings — the one- and two-story Building 81 and the six-story Technology Center — occupy the west half of the site, and two smaller buildings — the two-story Building 82 and the one-story Recreation Center — occupy the northeast quarter of the site.

Adjacent Areas. Figure 3.2-1 shows the project site and its adjacent areas. Adjacent uses in the area bounded by the four major roadways — Commercial Avenue, Central Expressway, Lawrence Expressway, and Arques Avenue — include retail uses such as banks, a fitness club, a clinic, and an electronics superstore; commercial uses such as a gas station, automotive service shops, printing, photography, and machining shops; miscellaneous uses such as a church; and office/light industrial uses, particularly high-technology businesses (see Figures 3.2-2 and 3.2-3). Directly facing the project site is an office/light industrial complex, a Fry's Electronics, and a church and a day care center east of Santa Trinita Avenue. Adjoining the east side of the site is the Sunnyvale Research Center, housing a variety of small high-technology business uses, including Mitsubishi Electronics. Adjoining the west side of the site is Molecular Dynamics, and across Central Expressway to the south lies National Semiconductor.

The northern boundary of the project site is formed by Arques Avenue, an arterial road which connects Wolfe Road (beyond Commercial Avenue) with Lawrence Expressway. To the north and east of the project site are mixed non-residential uses, primarily high-technology uses along with commercial uses. Residential uses lie about one-half mile to the north across Duane Avenue. A former high school site and park are about four blocks northwest at Arques Avenue/Maude Avenue.



- (A) Office/Laboratory/Light Industrial
- (B) Retail
- (C) Commercial Services
- (D) Church/Day Care
- (E) Vacant

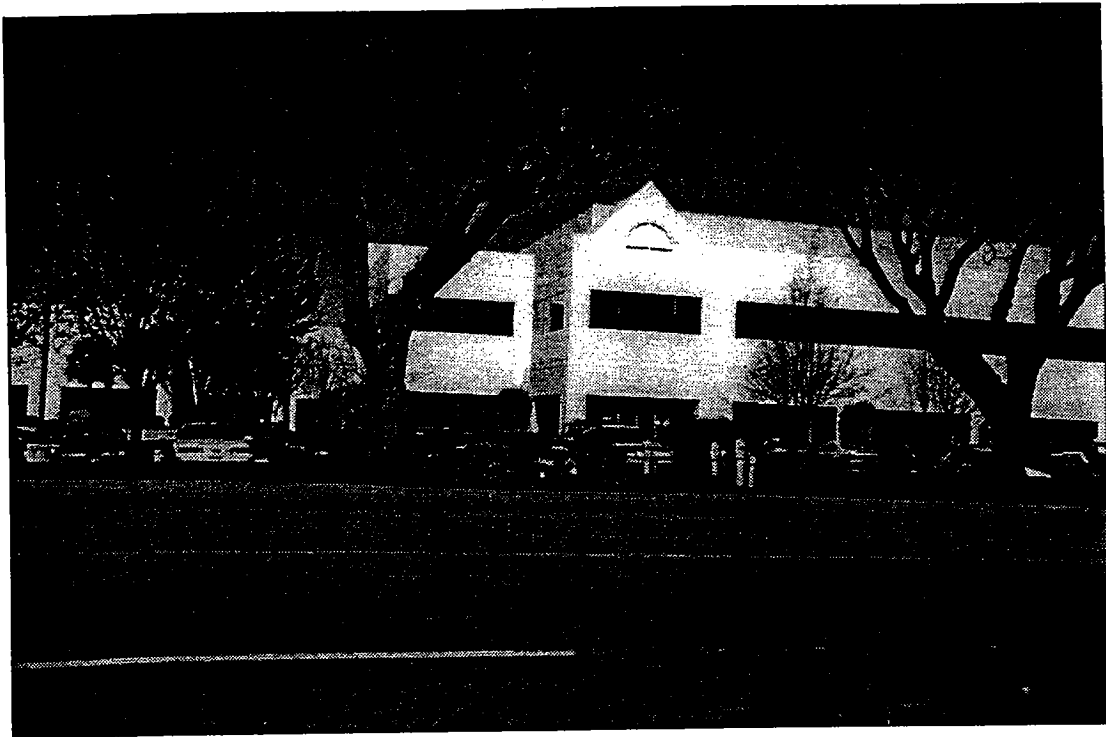
SOURCE: EIP Associates

APPLIED MATERIALS ARQUES CAMPUS SPECIFIC PLAN EIR
FIGURE 3.2-1 PRIMARY LAND USE MAP

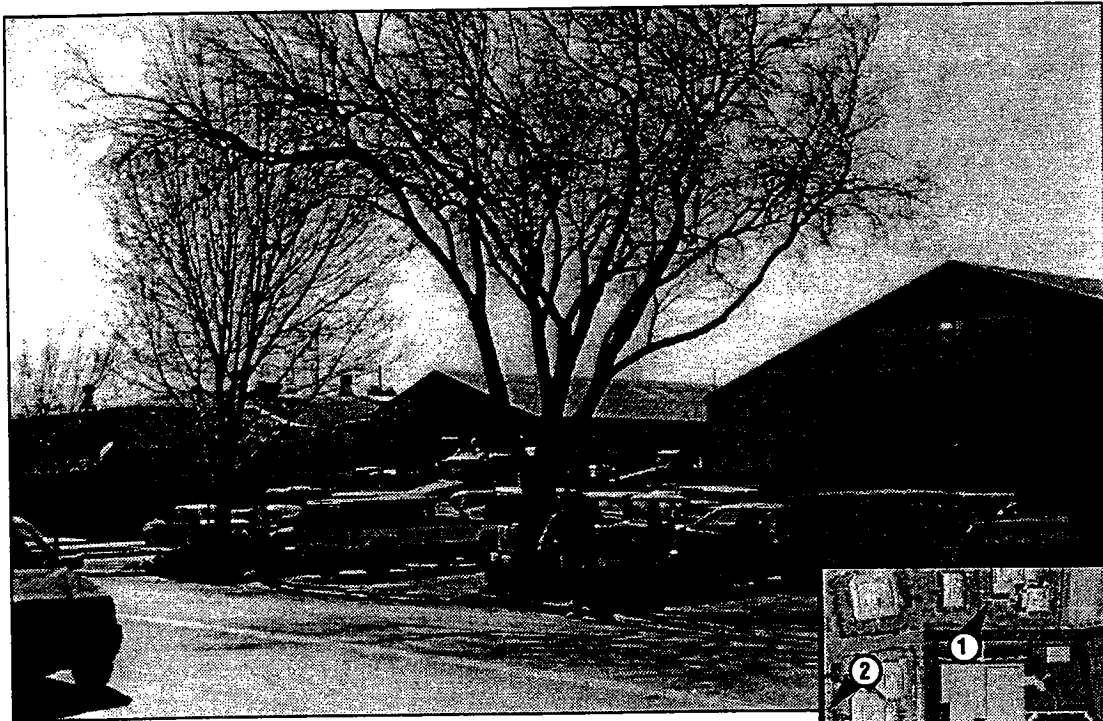
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3.2-2

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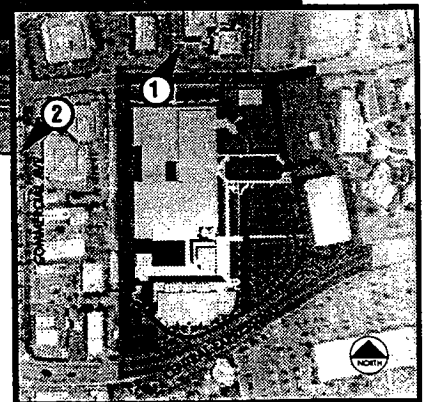


View 1: Looking north across Arques Avenue from the project site



View 2: Looking southwest from Commercial Avenue/Arques Avenue intersection

SOURCE: EIP Associates

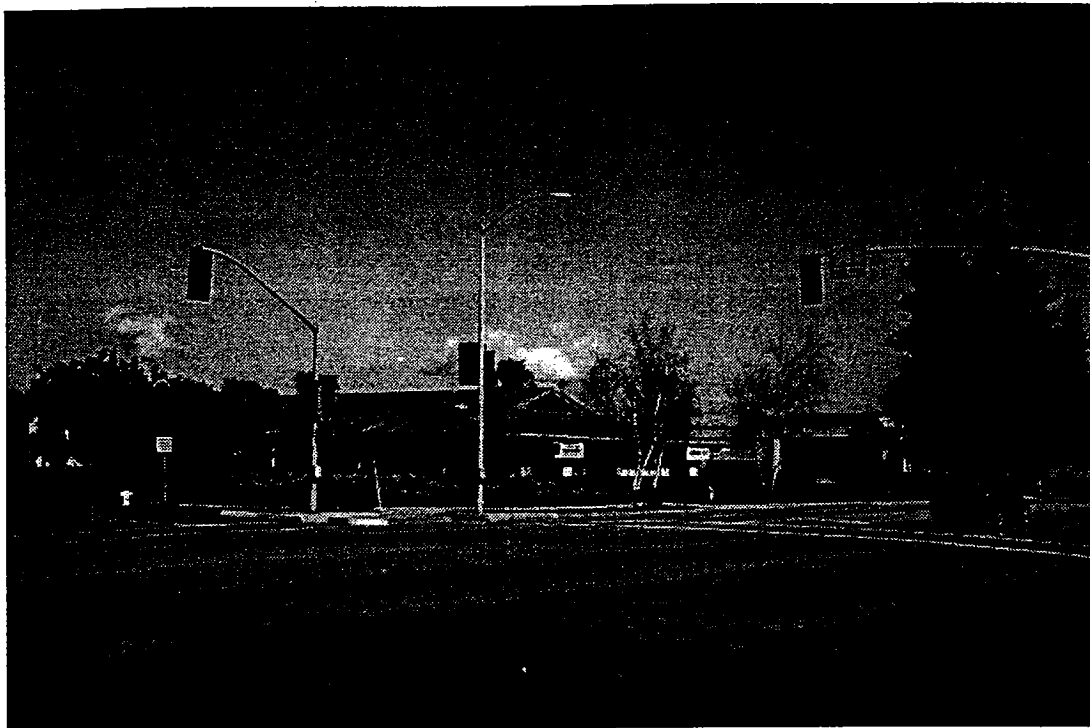


APPLIED MATERIALS ARQUES CAMPUS SPECIFIC PLAN EIR
FIGURE 3.2-2 VIEWS OF OFFICE/LIGHT INDUSTRIAL AND COMMERCIAL USES

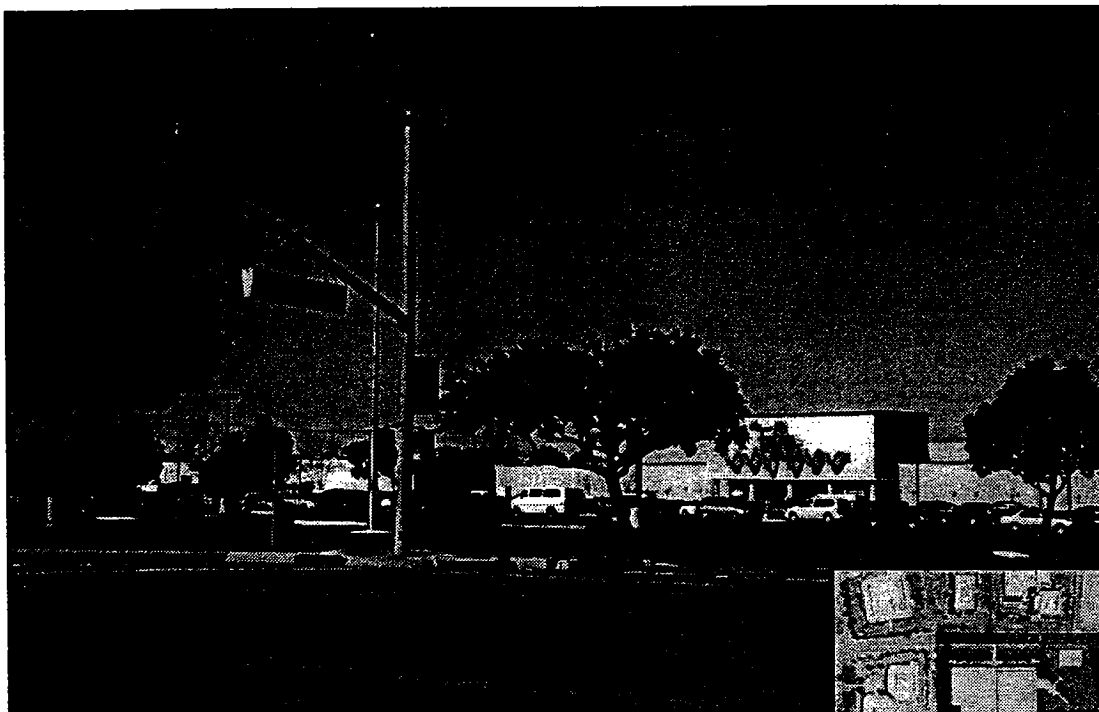
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3.2-3

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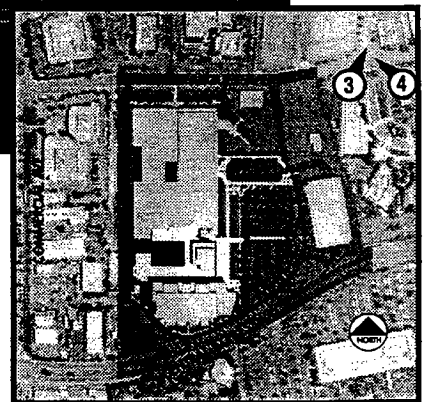


View 3: Looking northeast towards the Arques Avenue/Santa Trinita Avenue intersection



View 4: Looking northwest towards the Arques Avenue/Santa Trinita Avenue intersection

SOURCE: EIP Associates



APPLIED MATERIALS ARQUES CAMPUS SPECIFIC PLAN EIR
FIGURE 3.2-3 VIEWS OF RETAIL USES

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3.2-4

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Central Expressway forms the southern boundary of the project site. South of Central Expressway lie commercial and high-technology uses. About one-quarter mile away, the Caltrain tracks divide northern industrial uses from southern residential uses.

To the west of the project site lie non-residential mixed uses, primarily high-technology uses along with commercial uses. Beyond Wolfe Road, there is a mix of high-technology uses and residential uses of various densities.

General Plan and Zoning Designations

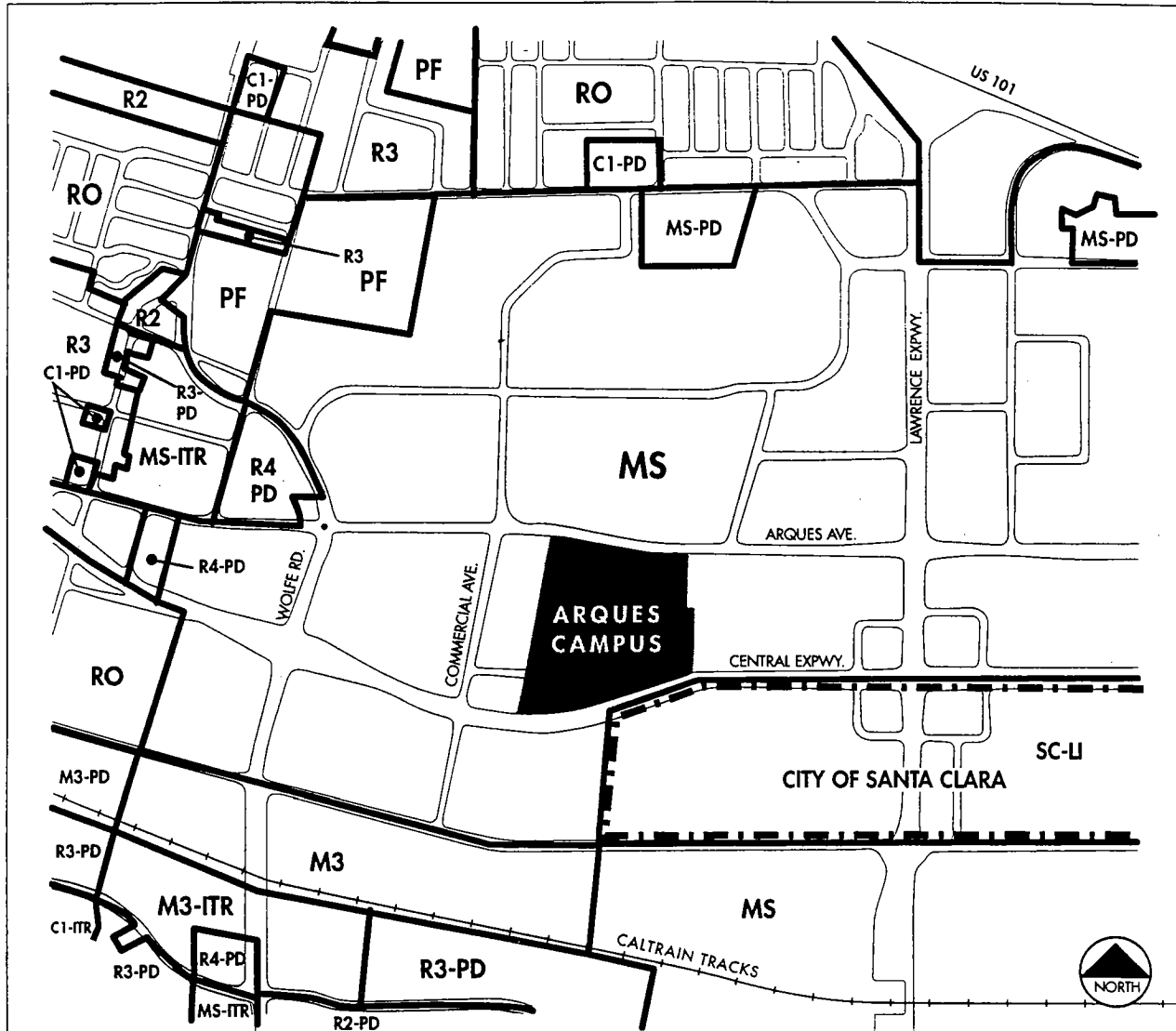
Project Site. The City of Sunnyvale's General Plan establishes land use designations for the City. The General Plan designation for the project site is Industry, which encourages a range of office and support uses, research and development, product assembly, and warehouses. Typical businesses within this designation include advanced electronics, computers, communication manufacturing, and biotechnology research.² The General Plan distinguishes between the "light" industrial uses in the M-S District (the project site's designation) and heavy industrial uses in the M-3 District. In the M-S District, development occurs on medium to small lots or as part of a campus-style complex with landscaping as a significant feature.³

The project site is zoned M-S, Industrial and Service District, which permits land uses such as offices, research, limited manufacturing, hotels and motels, restaurants, and retail sales and services. This zone also accommodates industrial plants and facilities for assembling, compounding, manufacturing, packaging, processing, repairing, or treating equipment, materials, merchandise, or products. The City of Sunnyvale Zoning Code, Chapters 19.32 and 19.36 through 19.49, outline the various building restrictions and requirements associated with the M-S zoning district (see also Table 2-2 for development standards). The M-S Industrial and Service District has a height limit of 8 stories or 75 feet for new development. Additionally (per Chapter 19.32.142 of the Code), the total FAR of all buildings associated with research and development uses shall not exceed 35%, unless authorized by use permit approved by the Director of Community Development, Planning Commission, or City Council. All development is subject to design review consistent with the Citywide Design Guidelines.

Adjacent Areas. The General Plan promotes industrial uses to the north, south, east, and west of the site. Low density residential designations (up to 7 dwelling units/acre) extend north of Duane Avenue. A mix of low, medium, and high density (up to 42 dwelling units/acre) residential uses are designated for the neighborhoods west of Wolfe Road. To the south, beyond the Caltrain tracks, residential uses are medium density. Zoning in these adjacent areas is consistent with the General Plan land use designations. As shown in Figure 3.2-4, areas immediately adjacent to the project site are zoned M-S, the same as the project site, along with some M-3, General Industrial, to the south. R-0 Low Density Residential lies approximately one-half mile to the north and to the west; R-2 Low Medium Density Residential, R-3 Medium Density Residential, and R-4 High Density Residential are found west of Wolfe Road; and R-3 Medium Density Residential and M3-ITR Industrial to Residential are south of the Caltrain tracks.

Applicable Plans and Policies

General Plan Land Use Policies. The City of Sunnyvale's General Plan *Land Use and Transportation Element* identifies goals and policies in four broad areas: community character, appropriate housing,



- M3 General Industrial
- MS Industrial and Service
- ITR Industrial to Residential
- RO Low Density Residential
- R2 Low Medium Density Residential
- R3 Medium Density Residential
- R4 High Density Residential
- SSP Site Specific Plan
- PD Planned Development
- SC-LI Santa Clara Light Industrial

SOURCE: City of Sunnyvale Precise Zoning Plan
Zoning District Map, June 1998

APPLIED MATERIALS ARQUES CAMPUS SPECIFIC PLAN EIR
FIGURE 3.2-4 ZONING DISTRICT MAP

EIP

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efficient transportation, and a strong economy. Of the goals outlined in the General Plan, the following goals concerning the regional context, community character, and a strong economy are particularly pertinent to the project:

- Promote integrated and coordinated local land use and transportation planning. (Policy R1.3)
- Recognize that the City is composed of residential, industrial and commercial neighborhoods, each with its own individual character; and allow change consistent with reinforcing positive neighborhood values. (Policy C1.1)
- Maintain a diversity of commercial enterprises and industrial uses to sustain and bolster the local economy. (Policy C4.1)
- Encourage businesses that provide a range of job opportunities. (Action Statement C4.1.2)
- Permit industrial FARs up to 35% (and allow warehouse FARs up to 50%), and permit higher FARs in the Futures intensification areas. (Action Statement C4.2.1)
- Study criteria to allow industrial FARs up to 45% by Use Permit in 35% zones, considering at a minimum:
 - the effect of the project on the regional or City-wide roadway system (e.g. strategies for reducing travel demand, proximity to transit centers, peak hour traffic generation)
 - minimum development size
 - redevelopment and/or lot consolidation
 - that the project is intended primarily for a single user or has common/shared management
 - mitigation of housing impacts
 - the development will result in an overall positive community benefit (Action Statement C4.2.2)
- Protect the integrity of the City's neighborhoods, whether residential, industrial, or commercial. (Policy N1.1)
- Require new development to be compatible with the neighborhood, adjacent land uses, and the transportation system. (Policy N1.2)
- Develop specific area plans to guide change in neighborhoods that need special attention. (Action Statement N1.2.3)
- Cluster high intensity industrial uses in areas with easy access to transportation corridors. (Policy N1.8)
- Require high quality site, landscaping, and building design for higher intensity industrial development. (Action Statement N1.8.1)

Community Development Element, Housing and Community Revitalization Sub-Element (1993). The Element contains policies related to the provision of jobs and housing. The following policies and action statements would pertain to the project:

- Continue to require office and industrial development above a certain intensity to mitigate the demand for housing or provide additional housing. (Policy 2.3A.2)
- The City shall require industrial and commercial developments that exceed established floor area ratios to contribute towards the housing fund or take other measures to mitigate the effects of the job increase upon the housing supply. (Action Statement 2.3.2a)

Impacts and Mitigation Measures

Significance Criteria

The proposed project would result in significant land use and planning impacts if the proposed Specific Plan:

- Substantially alters the type or intensity of land use on the proposed site, causing it to be incompatible with surrounding land uses or the overall character of the surrounding neighborhoods; or
- Conflicts with applicable, adopted environmental plans and goals.

Environmental Assessment

1. *Construction-related impacts would be a nuisance for on-site and nearby uses. Since they would be temporary, construction-period effects would not be considered significant. (I)*

Development at the Arques Campus is anticipated to occur in two phases: Stage I and buildout, or Stage II, as described in Section 2, Project Description. The timing of development is flexible and would vary depending on market conditions. The overall duration of construction-related impacts would depend on whether the phases of construction occur concurrently. Temporary impacts associated with construction include demolition of existing buildings (Building 82 and a portion of Building 81), site grading, installation of underground utilities, and building construction. These activities involve the movement of heavy construction truck equipment and traffic, diminished access to and around the project site, and construction noise and air emissions. Existing operations on-site, as well as businesses adjacent to the project site, would experience these effects to varying degrees throughout the construction period. California Avenue businesses would also expect to have reduced access since California is a two-lane roadway and construction traffic to the site would be expected to use the entrance on California Avenue.

Discussions of construction traffic and air quality impacts can be found in Sections 3.4, Transportation, and 3.5, Air Quality. Cumulatively, the nuisance and noise associated with project construction would temporarily disturb daily activities for on-site and offsite uses. Construction activity would be limited to the hours of 7:00 AM to 6:00 PM, Monday through Friday, and 8:00 AM to 5:00 PM, on Saturdays; construction is prohibited on Sundays and major holidays (Chapter 16.08.150, Sunnyvale Municipal Code). The temporary nature of the disturbance, the project site's

location along two major roadways which help buffer nearby uses to the north and south, and the proximity to major roadways for truck traffic would minimize the disturbance to adjacent uses. Thus, construction-period land use effects would be considered less than significant.

2. *The proposed project would not result in land use conflicts with adjacent development because of the industrial nature of surrounding development and the location of the project site, between two arterial roadways. (I)*

The existing Arques Campus contains industrial uses and is zoned for industrial and service uses (M-S). The Arques Campus Specific Plan would not alter the site's basic industrial use. The project site would continue as a high-technology campus, which is compatible with existing zoning and with adjacent and surrounding uses, as shown in Figure 3.2-1.

Due to the proposed front, side and rear setbacks, as well as building setbacks above the second story, the Arques Campus Specific Plan would not result in land use conflicts with adjacent development. Employees in businesses surrounding the project site and visitors to the area would perceive relatively little change in the overall massing and development of the site, along the Arques Avenue and Central Freeway project boundaries.

Even though the proposed offices and parking structure would be at a greater development intensity than exists in this portion of the City, potential land use conflicts would be reduced because of the physical separation afforded by the two major roadways abutting the site, which serve to physically and visually distance the site from uses to the north and to the south. The project site's development density would not be expected to affect the primarily commercial services uses on the west since they tend to be industrial uses; while the high technology campus-style industrial uses on the east comprise a large development, oriented away from the project site, and set back from the project site boundary.

The new uses proposed at the Arques Campus include office/prototype laboratory space, a parking structure, and amenities/employee support facilities. These activities are not expected to create excessive noise, heat, glare, vibration, air/odor emissions, or truck trips that can typically be operational nuisances for neighboring land uses. If such activities were to occur, they would be controlled inside the prototype laboratories and would not be expected to create external effects, or they would be associated with the Technology Center or central utility plant, both of which exist already and whose effects were examined previously and found to be insignificant.⁴ The project's potential impacts related to transportation, air quality, hydrology and water quality, and health and safety are individually addressed in the corresponding sections of this document:

- Impact 3.4.2 and Mitigation Measure 3.4.2 (Transportation). Adverse effect on three freeway segments on U.S. 101 during the PM peak hour.
- Impact 3.4.3 and Mitigation Measure 3.4.3 (Transportation). Adverse effect on queuing at Lawrence Expressway and Arques Avenue.
- Impact 3.4.10 and Mitigation Measure 3.4.10 (Transportation). Adverse cumulative effect on traffic along Wolfe Road and Lawrence Expressway.

- Impact 3.5.2 and Mitigation Measure 3.5.2 (Air Quality). Adverse effect on regional air quality.
- Impact 3.5.3 and Mitigation Measure 3.5.3 (Air Quality). Adverse effect from construction emissions.
- Impact 3.6.2 and Mitigation Measure 3.6.2 (Wastewater Services). Adverse effect on Arques Avenue Collector Sewer Main.
- Impact 3.6.3 and Mitigation Measure 3.6.3 (Wastewater Services). Adverse cumulative effect on wastewater services.
- Impact 3.7.2 and Mitigation Measure 3.7.2 (Hydrology and Water Quality). Adverse effect due to non-point source pollution.
- Impact 3.7.3 and Mitigation Measure 3.7.3 (Hydrology and Water Quality). Adverse effect on the quality of stormwater runoff.
- Impact 3.8.1 and Mitigation Measure 3.8.1 (Health and Safety). Adverse effect from existing contaminated soils or groundwater.
- Impact 3.8.3 and Mitigation Measure 3.8.3 (Health and Safety). Adverse effect from hazardous materials in existing building components.

A number of factors proposed as part of the Specific Plan serve to reduce the effect that proposed development would have on the surrounding environment: building façade setbacks along the Arques frontage; building setbacks greater than required by zoning regulations (see Table 2-2); articulation of the proposed buildings along the Arques frontage and along the east and west boundaries of the site; existing and new foliage buffers; and project site access at four points.

The proposed project is expected to enhance the visual character of the site by creating pedestrian sidewalks; providing building articulation at access viewpoints, both at Arques Avenue and at Central Expressway; siting new buildings around a central commons; and creating an integrated design style by using building materials that complement existing buildings, particularly the Technology Center.

3. *The proposed project appears to be consistent with policies and goals of the City of Sunnyvale General Plan.*

The proposed project is discussed here for its general conformity with applicable policies from the City's General Plan. The intent of this discussion is to indicate whether the Arques Campus Specific Plan would contradict a local policy and to help inform City decision-makers of potential concerns. The official determination of the project's consistency with the General Plan will be made by the City during the project approval phase. Consequently, no significance classification has been assigned to this impact discussion.

The General Plan seeks to coordinate land use and transportation planning, maintain distinct neighborhoods, and promote economic vitality. The proposed project would not compromise attainment of these goals. The proposed project involves expanding a research and development

campus that supports jobs and the provision of City services (Policy C4.1 and Action Statement C.4.1.2) and intensifies industrial uses on an industrial site bordered by arterial roadways (Policy N1.8). At buildout, the proposed project would employ about 2,800 employees, compared to the estimated 1,500 employees at the Arques Campus with full occupancy of existing space and under-construction facilities. The project site is along or near Arques Avenue, Central Expressway, and Lawrence Expressway and near a Caltrain stop.

The General Plan seeks to maintain the integrity of distinctive neighborhoods and enhance the overall image of the City (Policy C1.1 and Policy N1.1). The Arques Campus Specific Plan would maintain industrial uses, specifically high-technology uses, and establishes a site design concept, and architectural design and landscape design guidelines (Action Statement N1.2.3 and Action Statement N1.8.1). The design of the proposed campus would contribute to the image of Arques Avenue and Central Expressway, thereby maintaining and enhancing a distinct character for the industrial areas of the City. The project includes entryway and site landscaping that would visually integrate the project with its surroundings and enhance the appearance of Arques Avenue.

The proposed project site plan illustrated in Figure 2-3 calls for increasing the FAR on the project site from 35% to about 72%, thereby allowing an increase in development from 521,000 square feet to 1,114,600 square feet, or 593,600 net new square feet. There would be an increase in employment of about 1,300 new employees, a substantial increase over the existing employment base of about 1,500 employees, including those occupying the structures labeled as “under construction.” The proposed project includes three new office/prototype laboratory buildings (205,000 gsf each), a second parking garage (1,300 spaces), and four other related amenity buildings (totaling 65,000 gsf). The project essentially re-organizes the site, consolidating remaining surface parking areas into a seven-story structure, creating a central commons area, and building out the remaining area around the commons with three new office/prototype laboratory buildings. This magnitude of expansion is greater than the FAR increases previously allowed by the City through the use permit process. The environmental implications of this intensification are addressed in Section 3 and in the assessment of growth-inducing effects in Section 4 of this EIR. Other policy, economic, and fiscal implications will be weighed by the City in evaluating the merits of the proposed project.

Under Policy C4.2.1, the City of Sunnyvale seeks to “permit industrial FARs up to 35% (and allow warehouse FARs up to 50%), and permit higher FARs in the Futures intensification areas.” There are several criteria being studied by the City of Sunnyvale to authorize higher FAR with a use permit (Action Statement C4.2.2). The first criterion suggested by Action Statement C4.2.2 is the impact of the project on the roadway system (see also Policy R1.3 and Policy N1.2). Effects from the project on the roadway system are discussed in Section 3.4, Transportation, of this document. The second criterion proposed is “minimum development size;” this issue is addressed in the project description objectives as the sponsor maintains that a minimum threshold work unit is desirable to maximize the utility of the Technology Center. The third criterion suggested is whether the project is a redevelopment project or consolidates lots. The project would bring together different work units from Applied Materials’ other sites. The fourth criterion asks whether the project is a single user project. Applied Materials is the sole owner and user of the Arques Campus site. The fifth criterion suggested by Action Statement C4.2.2 concerns whether the project mitigates its housing impacts (see also Policy 2.3A.2 and Action Statement 2.3.2a). The proposed project, if approved, will be required to conform with the City’s Housing Mitigation

Policy. The final proposed criterion asks whether the proposed project offers overall positive community benefit. This decision will be based on the information provided in this document, as well as other reports and studies generated by the City for the project approval process.

4. *Land use effects related to development at the Arques Campus would be unlikely to combine with those of other developments to pose substantial cumulative effects. . (I)*

Development pursuant to the Arques Campus Specific Plan would be consistent with the General Plan land use designation of Industry. The project would not be expected to create operational nuisances; the proposed project's distance from other proposed developments makes it unlikely that the project would cumulatively generate operational nuisances. The overall jobs/housing balance would be expected to change marginally because of the project; this change would not be expected to generate much change in overall land uses. Thus, cumulative land use impacts would not be expected to occur.

Notes – Land Use

- 1 Floor area ratio means the ratio, expressed as a percentage, of the gross floor area of a given building, buildings, or portion of a building, to the net area of the parcel of real property on which such building or buildings are located. In non-residential uses, the area devoted to covered parking shall be excluded from the gross floor area. Definition from Chapter 19.04.070(4) of the City of Sunnyvale Municipal Code (Zoning).
- 2 Draft Arques Campus Specific Plan, October 23, 1998.
- 3 Community Development and Public Works Departments, *City of Sunnyvale General Plan, Land Use and Transportation Element*, November 1997, p. A-6.
- 4 City of Sunnyvale, *Mitigated/Negative Declaration for Application for a Design Permit by Applied Materials*, adopted July 28, 1997.

3.3 AESTHETICS

Introduction

Visual quality is a function of how people see and experience the environment. Generally, visual quality is based on the impression formed when viewing a place from several vantage points. The degree of visual sensitivity and visibility of the project area is related to those elements that help to define the character and context of the site, including building layout and scale, architecture and design, and landscaping. A visual survey of the project area is provided in this section to describe the existing character of the project site; surrounding development; landscaping characteristics; the system of pedestrian paths, streets, and open space; and the quality of the views into the proposed site from public vantage points and circulation routes. Changes to the visual context of the site associated with project development are described, and the compatibility of those changes with surrounding development is evaluated in the following assessment.

Environmental Setting

Project Context

The City of Sunnyvale's northwest corner is located at the foot of San Francisco Bay (see Figure 2-1). The City's topography rises gradually upward from the salt flats of the Bay, 0 msl, to the City's southwest corner, about +300 msl (300 feet above msl). The City's landform and topography are generally level. While there are no definable hills in the City, the coastal mountains can be seen to the south and west and provide a visual context to the landscape. Development patterns and districts are defined by large-lot industrial development in the northwest, north, and northeast of the City; the compact residential development in the central and southern portions of the City; and the concentrated commercial and retail corridors of El Camino Real and Evelyn Avenue/Southern Pacific right-of-way (both of these east-west routes traverse the middle of the City). Low-rise development, one to three stories high, predominates throughout the City. View corridors are limited to roadways and open space areas due to the relatively flat nature of the City's topography and the abundance of tall and wide-canopied mature trees. Long-range views throughout the City are filled with 80- and 100-foot-high evergreen trees.

Project Site

The rectangularly-shaped project site appears flat and has an average 0.10 degree slope up from +45 msl along Arques Avenue, the northern boundary of the site, to the southwest border of the site at +55 msl along the Central Expressway. As shown in Figure 2-4, there are three entrances to the project site from Arques Avenue. The western entrance leads to service parking which extends directly south, parallel to the west boundary of the site and along the length of Building 81. There are scattered cherry and pine trees, and ground cover along the western border of the project site. The central entrance opens onto two rows of surface parking (44+ spaces) arranged parallel to Arques Avenue. The parking areas are separated from the roadway by a 20-foot band of lawn area, dotted with 15- to 20-foot tall plum, magnolia, and liquid amber trees. The eastern entrance leads to an internal access road which bisects the eastern half of the site and circles west to connect to the west service yard and

parking. The eastern border of the site is landscaped with a row of 60- to 80-foot pine trees along with oak and ash trees. Along the Central Expressway site frontage, the foliage is more extensive. There is a double row of 60- to 80-foot pine trees, as well as assorted oak, ash and elm trees, with a seeded lawn and ivy hedges.

The view from Arques Avenue of the project site includes, from east to west, a dirt parking lot, a small white two-story building (Building 82), a grove of trees including 80- to 100-foot pine trees, and a low-lying green building with a partial second story (Building 81). Beyond the unpaved parking area are distant views of a six-story parking structure (under construction) in the southeast corner of the site. Building 82 is encircled with manicured shrubs, verdant lawn, and olive, redwood, birch, eucalyptus, and elm trees. This small grove of trees transitions into Building 81, which completes the Arques frontage and covers the entire northwestern quarter of the project site. Building 81 is connected by paved pedestrian walkways to the Central Utility building (under construction) and the six-story Technology Center (under construction). The Technology Center occupies the southwest corner of the project site.

Surface parking lots fill the center and southern third of the project site and wrap halfway around Building 81. The parking lots are planted with pine and pear trees at 30-foot intervals. The trees on the lots nearest the rear of the project site are larger and more mature.

Surrounding Development

The visual study area defined as the rectangular area bounded by Wolfe Road, Central Expressway, Lawrence Expressway, and Arques Avenue, including a 400-foot-wide band north of Arques Avenue, is shown in Figure 3.2-1. Commercial Avenue, just to the east of the project site, is characterized by commercial service businesses and sparse landscaping. One and two-story older commercial buildings, service yard areas, and a construction staging area define the visual setting. Farther west, Wolfe Road between Arques Avenue and Central Expressway is characterized by north-south traffic divided by a landscaped median including olive trees; roadway frontage landscaped with a variety of wide-canopied and mature trees; an alternating pattern of low-rise buildings and surface parking areas abutting landscaped berms.

South of the project site along the four-lane Central Expressway is a mix of building and landscaping types. The expressway includes a wide unpaved median. Dense foliage buffers, small and large rear building facades, unscreened parking areas, and unpaved service yards exhibit little visual coherence in the stretch between Wolfe Road and Lawrence Expressway.

East of the project site, Lawrence Expressway features half-block-long windowless building facades at the Central Expressway intersection; whereas at the Arques Avenue intersection, multiple retail uses, such as a fitness center and bank, as well as a gas station, occupy the intersection.

On the north side of Arques Avenue, opposite the project site, lie retail uses. Directly northeast of the project site is Fry's Electronics, characterized by a block-wide parking area in front of the "big box" building. On the south side of Arques Avenue are two-story office buildings set back from the road with surface parking beyond a landscaped berm. Building signage along the north side of Arques Avenue consists of rectangular signs about three feet above the ground. The last stretch of Arques Avenue, between the project site and Wolfe Road consists of one-story office and light industrial

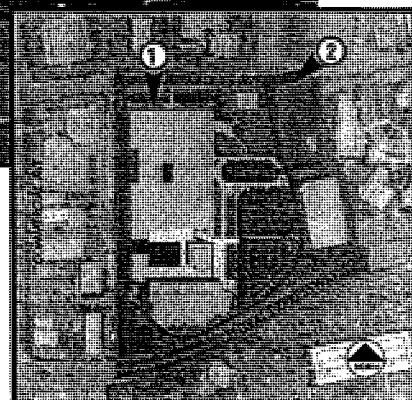


View 1: Looking south onto Building 81



View 2: Looking southwest from Santa Trinita Avenue

SOURCE: EIP Associates



APPLIED MATERIALS ARQUES CAMPUS SPECIFIC PLAN EIR
FIGURE 3.3-1 VIEWS FROM THE NORTH SIDE OF ARQUES AVENUE ONTO THE PROJECT SITE

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buildings. North of Arques Avenue, along Commercial Avenue, this pattern of landscaped roadway frontages continues with setbacks of surface parking or low-rise buildings. A few notable examples of high-technology uses include Advance Micro Devices at Santa Trinita and Stewart, Sunnyvale Research Center adjacent and east of the project site, and National Semiconductor to the south of the project site in Santa Clara.

Circulation around the project site occurs principally on the two major roadways abutting the Arques Campus — Arques Avenue and Central Expressway — Wolfe Road, and Lawrence Expressway. Surrounding development is marked by individual structures or clusters of low-rise office buildings with their own surface parking lots. Little pedestrian activity was evident during several site visits as part of this EIR.

Views

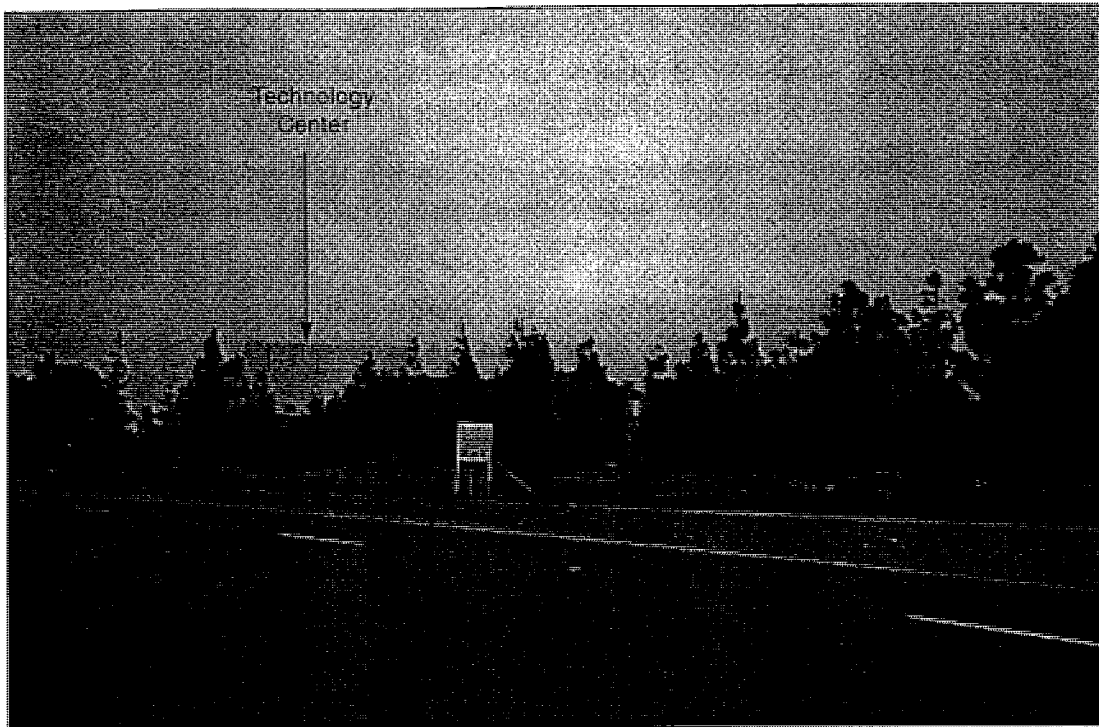
As seen in Figure 3.3-1, views of the project site from the north side of Arques Avenue, both directly in front of Building 81 and at Santa Trinita, are partially screened by the existing 15- to 20-foot high olive, oleander, and magnolia trees and 80- to 100-foot pine trees. The south edge of the project site is bordered by Central Expressway. The curve of the road and speed of traffic only allow glimpses of the three elements of the site at once: the Technology Center, a dense foliage buffer, and the parking structure (see Figure 3.3-2). Similarly, views from the parking lot of National Semiconductor are limited due to the curve of the site, and landscaping on the National Semiconductor site. Views of the site from the southwest, at the Commercial Avenue on-ramp, are partially screened by existing 40-foot elm and eucalyptus trees, adjacent buildings, and shrubbery. The highly articulated façade of the Technology Center is visible through the foliage briefly when one is immediately south of the center. The central portion of the project site is screened by multiple rows of 30- to 40-foot pine, ash, and oak trees. From Central Expressway looking towards the southeast corner of the site, one can see the top levels of the parking structure above the treeline and occasional views through the trees of the entire garage.

Applicable Plans and Policies

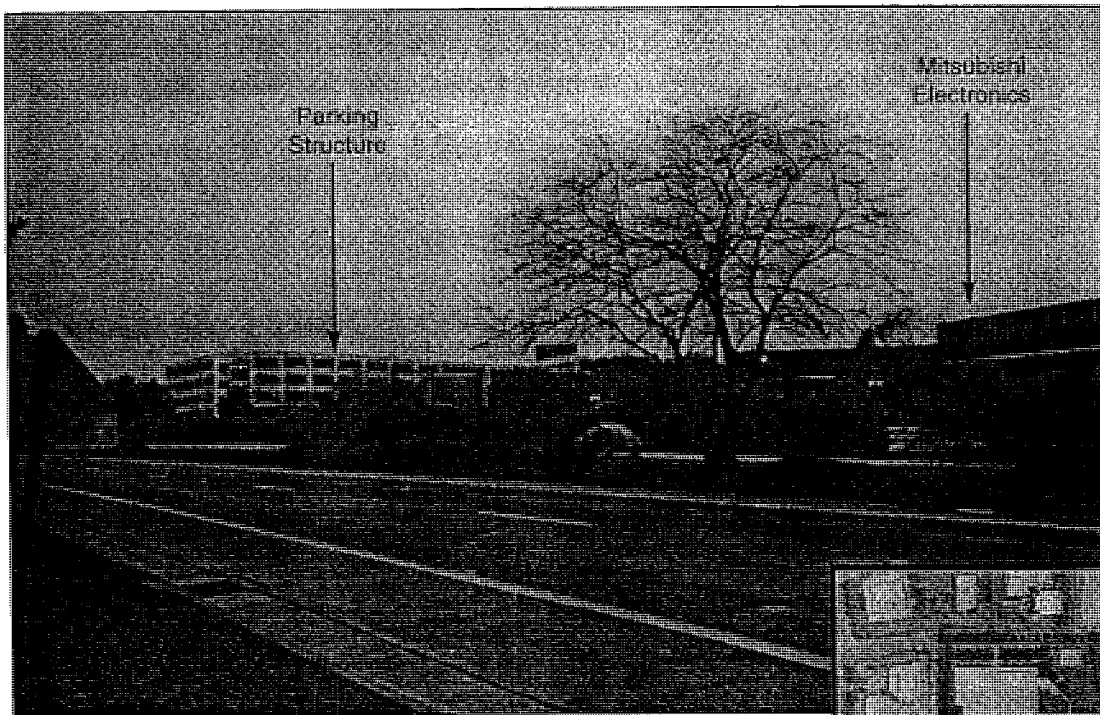
Land Use and Transportation Element. The proposed project would be evaluated with respect to those visual elements and effects that are consistent with City policies and goals:

- Require new development to be compatible with the neighborhood, adjacent land uses, and the transportation system. (Policy N1.2)
- Utilize adopted City design guidelines to achieve compatible architectural and scale for renovation and new development in Sunnyvale's neighborhoods. (Action Statement N1.2.2)
- Establish and monitor standards for community appearance and property maintenance. (Policy N1.1.5)

Community Design Sub-Element. The purpose of the Community Design Sub-Element "is to establish design policies to guide future growth and enhance existing development." The Element deals with "non-quantifiable issues and qualities, such as identity, comfort, beauty, and fun."

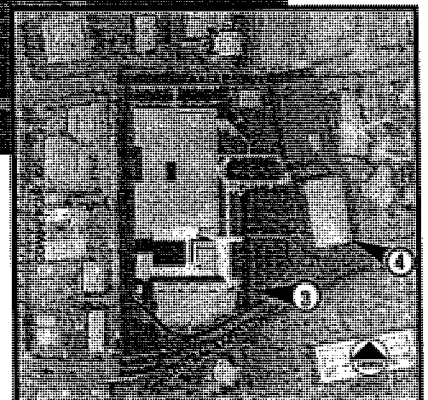


View 3: Looking west towards the Technology Center



View 4: Looking northwest towards parking structure

SOURCE: EIP Associates



APPLIED MATERIALS ARQUES CAMPUS SPECIFIC PLAN EIR
FIGURE 3.3-2 VIEWS FROM THE SOUTH SIDE OF CENTRAL EXPRESSWAY ONTO THE PROJECT SITE

EIP

Applied Materials Confidential

The Community Design Sub-Element recognizes the importance of Sunnyvale's visual environment to the quality of life in the City. Goals and policies of this element that pertain to the project are to:

- Maintain and provide attractive landscaping in the public right-of-way to identify the different types of roadways and districts, make motorists more comfortable and improve the enjoyment of residential neighborhoods. (Policy B.1)
- Ensure that buildings are appropriate to their context and designed to be compatible with surrounding properties and special districts. (Policy C.5)
- Continue to encourage infill development or redevelopment which is compatible with the use, density, setbacks, height and, where possible, the predominant building style and size of the surrounding district or neighborhood. (Action Statement 2.5A.2c)
- Support measures which enhance the identity of special districts and residential neighborhoods to create more variety in the physical environment. (Policy 2.5A.3)
- Place a priority on quality architecture and site design which will enhance the image of Sunnyvale and create a vital and attractive environment for businesses, residents and visitors, and be reasonably balanced with the need for economic development to assure Sunnyvale's economic prosperity. (Policy 2.5C.1)
- Continue to insure that projects have amenities which make them attractive and that these features are not sacrificed to maximize development potential. (Action Statement 2.5C.1c)
- Review site plans to insure the design is compatible with the natural and surrounding built environment. (Policy 2.5C.2)
- Continue to require that sites be designed so that the building locations, driveways, parking, exterior mechanical equipment, auxiliary structures and service access areas are attractive and compatible with adjoining properties and the public right-of-way. (Action Statement 2.5C.2c)
- Continue to require that on-site lighting be energy efficient, unobtrusive and located to minimize off-site glare while providing adequate night time safety. (Action Statement 2.5C.2d)
- Encourage site plans to be integrated with the adjoining road pattern, and at important junctions, provide view corridors into the project or other interesting features which will engage people. (Action Statement 2.5C.2e)
- Consider prohibiting wing walls or other blank, high walls on buildings in order to create attractive transition zones between buildings. (Action Statement 2.5C.2j)
- Continue to require the screening of exterior mechanical equipment. (Action Statement 2.5C.2k)
- Ensure that site design creates places which are well organized, attractive, efficient and safe. (Policy 2.5C.3)

- Encourage sites to have obvious and easy to locate entries. (Action Statement 2.5C.3a)
- Encourage site plans to have a legible organization including focal points and features which provide direction and clarity about the use of the site. (Action Statement 2.5C.3b)
- Encourage integrated site plans which have clear boundaries, similar detailing for all the elements and a complementary relationship with the buildings. (Action Statement 2.5C.3d)
- Encourage design elements which are pleasant to the senses. (Action Statement 2.5C.3e)

Industrial Design Guidelines. The Industrial Design Guidelines are meant to enhance and maintain the quality of the site and architectural design of the industrial areas of the City and to supplement the existing zoning standards. Section VIII, Industrial Parks addresses the guiding principles for the project site. Criteria VIII.1 suggests that a master plan be developed for industrial parks, which addresses arrangement, orientation, location, approximate size, and overall architectural design. Key guidelines for these factors are noted below.

- Criteria I.A2 - New development in an area with an established character shall be compatible with its surrounding development in intensity, design, setback, building form, scale, material, color and landscaping unless there are specific planning goals to change the character of an area.
- Criteria I.A3 - Transition shall be developed between projects with different uses and intensities on adjacent parcels to provide an effective visual and functional shift. Transition may be created through appropriate building setback, height and landscape buffers.
- Criteria I.A4 - New buildings shall present strong relationships to their site and surrounding buildings on the same or adjacent parcels. Visual and functional relationships between buildings and sites may be created by building orientation and massing, and site organization.
- Criteria I.A6 - Project perimeter landscaping shall be integrated with the landscaping of adjacent development for street scape continuity.
- Criteria I.B1 - Site components such as structures, parking, driveways, and out-door functions shall be arranged and located to emphasize the aesthetically pleasant components of the site such as existing mature trees and views, or superior architectural features, and disguise its less attractive scenes such as service facilities, outside storage and equipment areas, and trash enclosures through placement and design of the structure and landscaping.

Impacts and Mitigation Measures

Significance Criteria

The level of potential impacts resulting from the change in visual character is partially subjective. To some, any development and change in the existing setting, regardless of the design, is considered significantly adverse; others may consider any development to be beneficial. This EIR identifies explicit significance criteria by which the project is evaluated.

For the purposes of this EIR, significant visual impacts would arise if the proposed project:

- substantially adversely affects a scenic vista;
- substantially damages scenic resources, including, but not limited to, historic resources and protected trees;
- substantially degrades the existing visual character or quality of the site and its surroundings;
- creates a new source of substantial light or glare which adversely affects day or nighttime views in the area; or
- substantially conflicts with existing local plans or policies, concerning visual quality.

Environmental Assessment

1. *The proposed project would not substantially adversely affect a scenic vista. (I)*

The City of Sunnyvale and the project site are relatively level. Long-range views are limited due to the absence of elevated view corridors, existing development, and the presence of abundant street landscaping, primarily wide-canopied older trees.

Along Arques Avenue, views of the project site are predominantly of clustered trees, both along the street and adjacent to buildings, and of multi-story buildings (Building 81 and Building 82). The trees are clustered midway across the parking lot, and again around Building 82. These views of clustered trees and low-lying buildings would be replaced by regularly spaced trees and a continuous façade of taller buildings. The new buildings would be step backed above two stories, thus altering the ground-level streetscape little. Longer-range views from across the street (notably from the Fry's parking lot) would be replaced by a row of building masses above the treeline, approximately one to two stories above the tree tops. As one approaches the site from the north, the street trees along Arques Avenue would become more prominent and occupy a greater portion of the views and skyline. Thus, at the Arques Avenue sidewalk, the height of the trees, the deep building setback, and the architectural design of stepping back the upper floors, would combine to help mask the increased building heights and mass. As one moves further north, away from Arques Avenue, the proposed office/prototype laboratories and parking structures would be visible above the street trees, but because of the increased distance, they would occupy a smaller percentage of the views and skyline. Thus, impacts to longer-range views would not be significant since the buildings would be visible from certain limited areas, principally the Fry's parking lot; east-west views would be of short duration, a few hundred feet along Arques Avenue; and the new, taller development would not be expected to obstruct scenic views since there are no distinguishing features in the skyline.

Project impacts to motorists along Central Expressway would be similar to those along Arques Avenue. Views of the project site's Technology Center and parking structure would be altered to include an additional office/laboratory building between those two structures. The new building would be of a comparable height and of comparable building materials to other onsite structures. It would be partially visible through and above the rows of trees. Longer-range views, looking west along the expressway, would be altered, as a continuous series of building masses about one to two

stories above the tree line would be visible. Thus, impacts to longer-range views would not be potentially significant as they would be of short duration, a few hundred feet along the expressway due to the curve in the road; and would not be expected to obstruct scenic views (current views consist of a visually incoherent mix of structures lining the expressway).

2. *The proposed project would not substantially detract from scenic resources, such as heritage resources or protected trees. (I)*

Existing heritage resources are those determined and designated by the City Council to be appropriate for preservation and recognized by the State or nation as historically significant (Chapter 19.80.050, Sunnyvale Municipal Code). These resources are listed in a local inventory of heritage resources. No designated heritage resources are located near the project site; therefore, the project would not adversely affect heritage resources.

Section 19.81 of the City of Sunnyvale Zoning Code defines a "protected tree" as a tree of "significant size," that is, 38 inches or greater in circumference measured four feet above ground. For multi-trunk trees, a tree of "significant size" is one with at least one trunk of greater than 38 inches in circumference or combined tree trunks of 113 inches or greater in circumference, all measured four feet above the ground. According to Appendix C of the Arques Campus Specific Plan, about half of the protected trees would be retained. Pursuant to the Tree Preservation ordinance, project removal of any of these protected trees necessitates a Tree Survey (Appendix C) and a Tree Protection Plan. Upon approval by the City, the Tree Protection Plan will ensure that any protected trees affected by the project will be replaced on a one-for-one basis. Therefore, no impacts to protected trees would occur.

3. *The proposed project would not substantially degrade the existing visual character or quality of the site and its surroundings. (I)*

Existing buildings occupy the western half of the project site, while the eastern half is occupied by a mix of surface parking, scattered buildings, and a parking structure. Aside from the access road which encircles the site, there is no strong identity or relationship among the buildings and open areas on the project site. The proposed project would create a central open space area, the central commons, around which new and existing buildings would be arranged. Pedestrian pathways would link the buildings to the commons and to each other. A main pedestrian pathway would bisect the site from north to south. Along the perimeter, the main access road would provide various types of drop off points to the main building entrances, emphasizing the relationship of each of the buildings to each other and to the site. Colors and materials for new buildings would be consistent with the materials of the Technology Center, and new buildings would be four to five stories high. Buildings would transition from two to five stories depending on location. Thus, portions of the new buildings above two stories would be stepped back along Arques Avenue and would be consistent with the two- to three-story heights of existing office/laboratory buildings. New building facades along the interior commons would be similarly set back to transition from other two- to three-story amenity buildings (such as the cafeteria and recreation center) to the four- to six-story height of the parking structure and Technology Center. Taller building heights would be located away from Arques Avenue and, as much as possible, from short buildings or small site elements.

Compatibility of the project site with surrounding development can be evaluated by considering the height and scale of adjacent buildings on Arques Avenue and Central Expressway. As shown in Figure 3.3-3, buildings on Arques Avenue, both across the street and immediately adjacent to the project site, are two to three stories high and of neutral colors and materials, notably white cement, brick, and gray cement with black glass elements. Buildings are screened from view by wide-canopied oak, ash, and pine trees. Figure 3.3-4 illustrates the variety of streetscapes in the vicinity: Commercial Avenue's commercial buildings typically have minimal landscaping and wider curb cuts. The proposed project's Arques Avenue street frontage would include a double row of regularly spaced street trees, both at the curb and adjacent to the buildings, and new sidewalks. Buildings would be four to five stories high and would incorporate stepped back, two-story facades and other building articulation such as recesses, balconies, and porches. Building articulation would be concentrated in areas visible from public streets. Buildings would be set back to align with existing buildings; thus, on the Arques Avenue frontage, buildings would be aligned with Building 81, which is about 125 feet from the curb line. Building design would include a comprehensive color scheme for the site. Thus, the project would not significantly contrast with or detract from surrounding development on the Arques Avenue frontage.

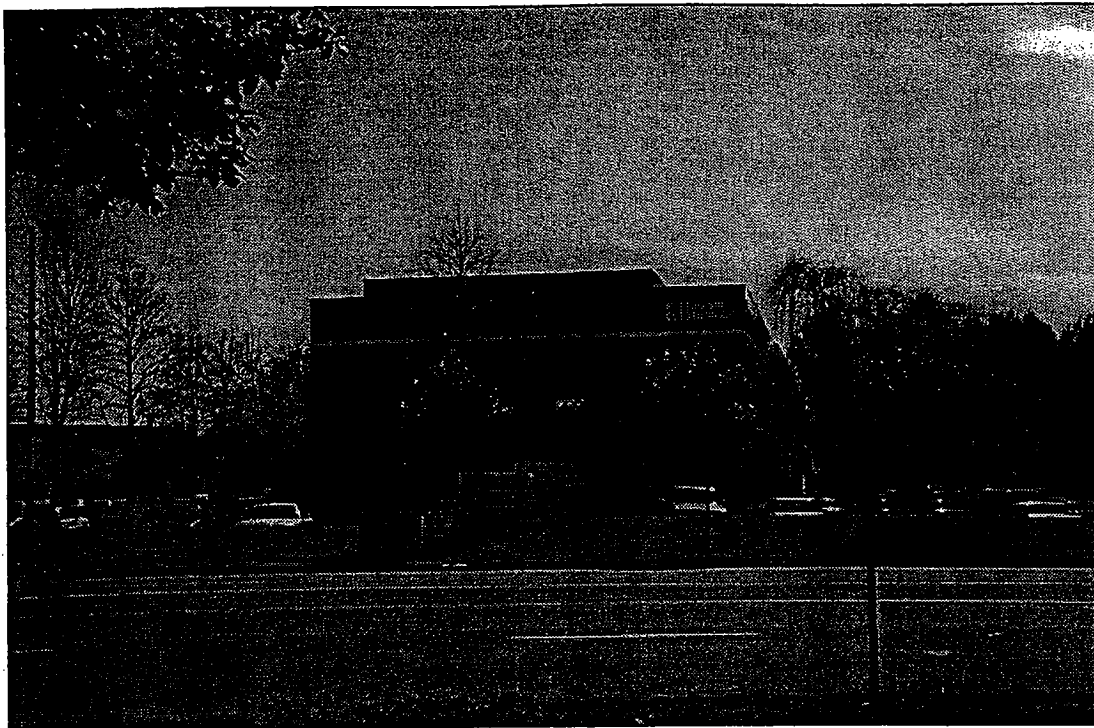
The Central Expressway roadsides are populated with a visually incoherent mix of dense vegetation, small and large building facades, parking areas, and service yards. The project site's Central Expressway border would be extensively planted with evergreen trees and shrubs, except for the southwest corner which would maintain filtered views of the Technology Center. Buildings would be four to five stories high and would incorporate simple building articulation. Buildings would be set back to align with existing buildings. On the Central Expressway frontage, buildings would be aligned with the Technology Center and parking structure. Thus, the project site would appear to have a more continuous, landscaped facade.

4. *The proposed project would not create a new source of substantial light or glare that adversely affects day or nighttime views in the area. (I)*

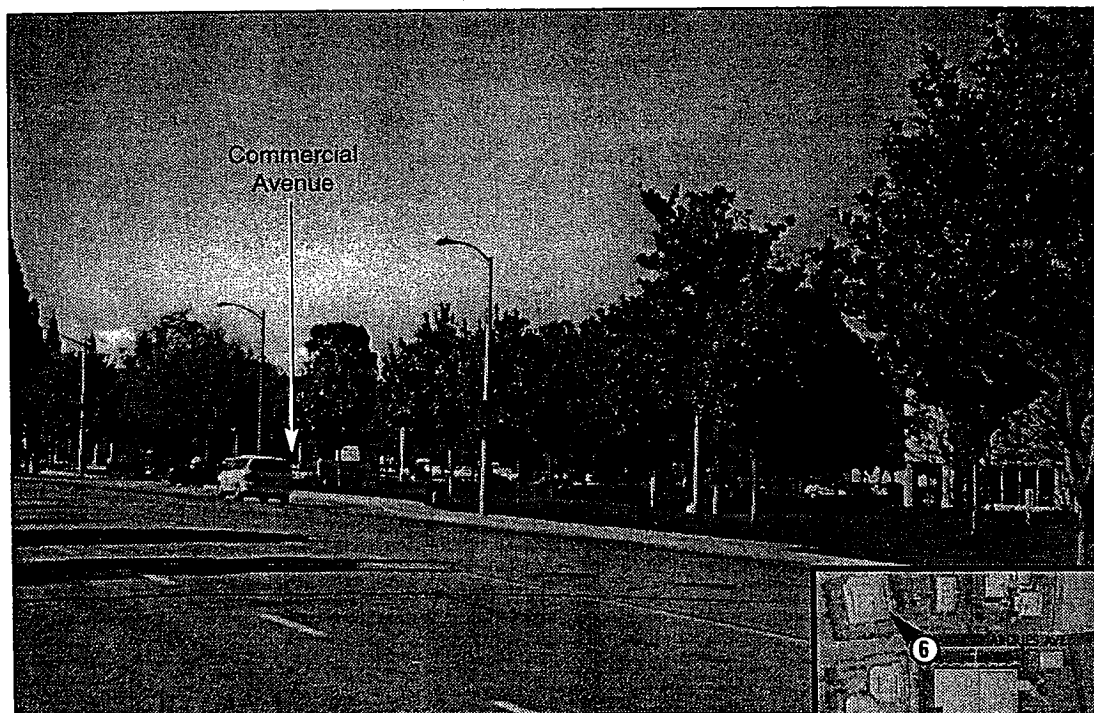
Light and glare effects are primarily caused by the use of reflective or glass building materials, and by nighttime lighting that is improperly directed. Section 5.6 of the Arques Campus Specific Plan specifies that building materials would not be mirror glass or highly reflective surfaces. In addition, metal panels, siding, or framework would not be polished or highly reflective. The lighting standards enumerated in Section 6.14 of the Arques Campus Specific Plan emphasize lighting designed to meet specific functions and standards while minimizing spillover lighting. Parking lot lighting would be directed onto the parking areas. On pedestrian walkways, the lighting would be scaled to pedestrian uses. Building lighting would be functional and overhead downlights would be encouraged. Lighting in service areas would be confined to the service yards. Thus, the proposed project would not be expected to cause substantial adverse light or glare.

5. *The proposed project appears to be consistent with the Land Use and Transportation Element, as well as the Community Sub-Element as expressed in the Industrial Design Guidelines.*

As described in Section 3.2, Land Use, official determination of a proposed project's consistency with applicable General Plan policies will be made by the City during the project approval phase. The following discussion is intended to provide input into that determination and does not make a judgment about whether the project would have a significant effect. In general, the proposed

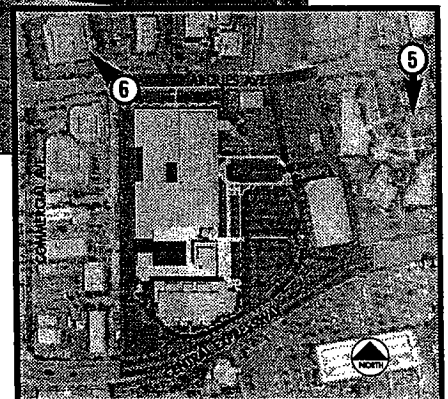


View 5: Looking south onto the adjacent property, east of the project site

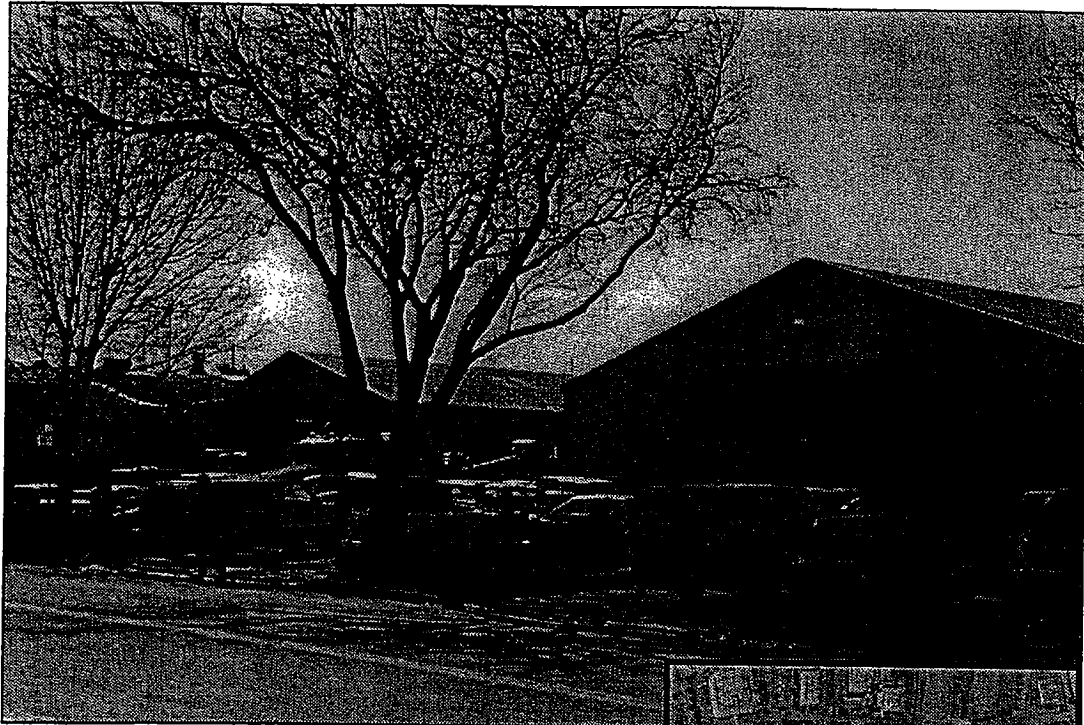


View 6: Looking northwest from the west side of the project site

SOURCE: EIP Associates

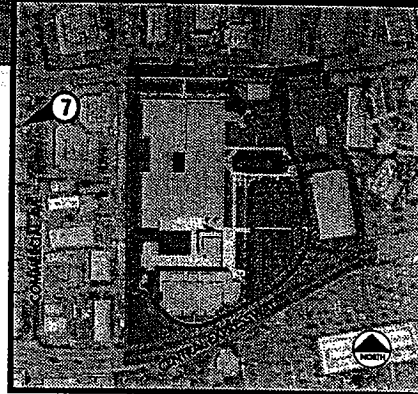


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FIGURE 3.3-3 VIEWS OF SURROUNDING DEVELOPMENT



**View 7: Looking southwest from Commercial Avenue /
Arques Avenue intersection**

SOURCE: EIP Associates



project does not appear to conflict with General Plan policies concerning urban design and visual quality.

The Arques Campus Specific Plan appears consistent with Policy N1.2, Action Statement N1.2.2, Action Statement 2.5A.2c, Policy 2.5C.1, Policy 2.5C.2, Policy 2.5C.2e, Criteria I.A2, Criteria I.A3, and Criteria I.A4 which discuss the transition between sites with different uses and intensities on adjacent parcels and compatibility with surrounding development; Section 3.1 of the Arques Campus Specific Plan outlines the site's relationship to surrounding development on Arques Avenue; and Sections 3.5 and 5.2 of the Arques Campus Specific Plan discuss the project's proposed use of landscaping, setbacks, stepbacks, and building articulation to minimize land use effects on Arques Avenue and Central Expressway.

The Arques Campus Specific Plan appears consistent with Criteria I.A4 and Action Statements 2.5C.3d and 2.5C.3j, which seek new development to create visual and functional relationships between buildings and sites through building orientation, massing, and site organization. Arques Campus Specific Plan, Section 3.2 describes creation of a central commons, with a cafeteria, conference room, and recreation center as the heart of the campus. From this open space area, the whole campus would be visible. Arques Campus Specific Plan, Section 5.2 notes that project buildings would incorporate setbacks, stepbacks, and building articulation to transition from the two-story elements to the five-story elements.

The Arques Campus Specific Plan appears consistent with Policy 2.5C.2 and Criteria I.B1, I.A2, I.A3, and I.A6 which relate to the integration of project perimeter landscaping with adjacent development. Section 6.2 of the Arques Campus Specific Plan identifies the type, density, and purpose of proposed project plantings to ensure continuity with the existing streetscapes of Central Expressway and Arques Avenue. Figure 2-7 in Section 2, Project Description, of this Draft EIR, highlights the Landscape Concept Plan for the Arques Campus.

The Specific Plan appears consistent with Policy N1.1.5 and Action Statements 2.5C.2c, 2.5C.2d, 2.5C.2k, and 2.5C.3e; and Criteria I.B1, which concerns the design of site components, features, and amenities. Section 3.4 of the Specific Plan describes the project's creation of a strong site identity through use of a perimeter vehicle circulation system, limiting service entrance from California Street, and developing a central commons focal point (Policy 2.5C.3, and Action Statements 2.5C.3a and 2.5C.3b). Section 6 of the Specific Plan outlines the landscape requirements for specific areas of the Arques Campus including streets and edges, campus entries, pedestrian and open space areas, parking areas, and campus buffers.

The increase in FAR on the project site is described and addressed in Section 3.2, Land Use and Planning.

6. *The proposed development envisioned by the Arques Campus Specific Plan would not combine with other nearby development to cumulatively result in significant changes to the visual setting. (I)*

The proposed development at the Arques Campus would not exceed existing height standards as set forth in Title 19 (the Uniform Planning and Zoning Code). Arques Avenue is an attractive tree-lined roadway, but there are no identifiable scenic resources, designated scenic roads, or significant view corridors in the immediate project vicinity. Given the proposed project's conformance with

height standards, the absence of scenic resources, and the distance to other approved projects in the vicinity, it is unlikely that there are viewpoints where the proposed project could be seen in combination with another development project and cumulatively detract from the visual setting. Consequently, cumulative visual impacts would not be expected to occur.

3.4 TRANSPORTATION

Introduction

Applied Materials retained Barton-Aschman Associates, Inc. to identify existing transportation conditions and to evaluate the effects of the proposed Specific Plan on transportation network facilities, operations, and service.¹ Data were collected for this assessment in November 1997 and February 1998 and are available for review at the City of Sunnyvale, Community Development Department. Both City staff and CCS Planning and Engineering Incorporated, a transportation consultant on the EIR team, independently reviewed the Barton-Aschman Associates' documentation for its adequacy, validity, and conformance with City and Santa Clara Valley Transportation Authority (VTA) guidelines. Based on these reviews, the analysis was generally determined to be acceptable for use in this EIR. Information in this section of the EIR has been summarized from the Barton-Aschman Associates' report.

Environmental Setting

Roadway Network

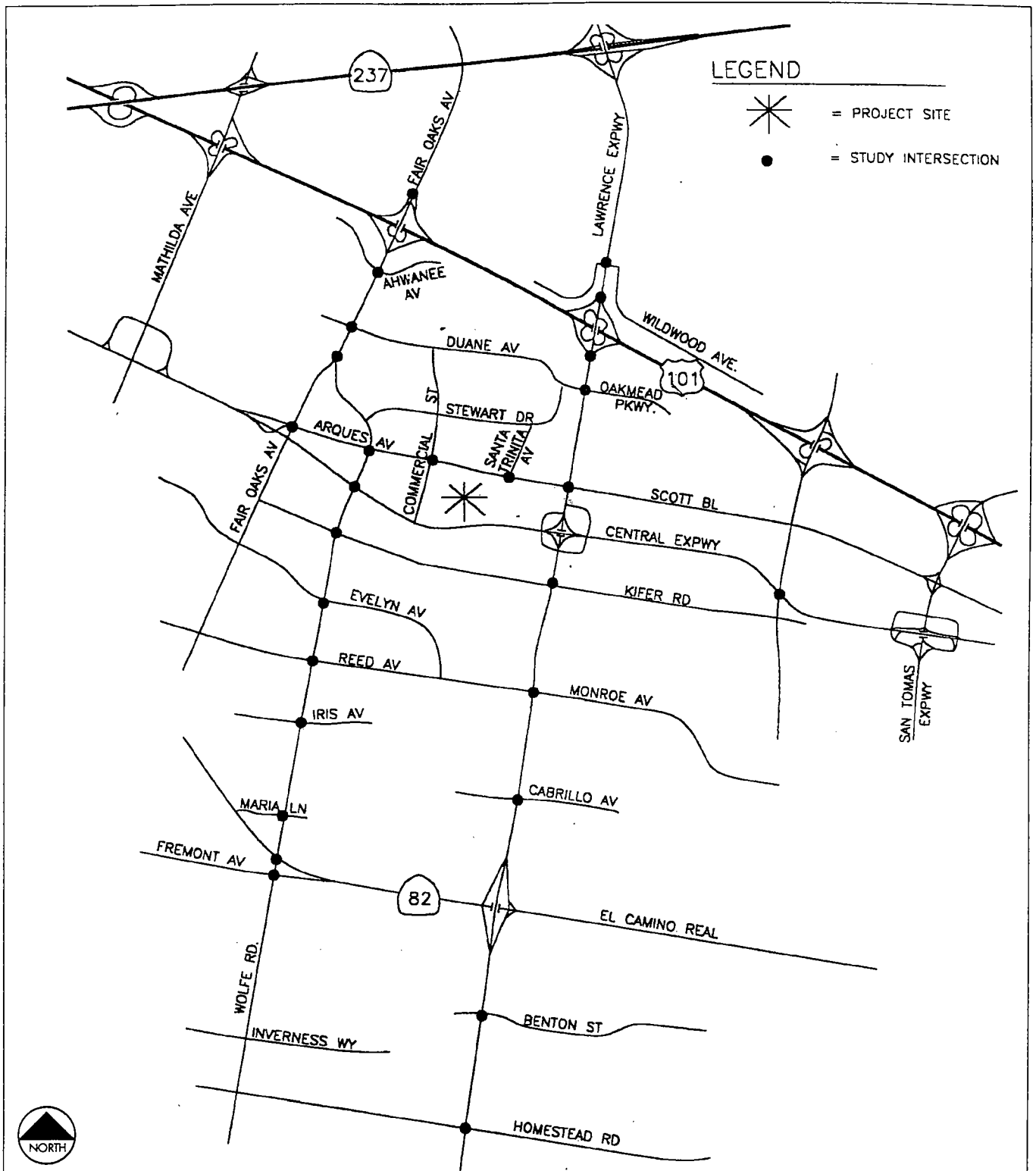
Regional access to the project site is provided by U.S. 101, State Route 237 (SR 237), Lawrence Expressway, and Central Expressway. Local access to the site is provided by Arques Avenue, Wolfe Road, Fair Oaks Avenue, and Commercial Street. The location of these roadways in relation to the proposed project site is illustrated in Figure 3.4-1. The characteristics of roadways are described below.

U.S. 101 is an eight-lane freeway (three mixed-flow lanes and one high-occupancy vehicle [HOV] lane in each direction). U.S. 101 extends northward through San Francisco and southward through Morgan Hill. Access to and from the site is provided via the U.S. 101 interchanges with Lawrence Expressway and Fair Oaks Avenue.

SR 237 extends in an east/northeast direction from El Camino Real in Mountain View to I-680 in Milpitas. It is generally a six-lane freeway (two mixed-flow lanes and one HOV lane in each direction). SR 237 provides access to the site via interchanges at U.S. 101 and Lawrence Expressway.

Lawrence Expressway is a six- to eight-lane limited access roadway that extends south from SR 237 to Saratoga Avenue where it becomes Quito Road. Within the eight-lane segments, one lane in each direction is reserved for HOVs during the commute periods. During off-peak hours and in the off-peak direction, use of these shoulder lanes is restricted to right turning vehicles. Lawrence Expressway has interchanges with SR 237 and Interstate 280 (I-280) in addition to its interchange with U.S. 101.

Central Expressway is a four-lane limited access facility with some grade-separated intersections. This facility provides access to the site from the City of Santa Clara to the east and the City of Mountain View to the west. Access to and from the site is via interchanges at Lawrence Expressway and Wolfe Road and right turns to and from westbound Central Expressway at Commercial Street.



SOURCE: Barton-Aschman Associates, Inc.

APPLIED MATERIALS ARQUES CAMPUS SPECIFIC PLAN EIR
FIGURE 3.4-1 PROJECT VICINITY ROADWAYS AND STUDY INTERSECTIONS

EIP

Arques Avenue provides direct access to the project site via three driveways. This arterial road extends east from Fair Oaks Avenue into the City of Santa Clara where it becomes Scott Boulevard. Arques Avenue, in the vicinity of the site, has five lanes: two travel lanes in each direction plus a center lane for left turns.

Wolfe Road is a north/south arterial road that extends from its intersection with Fair Oaks Avenue south into Cupertino. Wolfe Road is six lanes wide between Maude Avenue and Reed Avenue. South of Reed Avenue, Wolfe Road is generally four lanes wide, with a six-lane section in the vicinity of El Camino Real.

Fair Oaks Avenue is a north/south facility that extends from U.S. 101 to El Camino Real. Fair Oaks Avenue has an interchange with U.S. 101 and is grade-separated from Central Expressway (access to Central Expressway is from Arques Avenue and California Street). Fair Oaks Avenue is generally a four-lane facility, with three southbound lanes provided between U.S. 101 and Wolfe Road.

Commercial Street is a two-lane collector street that connects Central Expressway to Arques Avenue on the north and to Kifer Road on the south. At the Central Expressway/Commercial Street intersection, right turns only are permitted between westbound Central Expressway and the northern segment of Commercial Street and between eastbound Central Expressway and the southern segment of Commercial Street. Cross traffic on Commercial Street and left turns are not permitted. Commercial Street will provide access to the project site via a driveway from the California Street cul-de-sac. North of Arques Avenue, Commercial Street continues north to Duane Avenue as DeGuigne Drive.

Intersection Levels of Service

The operating conditions of the intersections identified for study are evaluated through level of service (LOS) calculations. *Level of service* is both a quantitative and qualitative description of an intersection's operation, ranging from LOS A, or free-flow conditions, to LOS F, or highly congested conditions. The level of service calculation methodology is specified by the Santa Clara Valley Transportation Authority's Congestion Management Program (CMP) and the City of Sunnyvale. This methodology evaluates an intersection's operation based on the average delay of vehicles stopped at the intersection. The average delay is calculated using a computer software program (TRAFFIX) and is then correlated to a level of service (see Table 3.4-1).

With respect to traffic impacts, level of service analyses are conducted at street intersections which are potentially impacted by the proposed facility. Twenty-seven intersections were identified for study in consultation with City of Sunnyvale staff using the methodology approved by the CMP. Five of the study intersections are designated as CMP intersections. As such, CMP facilities (roadways or intersections) are subject to Level of Service policies adopted by the VTA. The following intersections were analyzed for this project, and CMP intersections are denoted with an asterisk:

- Fair Oaks Avenue and U.S. 101 northbound ramps
- Fair Oaks Avenue and Ahwanee Avenue
- Fair Oaks Avenue and Duane Avenue
- Fair Oaks Avenue and Wolfe Road
- Fair Oaks Avenue and Arques Avenue

Table 3.4-1
Intersection Level of Service Definitions Using
Average Stopped Vehicular Delay

Level of Service	Average Stopped Delay (Seconds/Vehicle)	Description
A	delay ≤ 5	Operations with very low delay occurring with favorable progression and/or short cycle lengths.
B+	5 < delay ≤ 7	Operations with low delay occurring with good progression and/or short cycle lengths.
B	7 < delay ≤ 13	
B-	13 < delay ≤ 15	
C+	15 < delay ≤ 17	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.
C	17 < delay ≤ 23	
C-	23 < delay ≤ 25	
D+	25 < delay ≤ 28	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.
D	28 < delay ≤ 37	
D-	37 < delay ≤ 40	
E+	40 < delay ≤ 44	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.
E	44 < delay ≤ 56	
E-	56 < delay ≤ 60	
F	delay > 60	Operation with delays unacceptable to most drivers occurring due to over-saturation, poor progression, or very long cycle lengths.

Source: SCVTA CMP TIA Guidelines, May 7, 1998.

Wolfe Road and Arques Avenue
 Wolfe Road and Central Expressway²
 Wolfe Road and Kifer Road
 Wolfe Road and Evelyn Avenue
 Wolfe Road and Reed Avenue/Old San Francisco Road
 Wolfe Road and Iris Avenue
 Wolfe Road and Maria Lane
 Wolfe Road and El Camino Real*
 Wolfe Road and Fremont Avenue
 Lawrence Expressway and Wildwood Avenue
 Lawrence Expressway and U.S. 101 NB
 Lawrence Expressway and U.S. 101 SB
 Lawrence Expressway and Duane Avenue
 Lawrence Expressway and Arques Avenue*
 Lawrence Expressway and Kifer Road
 Lawrence Expressway and Reed Avenue/Monroe Street*

Lawrence Expressway and Cabrillo Avenue
Lawrence Expressway and Benton Street
Lawrence Expressway and Homestead Road*
Commercial Street and Arques Avenue
Santa Trinita Avenue and Arques Avenue
Bowers Avenue and Central Expressway*

The intersection of Bowers Avenue and Central Expressway is a CMP intersection located within the City of Santa Clara. All other intersections studied are located within the City of Sunnyvale. The locations of the study intersections are shown on Figure 3.4-1. These intersections were selected based on an analysis of where the proposed project was expected to add ten or more peak hour vehicles per lane to any intersection movement. This "ten trips per approach lane" criterion has been established by the CMP and adopted by the City of Sunnyvale as being an appropriate indicator of which intersections warrant study.

Existing peak-hour traffic volumes were obtained from the City of Sunnyvale and Santa Clara County Road and Airports Department and supplemented with manual peak-hour turning-movement counts (contained in background documentation available for review at the City's offices). Information obtained from Sunnyvale and Santa Clara County or as part of the annual CMP monitoring effort was collected during 1997. New turning movement counts were conducted in February 1998 for several intersections.

The existing volumes were used with the existing lane configurations and signal phasing and timing data as inputs to the TRAFFIX software to evaluate the current LOS operations of the key intersections. The lane configurations and signal phasing/timing were obtained from City and County staff and through field observations. The TRAFFIX default values provided by the VTA were used in the calculations, except where adjustments were appropriate to match field observations or to reflect scenarios desired by the City.³

The level of service calculation worksheets are available for review at the City's Community Development office at 456 West Olive Avenue. The level of service analysis findings are reported in Table 3.4-2. This table indicates that 25 of the 27 intersections analyzed are operating at LOS D or better under existing conditions, the standard used by the City of Sunnyvale to define acceptable traffic conditions. In contrast, intersections covered by the CMP are considered to operate acceptably at LOS E. LOS D is characterized as providing an "average stopped delay" of 40 seconds or less per vehicle. This level of traffic service experiences longer than average delays due to a combination of unfavorable progression, long traffic signal cycle lengths, or high ratios of capacity utilization. Many vehicles stop under these conditions, and delays are noticeable. One non-CMP intersection currently operates at LOS E during either the AM or PM peak hour and thus is considered by the City to operate at unacceptable congestion levels: Lawrence Expressway at Kifer Road. One intersection, Central Expressway at Bowers Avenue, operates at LOS F under existing conditions during the PM peak hour and thus does not meet the CMP criterion for acceptable operations.

Table 3.4-2
Existing and Background Intersection Levels of Service

Intersection	Peak Hour	Existing		Background	
		Average Delay ¹	LOS	Average Delay ¹	LOS
Fair Oaks/U.S. 101 NB	AM	15.8	C+	16.2	C+
	PM	25.4	D+	26.8	D+
Fair Oaks/Ahwanee	AM	12.3	B	12.0	B
	PM	8.4	B	9.3	B
Fair Oaks/Duane	AM	20.1	C	20.8	C
	PM	20.2	C	20.0	C
Fair Oaks/Wolfe	AM	17.5	C	17.7	C
	PM	15.9	C+	15.6	C+
Fair Oaks/Arques	AM	20.8	C	21.1	C
	PM	31.2	D	33.1	D
Wolfe/Arques	AM	20.7	C	21.1	C
	PM	24.2	C-	25.5	D+
Wolfe/Central ²	AM	31.4	D	36.0	D
	PM	39.0	D-	41.0	E+
Wolfe/Kifer	AM	20.2	C	22.7	C
	PM	28.8	D	30.2	D
Wolfe/Evelyn	AM	32.7	D	33.2	D
	PM	21.3	C	21.8	C
Wolfe/Reed	AM	33.2	D	32.3	D
	PM	27.7	D+	29.1	D
Wolfe/Iris	AM	15.8	C+	17.1	C
	PM	14.5	B-	18.0	C+
Wolfe/Maria	AM	10.6	B	12.4	B
	PM	20.4	C	28.9	D
Wolfe/El Camino*	AM	32.4	D	32.6	D
	PM	38.9	D-	40.2	E+
Wolfe/Fremont	AM	36.5	D	36.9	D
	PM	34.7	D	35.2	D
Lawrence/Wildwood	AM	N/A	N/A	8.3	B
	PM	N/A	N/A	10.7	B
Lawrence/U.S. 101 NB	AM	15.7	C+	16.8	C+
	PM	13.5	B-	13.9	B-
Lawrence/U.S. 101 SB	AM	10.3	B	10.6	B
	PM	12.4	B	12.4	B

Table 3.4-2
Existing and Background Intersection Levels of Service (continued)

Intersection	Peak Hour	Existing		Background	
		Average Delay ¹	LOS	Average Delay ¹	LOS
Lawrence/Duane	AM	31.9	D	33.7	D
	PM	37.0	D	43.9	E+
Lawrence/Arques*	AM	20.6	C	23.0	C-
	PM	34.3	D	38.0	D-
Lawrence/Kifer	AM	20.8	C	22.0	C
	PM	40.8	E+	42.6	E+
Lawrence/Reed*	AM	37.2	D-	40.5	E+
	PM	35.6	D-	38.9	D-
Lawrence/Cabrillo	AM	34.3	D	33.9	D
	PM	18.7	C	18.7	C
Lawrence/Benton	AM	29.1	D	29.5	D
	PM	36.5	D	38	D-
Lawrence/Homestead*	AM	33.3	D	33.4	D
	PM	36.9	D	37	D
Commercial/Arques	AM	9.0	B	9.7	B
	PM	10.6	B	10.9	B
Santa Trinita/Arques	AM	9.2	B	9.3	B
	PM	9.8	B	12.6	B
Bowers/Central*	AM	45.3	E	48.4	E
	PM	61.7	F	66.1	F

Source: Barton-Aschman Associates, Inc.

¹ Average stopped delay expressed in seconds per vehicle.

² The Central/Wolfe intersection is grade-separated with two signalized ramps intersections located on Wolfe Road. The traffic signals at these ramp intersections are controlled by one signal controller and were evaluated as one intersection, per city staff's direction.

* Designated CMP intersection.

Background conditions include existing plus approved development projects and are described further beginning on 3.4-12.

Shaded intersections operate at unacceptable service levels.

Freeway Segment Levels of Service

The operating conditions of the surrounding freeway system were also investigated. Segments of U.S. 101, SR 237, and SR 85 were analyzed to determine which segments would potentially be affected by the proposed project. A freeway segment must be included in a transportation impact analysis if it meets any one of the following requirements:

1. The proposed project is expected to add traffic equal to at least one percent of the freeway segment's capacity.
2. The proposed project is adjacent to one of the freeway segment's access or egress points.
3. Based on engineering judgment, lead agency staff determine that the freeway segment should be included in the analysis.

The 1994 update to the *Highway Capacity Manual* (HCM) was used to determine freeway segment capacities. According to the HCM, a four-lane freeway has a capacity of 2,200 vehicles per hour per lane, while a six- or eight-lane freeway has a capacity of 2,300 vehicles per hour per lane. The CMP requires that HOV lanes be analyzed separately. To be conservative, traffic volumes and capacities associated with the HOV lanes were ignored for this analysis. Therefore, SR 237 was treated as a four-lane freeway and U.S. 101 was treated as a six-lane freeway. The thresholds for analysis were, therefore, the addition of 69 or more trips to U.S. 101 (3 lanes x 2,300 vehicles per hour per lane x 1%) and the addition of 44 or more trips to SR 237 and SR 85 (2 lanes x 2,200 vehicles per hour per lane x 1%).

Using these thresholds, the following segments were identified for analysis:

- U.S. 101 - SR 237 to Mathilda Avenue
- U.S. 101 - Mathilda Avenue to Fair Oaks Avenue
- U.S. 101 - Lawrence Expressway to Great America Parkway
- U.S. 101 - Great America Parkway to Montague Expressway
- U.S. 101 - south of Montague Expressway
- SR 237 - east of Lawrence Expressway.

Data contained in the CMP's *1997 Monitoring and Conformance Report* were used to estimate existing freeway level of service. In this report, segment volumes are estimated, based on vehicle densities and speeds. According to these data, the following segments are currently operating at LOS F (an unacceptable level):

AM Peak Hour

Southbound U.S. 101, Lawrence Expressway to Great America Parkway

PM Peak Hour

Northbound U.S. 101, Mathilda Avenue to SR 237

Southbound U.S. 101, Great America Parkway to Montague Expressway

Southbound U.S. 101, south of Montague Expressway

Table 3.4-3 reports the specific findings of this analysis.

Transit Service

Four bus routes (Routes 41, 56, 140 and 304) provide service within one-quarter mile of the project site. Several additional bus routes operate within one-half mile of the site. Bus service is operated by the VTA. The bus routes directly serving the site are described below and illustrated in Figure 3.4-2.

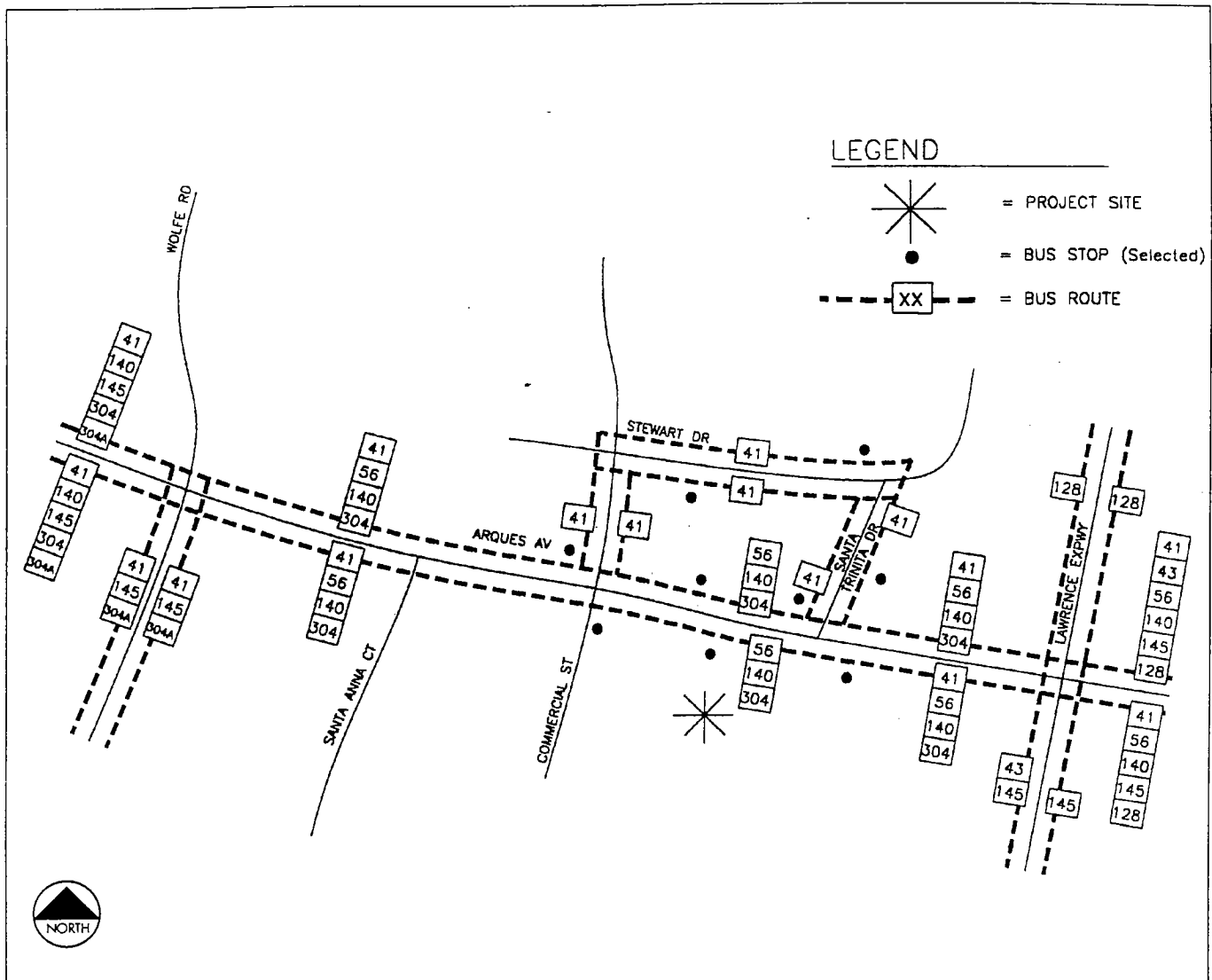
Table 3.4-3
Freeway Segment Analysis Determination - Summary

Freeway	Segment	Direction	Peak Hour	Existing				
				Lanes ¹	Average Speed	Volume	Density	LOS
U.S. 101	Mathilda Avenue to SR 237	NB	AM	3	50	6570	43.8	D
		NB	PM	3	15	4110	94.1	F
U.S. 101	SR 237 to Mathilda Avenue	SB	AM	3	60	4970	27.6	D
		SB	PM	3	60	4800	26.7	D
U.S. 101	Fair Oaks Avenue to Mathilda Avenue	NB	AM	3	65	3360	17.3	C
		NB	PM	3	60	5930	32.93	D
U.S. 101	Mathilda Avenue to Fair Oaks Avenue	SB	AM	3	60	3810	21.2	C
		SB	PM	3	60	4380	24.3	D
U.S. 101	Great America Parkway to Lawrence Expressway	NB	AM	3	60	4980	27.7	D
		NB	PM	3	60	6050	33.6	D
U.S. 101	Lawrence Expressway to Great America Parkway	SB	AM	3	25	4150	55.4	F
		SB	PM	3	50	6870	45.8	D
U.S. 101	Montague Expressway to Great America Parkway	NB	AM	3	60	3680	20.4	C
		NB	PM	3	35	5460	52.0	E
U.S. 101	Great America Parkway to Montague Expressway	SB	AM	3	60	3600	20.	C
		SB	PM	3	20	4850	80.9	F
U.S. 101	South of Montague Expressway	NB	AM	3	55	6490	39.3	D
		NB	PM	3	60	5390	29.9	D
U.S. 101	South of Montague Expressway	SB	AM	3	60	4640	25.8	D
		SB	PM	3	15	4110	91.4	F
SR 237	East of Lawrence Expressway	EB	AM	3	55	4290	39.0	D
		EB	PM	3	55	4370	39.8	D
SR 237	East of Lawrence Expressway	WB	AM	3	60	3120	26.0	D
		WB	PM	3	60	3210	26.8	D

Source: Barton-Aschman Associates, Inc.

¹ Excludes High Occupancy Vehicle (HOV) and Auxiliary Lanes

Shaded freeway intersections operate at unacceptable service levels.



SOURCE: Barton-Aschman Associates, Inc.

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FIGURE 3.4-2 EXISTING TRANSIT SERVICE

EIP

Route 41 provides service along Arques Avenue and DeGuigne Drive in the vicinity of the project site. This route provides commute service between the Lawrence CalTrain Station and the Sunnyvale industrial area on 20- to 60-minute headways.

Route 56 provides service between the intersection of Fair Oaks Avenue and El Camino Real in Sunnyvale to Milpitas. Commute service is provided on 15- to 20-minute headways. This route connects to both CalTrain and the Guadalupe Corridor Light Rail line (LRT). *Route 56* operates along Arques Avenue in front of the site.

Route 140 provides express commute service between the Fremont BART Station and the Sunnyvale CalTrain Station. This line provides two trips from Fremont to Sunnyvale during the AM commute period and two trips from Sunnyvale to Fremont during the PM commute period. This route operates along Arques Avenue in the vicinity of the site. In addition to connecting with CalTrain and BART, this line also connects to the Guadalupe Corridor LRT line.

Route 304 is a limited-stop route that operates between south San Jose and the Mountain View CalTrain Station. This line provides commute only service on headways of 15 to 30 minutes. In addition to CalTrain, *Route 304* connects to LRT.

The CalTrain station nearest the site is the Lawrence Station. Bus service to this station is provided directly via *Route 41*.

Bicycle and Pedestrian Facilities

In the vicinity of the project site, the Santa Clara County Bikeways Map has a designated bike route along Central Expressway, west of Wolfe Road, and Arques Avenue in the project vicinity is designated as part of a Countywide Bicycle Corridor. Central Expressway, east of Wolfe Road, and Lawrence Expressway are also accessible to cyclists (all expressways in the County are accessible to bicycles). No existing bikeways serve the Arques Campus. However, the City has prepared a Draft Bicycle Opportunities Study that indicates that the segment of Arques Avenue in the project site vicinity could be modified by single re-striping to provide Class II bike lanes. The City is seeking grant funding for this project.

Sidewalks are provided along both sides of Arques Avenue in the vicinity of the project site, although none exists in front of the project site. Crosswalks and pedestrian signals are provided at the signalized intersections of Arques Avenue with Commercial Street and with Santa Trinita Avenue.

Applicable Plans and Policies

The City of Sunnyvale General Plan Land Use and Transportation Element (November 1997) contains the following policies and action statements pertinent to the traffic, circulation, and parking aspects of the proposed project:

- Achieve an operating level of service (LOS) "E" or better for all regional roadways and intersections, as defined by the City functional classification of the street system. (Policy R1.4)
- Contribute to efforts to minimize region-wide average trip length, and single-occupant vehicle trips. (Policy R1.7)

- Local higher intensity land uses and developments so that they have easy access to transit services. (Action Statement R1.7.1)
- Achieve an operating level of service (LOS) of “D” or better on the City-wide roadways and intersections, as defined by the functional classification of the street system. (Policy C3.1)
- Require roadway and signal improvements for development projects to minimize decline of existing levels of service. (Action Statement C3.1.3)
- Integrate the use of land and the transportation system. (Policy C3.2)
- Allow land uses that can be supported by the planned transportation system. (Action Statement C3.2.1)
- Minimize driveway curb cuts, and require coordinated access when appropriate. (Action Statement C3.2.2)
- Encourage mixed use developments that provide pedestrian scale and transit oriented services and amenities. (Action Statement C3.2.3)
- Continue to evaluate transportation impacts from land use proposals at a neighborhood and City-wide level. (Action Statement C3.2.4)
- Provide appropriate site access to commercial and office uses while preserving available road capacity. (Policy N1.10)
- Encourage commercial enterprises and offices to provide support facilities for bicycles and pedestrians. (Action Statement N1.10.2)

Background Conditions

This section presents an analysis of intersection operations under background conditions. Background conditions are defined as conditions prior to the addition of the proposed development as set forth in the Arques Campus Specific Plan. Traffic volumes for background conditions include volumes from existing traffic counts plus traffic generated by approved, but not yet constructed, developments in the area.

Background Traffic Estimates. To derive the background conditions, City of Sunnyvale staff identified development conditions (size, composition and location) for 26 approved but not yet constructed or occupied projects located in Sunnyvale. These are considered to be all the approved but not built, or built but not occupied, developments that would affect the project study intersections. Traffic generated by each of these approved projects was calculated using trip generation rates published in the Institute of Transportation Engineers’ “Trip Generation” report. This traffic was then assigned to the street system based on trip distribution patterns observed for similar existing developments, and data obtained from the Countywide Transportation Model which is maintained by the Santa Clara County Center for Urban Analysis (CUA). The results of this analysis were reviewed and approved by City of Sunnyvale staff.

The locations of the 26 “background” projects, are illustrated on Figure 3.4-3. Their size and land use type are listed in Table 3.4-4 along with the estimated number of peak hour trips generated by the approved development, and the resulting background condition traffic volumes are available for review in the City offices.

Background Intersection Levels of Service. Intersection level of service calculations were performed using the TRAFFIX software program and the background traffic volumes. The results of these computations are listed in Table 3.4-2 alongside the existing conditions scenario.

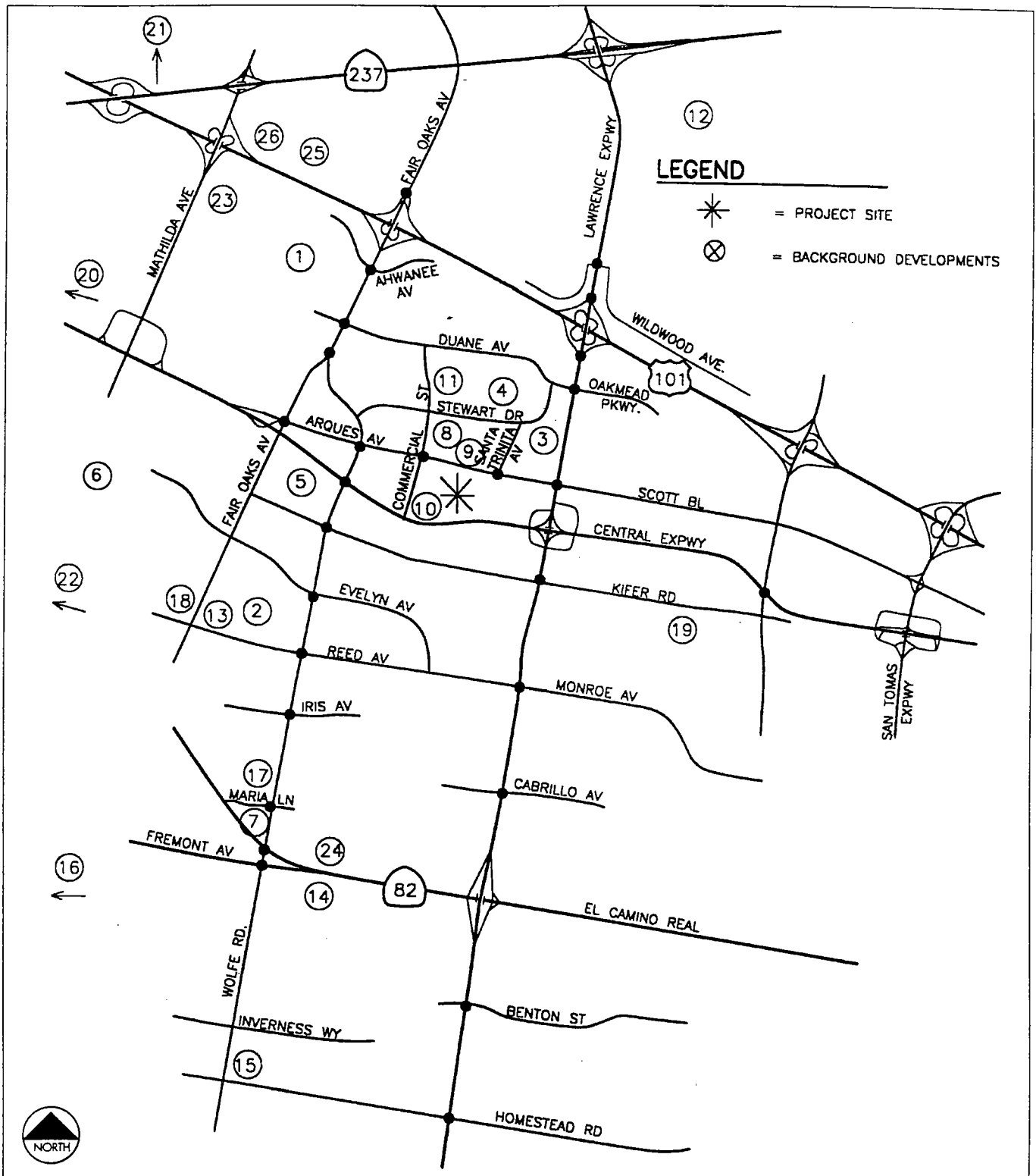
Under background conditions, the level of service designations (letter “grades”) remain relatively constant compared to the existing condition, although the average stopped delay increases by a modest amount at most intersections. The intersection of Lawrence Expressway and Reed Avenue changes from LOS D to LOS E during the AM peak hour, and the intersection of Wolfe Road and Arques Avenue changes from LOS C to LOS D during the PM peak hour. Three intersections (Wolfe Road at Central Expressway, Wolfe Road at El Camino Real, and Lawrence Expressway at Duane Avenue) change from LOS D to LOS E in the PM peak hour. Because LOS E or LOS F is considered unacceptable for City, non-CMP intersections, the intersections of Wolfe Road at Central Expressway (PM) and Lawrence Expressway at Duane Avenue (PM) deteriorate to unacceptable levels under background conditions.

Impacts and Mitigation Measures

Significance Criteria

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

- The addition of project-generated traffic causes the level of service at a CMP intersection or roadway to drop below LOS E (to LOS F); or the addition of project-generated traffic to a CMP intersection operating at LOS F under background conditions causes an increase in critical movement delay of four or more seconds *and* project traffic increases the critical volume to capacity ratio by 0.01 or more. For all non-CMP intersections and roadways located within the City of Sunnyvale, the addition of project traffic increases critical movement delays of four or more seconds and project traffic increases the critical volume-to-capacity ratio by 0.01 or more at an intersection operating at LOS E or LOS F under background conditions.⁴
- The addition of project traffic causes a freeway segment’s operation to deteriorate below LOS E (to LOS F) or the addition of project traffic to a freeway segment already operating at LOS F under existing conditions exceeds the threshold of one percent of the freeway segment’s capacity.
- The addition of project traffic results in insufficient capacity being available for left turn (or ramp) queuing vehicles; and queues from one intersection extend back and affect other intersections, or queues impact the operation of the intersection for through movements and other turning vehicles.



SOURCE: Barton-Aschman Associates, Inc.

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FIGURE 3.4-3 APPROVED BACKGROUND DEVELOPMENTS

EIP

Applied Materials Confidential

Table 3.4-4
City of Sunnyvale Approved Background Developments

Location ¹	Project/Description	Size	Peak Hour Trip Generation ³			
			AM		PM	
			In	Out	In	Out
1	Navair Residential	85 D.U.	16	47	56	30
2	King George Apartments	268 D.U.	23	114	115	54
3	348 Santa Trinita (R&D)	89,896 s.f.	92	19	14	82
4	955 Stewart (R&D)	40,000 s.f.	41	8	6	37
5	Maxim (Office)	93,046 s.f.	158	19	30	144
6	Sunnyvale Town Center Mall (Retail) (Theater)	170,000 s.f.	69	44	206	227
		4,000 seats	0	0	297	263
7	El Camino Real (Hotel)	63 rooms	22	15	23	16
8	Stewart & DeGuigne (R&D)	128,960 s.f.	132	27	21	117
9	Fry's Electronics (Retail)	151,000 s.f.	95	61	333	347
10	Applied Materials (R&D)	54,150 s.f. ²	56	11	9	49
11	Freestone (R&D)	420,000 s.f.	432	89	68	386
12	Elko (Office)	3,600 s.f.	6	1	1	6
13	Neighborhood Commercial Building	6,500 s.f.	—	—	5	7
14	Hotel	62 rooms	21	14	20	18
15	Restaurant	10,215 s.f.	7	0	36	17
16	Gas Station	8 pumps	40	40	54	54
17	Town Homes	11 D.U.	1	3	3	2
18	Town Homes	19 D.U.	0	5	5	2
19	Office Building	88,000 s.f.	91	19	14	81
20	R&D	217,810 s.f.	109	30	19	77
21	Manufacturing R&D	375,000 s.f.	597	142	161	522
		375,000 s.f.				
22	Hotel	110 rooms	38	24	36	32
23	R&D	126,960 s.f.	82	20	13	64
24	Town Homes	22 D.U.	1	6	6	3
25	Apartments	30 D.U.	2	13	12	6
26	Single Residential Occupancy	194 D.U.	15	44	41	26

Source: City of Sunnyvale Traffic Engineering

Notes:

- 1 See Figure 3.4-3 for location of approved developments.
- 2 This square footage reflects space that is currently under construction, such as the Technology Center, but only that portion associated with new employees. Thus, for the Technology Center, the large tool bays are not included since they do not generate trips.
- 3 Peak hour trips represent net new trips, subtracting existing trips and any pass-by trips.

- The project increases demand for transit service to such a degree that accepted service standards are not maintained, or create congestion that affects transit services, e.g., delays worsen on a roadway that a specific transit route serves.
- The project is found to cause modifications or elimination of existing bicycle and pedestrian facilities, bicycle lanes, routes and paths, and expressway shoulders used for bicycle travel or affect future bicycle plans.
- The project is found to create localized congestion and interfere with traffic flow at the project site entryways.
- The project is found to have inadequate parking supply (based on City Code requirements).
- The project is found to have impacts related to construction activities, including traffic impacts, construction equipment staging areas, and/or potential damage to the study area roadbeds.

Methodology

The amount of traffic associated with a project is estimated using a three-step process: (1) trip generation, (2) trip distribution, and (3) trip assignment. In the first step, the amount of traffic entering and exiting the site is estimated on both a daily and a peak-hour basis. In the second step, the directions travelers use to approach and depart the site are estimated. Vehicle trips are then assigned to specific streets and intersections in the third step.

Trip Generation. The amount of traffic generated by a development is estimated by applying the appropriate trip generation rate to the size of the development, expressed in 1,000s of square feet (s.f.) The trip generation rates used in this analysis are those published in the Institute of Transportation Engineers' (ITE) *Trip Generation* Report. The proposed project would add 430,880 net s.f. of corporate headquarters space and 162,720 net s.f. of manufacturing space. For this analysis, ITE's "Corporate Headquarters" use was deemed appropriate for the Arques Campus based on ITE's specification: "A corporate headquarters building is a single tenant office building that houses the corporate headquarters of a company or organization, which generally consists of offices, meeting rooms, space for file storage and data processing, a restaurant or cafeteria, and other service functions." As the Etch Division Headquarters contains all of these building uses, this rate was applied to estimate the traffic generated by the office, campus cafeteria, campus recreation center, campus conference center, and campus training room uses. The "Manufacturing" trip rate was applied to the 162,720 s.f. of space proposed for Applied's "working laboratory" of manufacturing processes.

The resulting traffic generated by the proposed project was then reduced by five percent to reflect Transportation Demand Management (TDM) and transit trip reduction standards contained in the 1998 CMP "Transportation Impact Analysis Guidelines." The five percent trip reduction reflects the allowances granted by the CMP for Applied Materials' policy of providing financial incentives for encouraging transit use, and the company's shuttle bus program which connects the Arques Campus with the CalTrain commuter rail station located at Lawrence Expressway. It should be noted that a 15 percent alternative transportation mode share already exists at this site.

Given these rates, the TDM reduction of five percent, and the size of the proposed development, the project is estimated to generate 3,751 trips daily. Of these, 722 trips would occur during the AM peak

hour (641 inbound and 81 outbound), and 685 trips would occur during the PM peak hour (123 inbound and 562 outbound). These trips would use the surrounding street network of city roads, county expressways, and state freeways to access and leave the site.

Table 3.4-5 presents the rates and quantities used to derive these estimates of trip generation.

Trip Distribution. The trip distribution pattern was estimated based on information contained in the Santa Clara County Center for Urban Analysis' travel demand forecasting model and existing travel patterns in the study area. The major directions of approach and departure are estimated to be:

- 21 % on U.S. 101 to and from the south (east in the vicinity of the site)
- 8 % on U.S. 101 to and from the north (west in the vicinity of the site)
- 5 % on Montague Expressway to and from the east
- 6 % on SR 237 to and from the west
- 7 % on SR 237 to and from the east
- 12 % on Lawrence Expressway to and from the south
- 6 % on Central Expressway to and from the west
- 3 % on Fair Oaks Avenue to and from the south
- 3 % on Wolfe Road to and from the south
- 2 % on Fremont Avenue to and from the west
- 2 % on Monroe Street to and from the east

The remaining trips would be distributed among cross streets connecting with these facilities. The trip distribution pattern is shown graphically on Figure 3.4-4.

Trip Assignment. The net added trips generated by the proposed development were assigned to the roadway system based on the distribution pattern reported above. Figure 3.4-5 illustrates the project-generated trip volumes assigned to the roadway network.

Environmental Analysis

1. *The proposed project would increase average delays at intersections surrounding the project site; however, none of the changes is considered to add significantly to background levels of congestion. (I)*

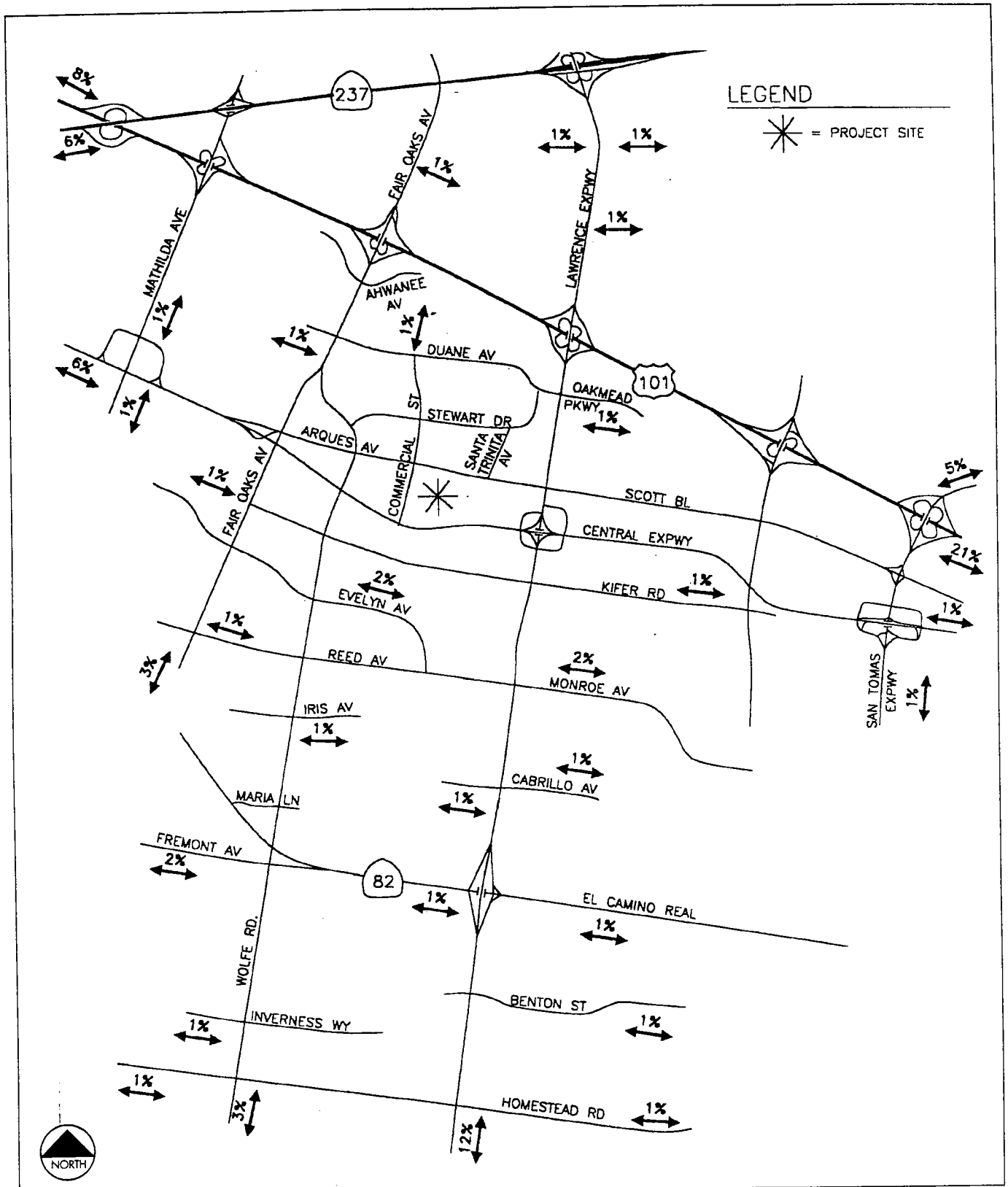
The level of service calculations indicate that under project conditions, intersection operations continue to remain relatively constant compared to the background conditions and most intersections continue to operate at acceptable levels of service (see Table 3.4-6). Service levels would reduce by one "letter grade" at two intersections: the intersection of Lawrence Expressway and Arques Avenue would change from LOS C to LOS D during the AM peak hour and from LOS D to LOS E in the PM peak hour; and the intersection of Lawrence Expressway and Reed Avenue deteriorates from LOS D to LOS E during the PM peak hour. While the reduced level of service at these intersections would trigger the City's significance threshold (LOS E), both intersections are governed by the CMP, which has a significance criterion of LOS F. None of the other intersections would experience reduced service levels below the City's acceptable operations standard.

**Table 3.4-5
Project Trip Generation Estimates—Net Added**

Use	Size	Daily Trip Rate ¹	Total Daily Trips	AM Peak Hour			Total	PM Peak Hour			Total
				Rate ¹	In	Out		Rate ¹	In	Out	
Corporate Headquarters	430,880 s.f.	7.72	3,326	1.47	587	46	633	1.39	66	533	599
Manufacturing	<u>162,720 s.f.</u>	3.82	<u>622</u>	0.78	<u>88</u>	<u>39</u>	<u>127</u>	0.75	<u>63</u>	<u>59</u>	<u>122</u>
Subtotal	593,600 s.f.		3,948		675	85	760		129	592	721
TDM Reduction		5%	<u>(197)</u>	5 %	<u>(34)</u>	<u>(4)</u>	<u>(38)</u>	5 %	<u>(6)</u>	<u>(30)</u>	<u>(36)</u>
Total	593,600 s.f.		3,751		641	81	722		123	562	685

Source: Institute of Transportation Engineers, *Trip Generation*, 6th Edition, 1997.

¹ Per 1,000 s.f.



SOURCE: SOURCE: Barton-Aschman Associates, Inc.

APPLIED MATERIALS ARQUES CAMPUS SPECIFIC PLAN EIR
 FIGURE 3.4-4 TRIP DISTRIBUTION PATTERN

EIP

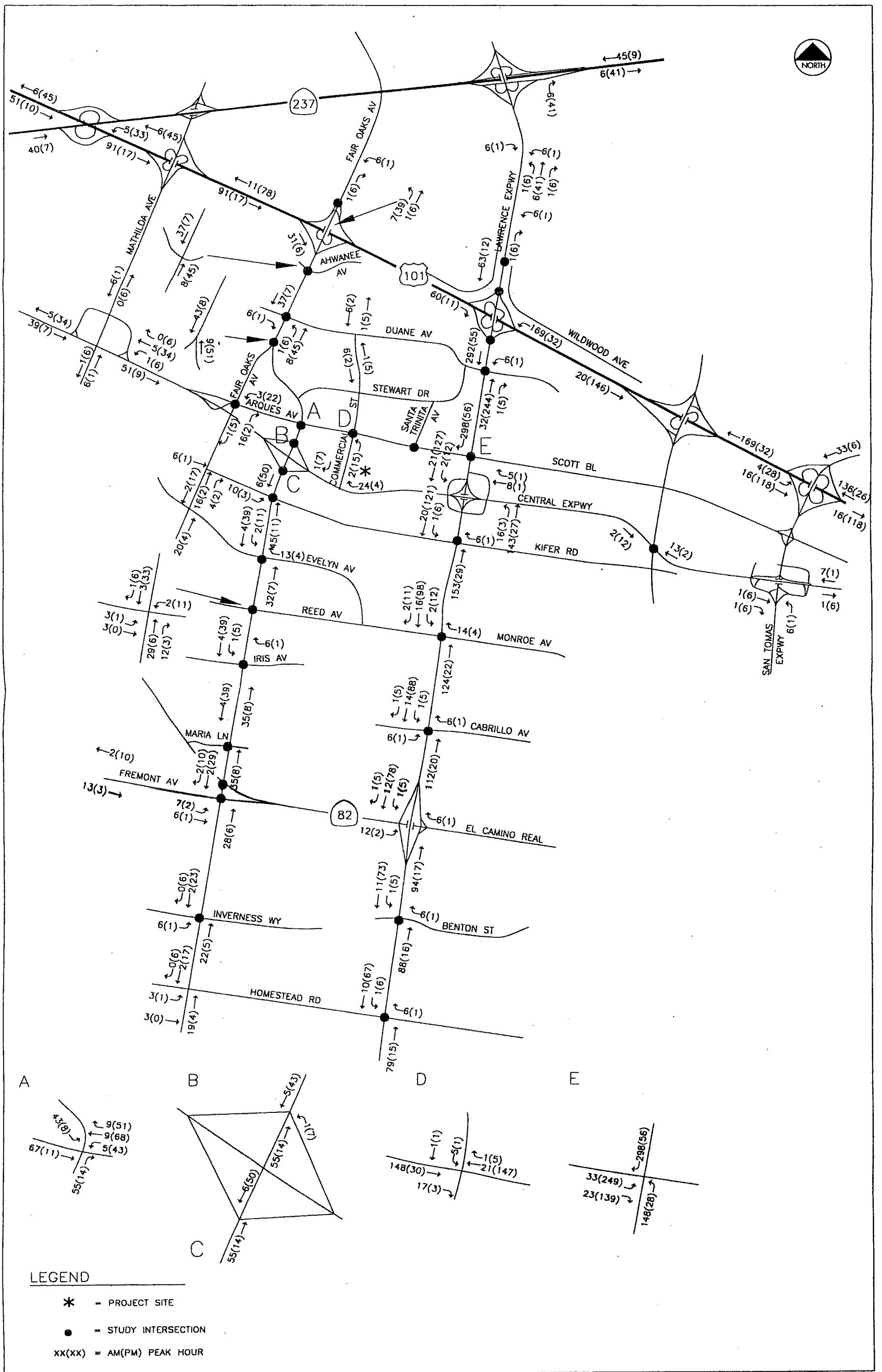


**Table 3.4-6
Background and Project Intersection Levels of Service**

Intersection	Peak Hour	Background		Project		Increase ²
		Average Delay ¹	LOS	Average Delay ¹	LOS	
Fair Oaks/U.S. 101 NB	AM	16.2	C+	16.2	C+	
	PM	26.8	D+	30.7	D	
Fair Oaks/Ahwanee	AM	12.0	B	11.9	B	
	PM	9.3	B	9.3	B	
Fair Oaks/Duane	AM	20.8	C	21.0	C	
	PM	20.0	C	20.1	C	
Fair Oaks/Wolfe	AM	17.7	C	17.7	C	
	PM	15.6	C+	15.6	C+	
Fair Oaks/Arques	AM	21.1	C	22.6	C	
	PM	33.1	D	31.3	D	
Wolfe/Arques	AM	21.1	C	23.7	C-	
	PM	25.5	D+	26.6	D+	
Wolfe/Central ³	AM	36.0	D	35.9	D	
	PM	41.0	E+	41.1	E+	
Wolfe/Kifer	AM	22.7	C	23.7	C-	
	PM	30.2	D	30.3	D	
Wolfe/Evelyn	AM	33.2	D	34.1	D	
	PM	21.8	C	21.9	C	
Wolfe/Reed	AM	32.3	D	32.6	D	
	PM	29.1	D	29.5	D	
Wolfe/Iris	AM	17.1	C	18.5	C	
	PM	18.0	C	20.0	C	
Wolfe/Maria	AM	12.4	B	13.6	B-	
	PM	28.9	D	33.4	D	
Wolfe/El Camino*	AM	32.6	D	32.7	D	
	PM	40.2	E+	40.4	E+	
Wolfe/Fremont	AM	36.9	D	37.1	D-	
	PM	35.2	D	35.4	D	
Lawrence/Wildwood	AM	8.3	B	8.3	B	
	PM	10.7	B	10.7	B	
Lawrence/U.S. 101 NB	AM	16.8	C+	17.0	C+	
	PM	13.9	B-	14.0	B-	
Lawrence/U.S. 101 SB	AM	10.6	B	12.4	B	
	PM	12.4	B	12.5	B	
Lawrence/Duane	AM	33.7	D	33.4	D	
	PM	43.9	E+	44.4	E	

**Table 3.4-6
Background and Project Intersection Levels of Service (Continued)**

Intersection	Peak Hour	Background		Project		Increase ²
		Average Delay ¹	LOS	Average Delay ¹	LOS	
Lawrence/Arques*	AM	23.0	C+	25.2	D+	
	PM	38.0	D-	45.0	E	
Lawrence/Kifer	AM	22.0	C-	23.3	C-	
	PM	42.6	E+	43.9	E+	
Lawrence/Reed*	AM	40.5	E+	44.4	E	
	PM	38.9	D-	40.2	E+	
Lawrence/Cabrillo	AM	33.9	D	34.6	D	
	PM	18.7	C	19.1	C	
Lawrence/Benton	AM	29.5	D	30.2	D	
	PM	38.0	D-	39.4	D-	
Lawrence/Homestead*	AM	33.4	D	33.8	D	
	PM	37.0	D	37.1	D-	
Commercial/Arques	AM	9.0	B	9.4	B	
	PM	10.9	B	10.7	B	
Santa Trinita/Arques	AM	9.3	B	8.9	B	
	PM	12.6	B	12.2	B	
Bowers/Central*	AM	48.4	E	48.9	E	
	PM	66.1	F	66.8	F	+ 1.2 sec/0.003

Source: Barton-Aschman Associates, Inc.

¹ Average stopped delay expressed in seconds per vehicle.

² Increase in critical movement delay and critical volume/capacity value. Reported only for intersections that are projected to operate at unacceptable levels under background conditions.

³ The Central/Wolfe intersection is grade-separated with two signalized ramps intersections located on Wolfe Road. The traffic signals at these ramp intersections are controlled by one signal controller and were evaluated as one intersection, per city staff's direction.

* Designated CMP intersection.

Shaded intersections experience a reduction in LOS with project traffic added to background conditions

Six intersections continue to operate at LOS E from background conditions to project conditions. Three of these intersections – Wolfe Road and El Camino Real, Lawrence Expressway and Reed Avenue, and Central Expressway and Bowers Avenue – are CMP intersections and operate within the acceptable significance threshold (LOS F). The remaining three intersections – Wolf Road and Central Expressway (PM peak hour), Lawrence Expressway and Duane Avenue (PM peak hour), and Lawrence Expressway and Kifer Road (PM peak hour) – fall below the acceptance threshold for non-CMP intersections within the City of Sunnyvale (LOS D). These three intersections do not, however, exceed the Second Criterion for determining a significant impact at non-CMP intersections operating at LOS E (i.e., critical movement delay of four seconds or more and an increase in critical volume-to-capacity ratio of 0.01 or more at an intersection operating at LOS E or LOS F under background conditions).

One intersection operates at LOS F throughout each of the analysis scenarios, Central Expressway at Bowers Avenue. The project does not “impact” this intersection, however, as defined by the CMP guidelines, because the addition of project traffic does not increase the average stopped delay

for critical movements by four seconds or more, and it does not increase the critical volume-to-capacity ratio by 0.01 or more.

2. *The proposed project would significantly affect three freeway segments along U.S. 101 during the PM peak hour. (S)*

As discussed under existing conditions (see Table 3.4-3), the following freeway segments are currently operating at LOS F (an unacceptable level) based on 1997 CMP monitoring data:

AM Peak Hour

Southbound U.S. 101, Lawrence Expressway to Great America Parkway

PM Peak Hour

Northbound U.S. 101, Mathilda Avenue to SR 237

Southbound U.S. 101, Great America Parkway to Montague Expressway

Southbound U.S. 101, south of Montague Expressway

As shown in Table 3.4-7, the traffic generated by the proposed project is estimated to add traffic volumes equal to or greater than one percent of the capacity of three of the above segments. According to the CMP guidelines, the addition of project traffic would therefore result in a significant impact along:

- Northbound U.S. 101, from Mathilda Avenue to SR 237 (PM Peak Hour)
- Southbound U.S. 101, from Great America Parkway to Montague Expressway (PM Peak Hour)
- Southbound U.S. 101, from south of Montague Expressway (PM Peak Hour).

MITIGATION MEASURES. Along the freeway segments affected by the project, there are no physical improvements that can be feasibly undertaken by a single development proposal to significantly improve traffic operations. Thus, measures to both increase capacity and reduce trips are necessary given. If all of the mitigation measures could be implemented, the freeway segment impacts would be reduced to less than significant. However, because the improvements (Mitigation Measures 2.1 and 2.2) are not fully funded and may not be constructed, a possibility remains for the effect to be significant. The City of Sunnyvale does not have authority or jurisdiction over Mitigation Measures 2.1 and 2.2, and cannot ensure that they would be implemented.

- 2.1 *Contributions to Northbound U.S. 101 Traffic Improvements.* On northbound U.S. 101, the project was found to significantly affect the freeway segment between Mathilda Avenue and State Route 237 during the PM peak hour. This segment experiences spillback traffic delays from downstream congestion in the vicinity of the State Route 85 interchange (junction) with U.S. 101. The Santa Clara County Transportation Advisory Measure A

**Table 3.4-7
Freeway Segment Analysis Determination**

Freeway	Segment	Direction	Peak Hour	Existing					Project				
				Lanes ¹	Avg. Speed	Volume	Density	LOS	Project Trips	Density	LOS	Impact	Percentage ²
U.S. 101	Mathilda Avenue to SR 237	NB	AM	3	50	6570	43.8	D	11	43.9	D	NO	1.13%
		NB	PM	3	15	4110	91.4	F	78	93.1	F	YES	
U.S 101	SR 237 to Mathilda Avenue	SB	AM	3	60	4970	27.6	D	91	28.1	D	NO	
		SB	PM	3	60	4800	26.7	D	17	26.8	D	NO	
U.S 101	Fair Oaks Avenue to Mathilda Avenue	NB	AM	3	65	3360	17.3	C	11	17.3	C	NO	
		NB	PM	3	60	5930	32.9	D	78	33.4	D	NO	
U.S 101	Mathilda Avenue to Fair Oaks Avenue	SB	AM	3	60	3810	21.2	C	91	21.7	C	NO	
		SB	PM	3	60	4380	24.3	D	17	24.4	D	NO	
U.S 101	Great America Parkway to Lawrence Expressway	NB	AM	3	60	4980	27.7	D	169	28.6	D	NO	
		NB	PM	3	60	6050	33.6	D	32	33.8	D	NO	
U.S 101	Lawrence Expressway to Great America Parkway	SB	AM	3	25	4150	55.4	F	20	55.6	F	NO	
		SB	PM	3	50	6870	45.8	D	146	46.8	E	NO	
U.S 101	Montague Expressway to Great America Parkway	NB	AM	3	60	3680	20.4	C	169	21.4	C	NO	
		NB	PM	3	35	5460	52.0	E	32	52.3	E	NO	
U.S. 101	Great America Parkway to Montague Expressway	SB	AM	3	60	3600	20.0	C	20	20.1	C	NO	
		SB	PM	3	20	4850	80.9	F	146	83.3	F	YES	2.12%
U.S 101	South of Montague Expressway	NB	AM	3	55	6490	39.3	D	136	40.2	D	NO	
		NB	PM	3	60	5390	29.9	D	26	30.1	D	NO	
U.S 101	South of Montague Expressway	SB	AM	3	60	4640	25.8	D	16	25.9	D	NO	
		SB	PM	3	15	4110	91.4	F	118	94.0	F	YES	1.17%
SR 237	East of Lawrence Expressway	EB	AM	2	55	4290	39.0	D	6	39.1	D	NO	
		EB	PM	2	55	4370	39.8	D	41	40.1	D	NO	
SR 237	East of Lawrence Expressway	WB	AM	2	60	3120	26.0	D	45	26.4	D	NO	
		WB	PM	2	60	3210	26.8	D	9	26.8	D	NO	

Source: Barton-Aschman Associates, Inc.

¹ Excludes High Occupancy Vehicle (HOV) and Auxiliary Lanes

² Percentage of project traffic to freeway capacity.

Shading indicates an unacceptable level of service.

passed by voters on November 5, 1996, identifies the need for interchange improvements at this location. At Project Study Report prepared for Caltrans indicates the need to include improvements to adjacent upstream and downstream interchanges and connections that are affected by the SR 85/U.S. 101 interchange. Santa Clara County Sales Tax Measure B, passed by voters on November 5, 1996, will provide the vast majority of funding required to implement these improvements. Funding shortfalls are currently anticipated however.⁵

To address this funding shortfall, currently estimated at 11% for the highway program, additional state and federal funding may be sought, reductions in the scope of the highway projects may be identified, and/or traffic mitigation fees may be assessed (or contributions sought) for land development proposals.

While a final Measure B implementation plan has yet to be developed, and appropriate shortfall funding mechanisms established, the project sponsor should provide a project-specific financial contribution based on its fair share of traffic contribution. One estimate for this fair share contribution is derived as follows. For the segment in question, the proposed project would contribute 78 trips during the PM peak hour to the exiting volume of 4110 vehicles per hour (1.9 percent). The project sponsor should make a monetary contribution of 1.9 percent of the unfunded portion of the SR 85/U.S. 101 improvement project to the VTA congestion Management Program as mitigation of its impacts on this segment of U.S. 101.

- 2.2 *Contribution to Southbound U.S. 101 Traffic Improvements.* On southbound U.S. 101, the project was found to significantly affect the freeway segments between Great America Parkway to Montague Expressway. As was the case for northbound traffic, these segments experience spillback traffic delays from downstream congestion beginning at the U.S. 101/I-880 Interchange exacerbated by traffic exiting to the SR 87 Guadalupe Parkway. In the latter case, traffic spills back from the SR 87/Airport Parkway intersection onto southbound U.S. 101, thereby blocking the right hand auxiliary and through traffic lanes.

Transportation improvement projects are under construction and programmed to relieve these traffic bottlenecks. SR 87 is being upgraded to a freeway from U.S. 101 to downtown San Jose. This project is under construction and is expected to eliminate the traffic spillback that currently exists in the right hand traffic lanes.

Widening I-880 to six lanes north of U.S. 101 and adding auxiliary lanes south of U.S. 101 to First Street should help to reduce traffic spillback onto U.S. 101 from this interchange. These improvements are programmed to be funded by Measure B and a funding shortfall of \$3 million is anticipated, based on the assumptions noted above.

For the U.S. 101 freeway segments that approach this interchange, the proposed project would contribute 3% of the mainline traffic volumes. To mitigate its impact on these segments of southbound U.S. 101, the project sponsor should make a monetary contribution to the VTA Congestion Management Program, earmarked for the I-880 widening project (which affects the performance of U.S. 101).

2.3 *Transportation Demand Management.* Efforts by Applied Materials to reduce automobile trips would reduce impacts on the regional transportation system. Applied Materials will implement measures to achieve a minimum 15% reduction of automobile trips. Techniques that can be continued, enhanced, or initiated include informing employees of transit options, subsidizing transit passes, providing shuttle services to bus and rail stops and transit centers, vanpooling and ridersharing, and promoting bicycle use. Applied Materials will submit reports to the City to document its semi-annual progress. A 15% trip reduction would lessen project trips on U.S. 101, but all freeway segments would still be expected to accommodate a greater number of trips than the significance threshold of 69 additional trips. Accordingly, this measure by itself would almost avoid the impact on the U.S. 101 between Mathilda Avenue and SR 237 (reducing project added trips to 70-71) but would leave the other two segments significantly affected.

3. *Development associated with the proposed project would result in significant queuing impacts at the intersection of Lawrence Expressway and Arques Avenue. (S)*

The "design queue" was calculated by Barton-Aschman Associates for each of the 27 intersections (all approaches) using the TRAFFIX analysis software. These calculations were performed for each study scenario, i.e., existing conditions, background conditions, and project conditions. In those instances where the design queue increased by four or more vehicles between the background condition and the project condition, field measurements and traffic observations were undertaken to determine left turn lane length, vehicle storage capacity, and traffic queue impacts on through traffic and adjacent intersections. Selection of the "over three vehicle" increase as a threshold requiring further study was deemed to be reasonable in the absence of CMP defined standards.

Table 3.4-8 reports the results of the queuing analysis for all of the intersection approaches that experience a design queue increase of four or more vehicles between the existing and project conditions. The table indicates that several of the approaches operate "over capacity" under the existing condition scenario. These same approaches worsen under the background condition scenario.

Significant project-related impacts would occur at the south approach of Lawrence Expressway at Arques Avenue, because insufficient capacity exists for left-turn queuing vehicles, and because the project traffic contribution to the design queue causes through traffic to be affected. The existing northbound double left-turn lane has available storage for approximately 31 vehicles. The projected design queue for the project condition is 46 vehicles during the AM peak hour (exceeding the left-turn lane storage capacity). Insufficient capacity is available for left-turn queuing vehicles under the background condition. This is due to the traffic generated by the approved but not yet constructed or occupied projects located in Sunnyvale and the City of Santa Clara.

Insufficient capacity is available for left-turn queuing vehicles (under existing, background and project conditions) along the west approach of Arques Avenue at Lawrence Expressway and along the east approach of Arques Avenue at Wolfe Road. While the west approach left-turn queue of Arques Avenue at Lawrence Expressway exceeds the storage capacity of the left-turn lanes under existing, background, and project conditions, the traffic operates at an acceptable level of service. The operation of the west approach insofar as left-turn storage capacity should continue to operate

Table 3.4-8
Left Turn Design Queue Analysis Determination¹—Summary

Intersection	Approach	AM/PM	Study Scenario				
			Existing	Background	Project	Available Storage	Project Impact
Wolfe/Arques	N	AM	8	10	13	14	NO
	E	PM	29	34	37	22	NO ²
Wolfe/Kifer	W	PM	7	13	14	15	NO
Lawrence/Duane	W	PM	53	67	67	22	NO
Lawrence/Arques	S	AM	25	36	46	31	YES
	S	PM	14	24	27	31	NO
	W	AM	20	23	26	16	NO ²
	W	PM	30	45	63	16	NO ²
Lawrence/Reed	W	AM	47	50	52	22	NO ³
Santa Trinita/Arques	N	PM	2	8	8	10	NO
Lawrence/U.S. 101 NB	E	AM	31	43	44	23	NO ³

Source: Barton-Aschman Associates, Inc.

¹ Intersection approaches experiencing queue increase of four vehicles or more between background and project scenarios.

² Not considered a significant project impact. Approach leg should continue to operate at an acceptable level of service as queue does not significantly impact through traffic.

³ Not considered a significant impact. The difference between the background and project levels would be less than 4.

acceptably due to the fact that the through volume for the PM peak hour for the project condition is relatively minor compared to the left-turn movement (261 through vehicles vs. 762 left-turning vehicles), and two lanes are available for the through movement. The spill-back of left-turning vehicles would occur in the left-most through lane, resulting in the blocking of that through lane. This situation currently exists and would continue under background conditions. Since the through volume is projected to be relatively minor, the through movement is expected to clear the intersection using the right-most lane, as it currently does. Therefore, this is considered to be a less-than-significant project impact.

While the east approach left-turn queue of Arques Avenue at Wolfe Road exceeds the storage capacity of the left-turn lanes, the traffic operates at an acceptable level of service. This is due to the fact that the through volume for the PM peak hour for the existing, background and project conditions is relatively minor compared to the left-turn movement (385 through vehicles vs. 538 left-turning vehicles for the project condition), and two lanes are available for the through movement. The spill-back of left-turning vehicles occurs in the left-most through lane, resulting in the blocking of that through lane. This situation currently exists and would continue under background conditions. Since the through volume is projected to be relatively minor, the through movement is expected to clear the intersection using the right-most lane, as it currently does. Therefore, this is considered to be a less-than-significant project impact.

MITIGATION MEASURE. The following measure would reduce queuing impacts to a less-than-significant level.

3.1 *Lawrence Expressway and Arques Avenue Intersection Improvements.* The project sponsor will contribute funds to the City to lengthen the northbound dual left-turn lanes from approximately 320 feet to approximately 560 feet. This action will increase left turn storage capacity to 46 cars, the design queue identified for the project condition. This extension will require modifications to the median in Lawrence Expressway, but no additional right-of-way will be required. Responsibilities for implementing this improvement, timing and phasing of construction, and payment by Applied Materials to the City will be specified in a Development Agreement, pursuant to Government Code Section 65864 *et seq.*, to be entered into between Applied Materials and the City of Sunnyvale.

4. *The proposed project would likely increase demand for transit services, but there is available capacity to accommodate additional patrons and transit service would not be adversely affected. (I)*

Estimating transit usage at 5% would generate 38 additional transit trips (34 in, 4 out) in the AM peak hour and 36 transit trips (6 in, 30 out) in the PM peak hour. Table 3.4-9 indicates that ample capacity is available to accommodate additional transit patronage generated from background developments in the study area and the proposed expansion of the Applied Materials campus. Therefore, the impact on transit service is considered to be less than significant.

As reported under Impact 1, traffic generated by the proposed development would add “average stopped delay” to vehicles traversing study intersections. In the immediate vicinity of the site, the average stopped delay would increase by 2.1 seconds per trip during the AM peak hour and 10.4 seconds per trip during the PM peak hour for buses traversing the intersection of Lawrence Expressway and Arques Avenue. At the intersection of Wolfe and Arques Avenues, average stopped delays would increase by 3 seconds per trip and 1.2 seconds per trip during the AM and PM peak hours, compared to the background condition. Therefore, the impact on transit service is considered to be less than significant.

Finally, the proposed project would not physically alter or constrain transit facilities, such as bus stops. Public sidewalks exist along both sides of Arques Avenue adjacent to the project site, and pedestrian crosswalks with signals are provided at the intersections of Arques Avenue with Commercial Street and Santa Trinita Avenue. Examination of the Specific Plan indicates that adequate and direct sidewalks would be furnished between the project’s employment sites and the street frontage (and bus stops) along Arques Avenue. Therefore, there would be no impact to transit facilities.

5. *The proposed project would not modify or eliminate existing or planned bicycle or pedestrian facilities. (I)*

The Santa Clara County Bikeways Map designates a bicycle route along Central Expressway, west of Wolfe Road. Central Expressway, east of Wolfe Road, and Lawrence Expressway are also accessible to cyclists, since all expressways in the County are designated as accessible to bicyclists. Additional bicycle lanes along Reed Avenue and along Wolfe Road provide a connection to the residential areas to the south and west. Public sidewalks exist along both sides of Arques Avenue,

**Table 3.4-9
Bus Service Characteristics – Peak Hour¹**

Bus Route	Load Factor ²			
	AM Peak		PM Peak	
	NB EB	SB WB	NB EB	SB WB
Local # 41 Lawrence Caltrain Station to Sunnyvale Industrial Area	--	0.04	--	0.05
Local # 56 Fair Oaks & El Camino to Milpitas	0.36	0.04	0.08	0.35
Express # 140 Fremont BART Station to Sunnyvale Caltrain Station	--	0.04	0.04	--
Limited Stop # 304 South San Jose to Mountain View Caltrain Station	--	0.10	0.14	--

Source: SCVTA, Service Planning and Operations, 1998, and SCVTA Transit Schedule July, 1998.

Note:

1 During the periods from approximately 6:00 AM to 9:00 AM and 3:00 PM to 6:00 PM.

2 Based on a capacity of 28 passengers for the local transit buses and 45 passengers for the express and limited stop transit buses.

and pedestrian crosswalks with signals are provided at the intersections of Arques Avenue with Commercial Street and Santa Trinita Avenue. Examination of the Specific Plan indicates that adequate and direct sidewalks would be furnished between the project's employment sites and the street frontage along Arques Avenue.

No modifications or elimination of existing bicycle and pedestrian facilities, bicycle lanes, routes and paths, and expressway shoulders used for bicycle travel are proposed as part of the project. Therefore, there would be no impact on bicycle and pedestrian facilities.

The City of Sunnyvale General Plan and the Santa Clara County General Plan and Bicycle Plan were reviewed to determine the projects' impact on future bicycle plans. The results of this review of proposed changes to the Arques Avenue frontage, curb cuts, traffic accessing and leaving the site, and landscaping indicate that the project would not impact future bicycle plans. Therefore, the project would have no impact on future bicycle plans.

The proposed project does not include any off-site bicycle or pedestrian facilities, but does propose that bicycle racks be installed at strategic locations throughout the campus. Employees would also have access to on-site showers that encourage bicycle use. The Specific Plan also provides for a comprehensive pedestrian pathway system linking all major site components with one another and Arques Avenue. Walkways would be between 8 and 16 feet wide and would comply with the Americans with Disabilities Act (ADA). Safe lighting levels are also proposed.

6. *The design of the proposed project's accessways would not adversely affect local circulation along Arques Avenue or California Street. (I)*

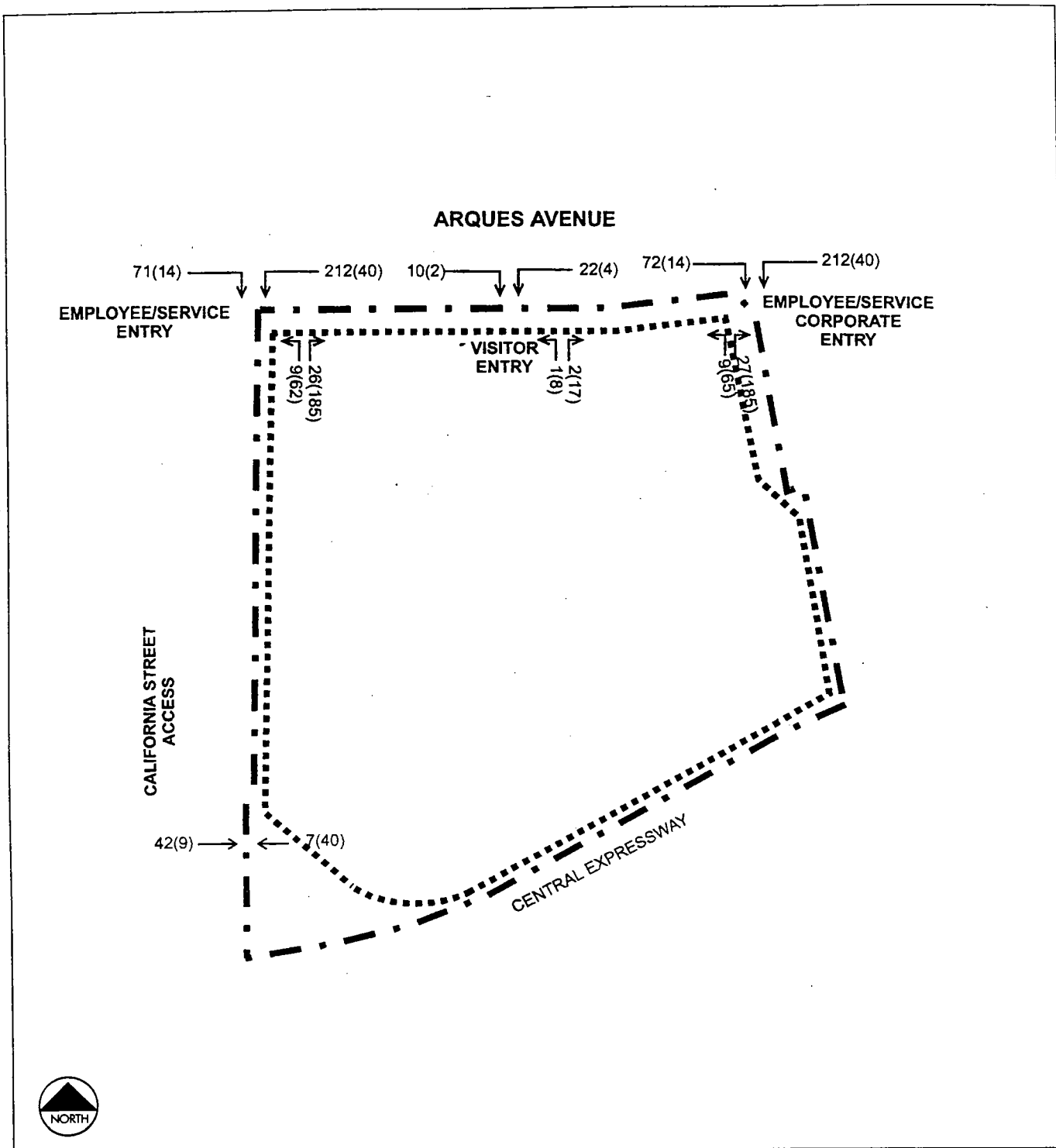
A site entrance operations analysis was completed to determine the required queuing storage area for the project access driveways necessary to accommodate projected inbound traffic volumes for the Specific Plan buildout condition. The peak inbound traffic volume would take place during the AM peak hour. Therefore, the analysis presented here was only undertaken for the AM peak hour condition.

The number of vehicles that can enter the main entrance security checkpoints, per lane, is related to the angle of approach (sharp turns have less capacity than straight-in runs), the type of gate control used, the familiarity of the driver with the entrance gate, and the degree of conflict with pedestrians. Based on the proposed on-site circulation system shown in the Specific Plan and the existing type of access control currently being used, the existing hourly entrance gate capacity was estimated. Assumptions were made concerning the method of entrance gate access control and security procedures for employee vehicle processing in order to estimate the hourly inbound capacity. These assumptions include:

- Easy approach access
- Security procedures in place for processing employee vehicles
- Employees are familiar with the entrance gates (same drivers enter daily)
- Minimal degree of conflict with pedestrians.

Given the above assumptions, Barton-Aschman Associates estimated the entrance service capacity to be 1,100 vehicles per hour per lane. Based on the existing traffic volumes and the approved trip generation estimates, the estimated AM peak hour inbound flow rate to the overall campus would be approximately 1,200 vehicles. The primary access to the site is from Arques Avenue, where there would be two employee/service entrances and one visitor entrance. Additionally, there is an employee/service entrance at California Street. It was assumed that the proposed main entrance and exit (easternmost access point) would be the primary point of access to the eastern parking structure and surface parking. It was also assumed that the proposed employee entrance and exit (westernmost access point) would be the primary point of access to the western parking structure and surface parking. Approximately 560 vehicles would access the main entrances on Arques Avenue. Projected inbound AM peak hour traffic volumes at the visitor entrance on Arques Avenue and the employee entrance on California Street would handle a significantly lower volume of inbound traffic compared to the volumes projected at the main employee entrances on Arques Avenue. Figure 3.4-6 shows the peak hour project traffic assignment at the site access driveways.

The assumed method of access control (same as the existing condition) can process a maximum of 1,100 inbound cars per hour per lane. Therefore, one inbound lane is required at each of the employee entrance on Arques Avenue ($560/1,100 = 0.51 = 1$ lane). This does not exceed the number of inbound lanes proposed in the Arques Campus Specific Plan; therefore, no access modifications would be required.



SOURCE: Barton-Aschman Associates, Inc.

APPLIED MATERIALS ARQUES CAMPUS SPECIFIC PLAN EIR
 FIGURE 3.4-6 PEAK HOUR PROJECT TRAFFIC ASSIGNMENT AT SITE ACCESS DRIVEWAYS

EIP

3.4-31

Resulting average and maximum queue lengths were also calculated for the peak inbound period to verify that the expected queue would not extend onto Arques Avenue. The estimates of needed queuing storage space were obtained by applying standard queuing formulas. The results indicate that, on average, 9 inbound vehicles would arrive at the employee entrances each minute and potentially queue ahead of the employee entrance security checkpoints facing Arques Avenue. Since average queues are usually exceeded about 50 percent of the time, it is customary to include a value that represents the queue length for the 95th percentile (queues will be this length 5 percent of the time) which represents the design queue length. The results indicate that for design purposes, a total of 12 inbound vehicles would need to be stored in advance of the main employee entrances on Arques Avenue. Therefore, the security checkpoints/gatehouses for the main employee entrances should be setback 125 feet from Arques Avenue to accommodate projected maximum queue lengths. This assumes that the Arques Avenue (employee access) driveways would be four-lane roadways (two inbound and two outbound lanes) as shown in the Specific Plan. For outbound traffic, the two outbound lanes would be striped to accommodate outbound left and right turning vehicles, which would reduce average vehicle delay compared to a single lane exit. Based on these provisions, there would be no impact on site circulation and access.

7. *The proposed project would include sufficient on-site parking spaces to satisfy anticipated parking requirements. (I)*

A parking supply of 2,975 spaces is proposed for the overall site which is expected to build out at 1,114,600 gross square feet of development. This yields a parking ratio of 2.67 spaces per 1,000 square feet of corporate office/laboratory development. This parking supply is consistent with the average demand reported by the Institute of Transportation Engineers for general office buildings (2.79 spaces/1,000 gsf), higher than the average demand rate reported for office parks in a campus type setting (2.52 spaces/1,000 gsf), and substantially higher than a limited sampling of research centers. The City's zoning ordinance would require between 2,229 and 4,458 parking stalls for the site at buildout. The proposed 2,975 spaces falls within the acceptable range required by the City. Therefore, the proposed parking supply should be sufficient.

The ADA requires that parking be provided for handicapped drivers. The number and location of spaces signed and striped for handicapped individuals shall be designed to conform with City and State code requirements. The site development plan would be subject to review and approval by the City of Sunnyvale. As a result, no impacts were identified.

8. *Construction activity associated with the Arques Campus Specific Plan is not expected to significantly affect the local circulation network. (I)*

Project construction is expected to take place over a four-year period, primarily in two phases, as market conditions permit. At the peak of construction activity, it is anticipated that project construction worker trips and daily truck trips for the transport of construction equipment and materials would total approximately 170 daily trips. Construction activities associated with the proposed project would occur on the site of the existing Applied Materials campus and are not expected to impact external streets, since there is adequate roadway capacity to absorb these trips in both peak and off-peak periods. Project construction worker trips generally would occur in off-peak periods, starting work by 7:00 AM and stopping work by 6:00 PM, outside typical traffic

peak periods. Also, there is enough land area on-site to accommodate all parking needs during construction of the project so that construction staging would take place entirely on-site.

9. *Near-term cumulative growth in the year 2003 would not result in any unacceptable service levels at study intersections. (I)*

A near-term cumulative analysis is provided to evaluate cumulative traffic impacts in the year 2003. The approach for calculating expected growth was determined in consultation with City of Sunnyvale staff. Expected growth was estimated by:

- applying a growth factor to background conditions
- using the CMP Countywide Transportation Model and Santa Clara County Center for Urban Analysis land use forecasts for year 2005.

The resulting near-term cumulative condition (2003) traffic volumes are available for review at the City offices. Under near-term cumulative conditions, the level of service designations (letter “grades”) remain relatively constant compared to the project condition although the average stopped delay increases by a modest amount at most intersections. Changes in “local” intersection service levels between project and near-term cumulative conditions, indicated in Table 3.4-10, are projected for the intersection of Lawrence Expressway at Benton Street, which would change from LOS D to LOS E during the PM peak hour, with or without the project. The project’s contribution to the reduction in level of service would be minimal and, therefore, less than significant.

Intersections that operate at unacceptable levels under project conditions and would worsen under near-term cumulative conditions include:

- Wolfe Road and Central Expressway in the PM peak hour
- Lawrence Expressway and Duane Avenue in the PM peak hour
- Lawrence Expressway and Kifer Road in the PM peak hour
- Bowers Avenue and Central Expressway in the PM peak hour.

The reduction in intersection operations from project to near-term cumulative conditions, however, would not be sufficient to be considered a significant effect according to the criteria used in this analysis; i.e., increase critical movement delays by 4 seconds and the volume-to-capacity ratio by 0.01 or more.

A CMP intersection, Lawrence Expressway and Reed Avenue in the PM peak hour, would experience a reduction in its letter grade. While this intersection would deteriorate to LOS E, this service level is considered acceptable by CMP significance thresholds.

10. *Compared to the project condition scenario (representing 1998 existing plus background plus project-generated traffic), traffic operations under far-term cumulative conditions (year 2015) would worsen along Wolfe Road and Lawrence Expressway. (S)*

**Table 3.4-10
Intersection Levels of Service Under Cumulative Conditions**

Intersection	Peak Hour	Project			Near-Term Cumulative ⁴ (2003)			Far-Term Cumulative ⁴ (2015)		
		Avg. Delay ¹	LOS	Increase ²	Avg. Delay ¹	LOS	Increase ²	Avg. Delay ¹	LOS	Increase ²
Fair Oaks Ave. and US 101 NB Ramp	AM	16.2	C+		16.2	C+		16.2	C+	
	PM	30.7	D		30.7	D		30.7	D	
Fair Oaks Ave. and Ahwanee Ave.	AM	11.9	B		12.5	B		16.8	C+	
	PM	9.3	B		9.6	B		10.5	B	
Fair Oaks Ave. and Duane Ave.	AM	21.0	C		22.0	C		22.3	C	
	PM	20.1	C		21.1	C		22.1	C	
Fair Oaks Ave. and Wolfe Rd.	AM	17.7	C		17.7	C		17.8	C	
	PM	15.6	C+		15.9	C+		15.9	C+	
Fair Oaks Ave. and Arques Ave.	AM	22.6	C		23.2	C-		23.7	C-	
	PM	31.3	D		33.5	D		35.5	D	
Wolfe Rd. and Arques Ave.	AM	23.7	C-		27.5	D+		28.5	D	
	PM	26.6	D		30.6	D		31.1	D	
Wolfe Rd. and Central Expwy. Ramps ³	AM	35.9	D		35.9	D		38.2	D-	
	PM	41.1	E+		41.1	E+	0.2 sec/0.002	48.1	E	+0.4 sec/0.003
Wolfe Rd. and Kifer Rd.	AM	23.7	C-		25.8	D+		27.7	D+	
	PM	30.3	D		31.4	D		31.4	D	
Wolfe Rd. and Evelyn Ave.	AM	34.1	D		34.2	D		34.2	D	
	PM	21.9	C		22.3	C		22.7	C	
Wolfe Rd. and Reed Ave.	AM	32.6	D		32.8	D		32.8	D	
	PM	29.5	D		32.1	D		37.7	D-	
Wolfe Rd. and Iris Ave.	AM	18.5	C		18.5	C		18.5	C	
	PM	20.0	C		20.0	C		20.0	C	
Wolfe Rd. and Maria La.	AM	13.6	B-		15.2	C+		17.5	C	
	PM	33.4	D		33.4	D		33.4	D	

Table 3.4-10
Intersection Levels of Service Under Cumulative Conditions (Continued)

Intersection	Peak Hour	Project			Near-Term Cumulative ⁴ (2003)			Far-Term Cumulative ⁴ (2015)		
		Avg. Delay ¹	LOS	Increase ²	Avg. Delay ¹	LOS	Increase ²	Avg. Delay ¹	LOS	Increase ²
Wolfe Rd. and El Camino Real*	AM	32.7	D		34.2	D		35.7	D	
	PM	40.4	E+		40.7	E+		42.2	E+	
Wolfe Rd. and Fremont Ave.	AM	37.1	D-		38.2	D-		40.8	E+	+0.5 sec/0.009
	PM	35.4	D		36.2	D		37.0	D-	
Lawrence Expwy. and Duane Ave.	AM	33.4	D		33.4	D		36.2	D	
	PM	44.4	E		56.2	E-		75.3	F	+5.7 sec/0.010
Lawrence Expwy. and Arques Ave.*	AM	25.2	D+		29.5	D		30.6	D	
	PM	45.0	E		45.9	E		48.9	E	
Lawrence Expwy. and Kifer Rd.	AM	23.3	C-		25.9	D+		28.0	D	
	PM	43.9	E+		47.4	E		53.8	E	
Lawrence Expwy. and Reed Ave.*	AM	44.4	E		50.9	E		53.2	E	
	PM	40.2	E+		41.7	E+		45.0	E	
Lawrence Expwy. and Cabrillo Ave.	AM	34.6	D		37.0	D-		38.3	D-	
	PM	19.1	C		20.5	C		22.5	C	
Lawrence Expwy. and Benton St.	AM	30.2	D		30.2	D		30.6	D	
	PM	39.4	D-		42.4	E+		45.5	E	
Lawrence Expwy. and Homestead Rd.*	AM	33.8	D		34.9	D		35.5	D	
	PM	37.1	D-		38.9	D-		40.5	E+	
Commercial St. and Arques Ave.	AM	9.4	B		9.7	B		9.7	B	
	PM	10.7	B		10.9	B		10.9	B	
Santa Trinita Ave. and Arques Ave.	AM	8.9	B		9.3	B		9.3	B	
	PM	12.2	B		12.6	B		12.6	B	
Bowers Ave. and Central Expwy.*	AM	48.9	E		48.9	E		46.9	E	
	PM	66.8	F	+1.2 sec./0.003	72.0	F	+1.5 sec/0.004	85.5	F	+1.9 sec./0.004

**Table 3.4-10
Intersection Levels of Service Under Cumulative Conditions (Continued)**

Intersection	Peak Hour	Project			Near-Term Cumulative ⁴ (2003)			Far-Term Cumulative ⁴ (2015)		
		Avg. Delay ¹	LOS	Increase ²	Avg. Delay ¹	LOS	Increase ²	Avg. Delay ¹	LOS	Increase ²
Lawrence Expwy. and Wildwood Ave.	AM	8.3	B		8.5	B		9.5	B	
	PM	10.7	B		10.9	B		10.9	B	
Lawrence Expwy. and US 101 NB Ramp	AM	17.0	C		17.0	C		17.0	C	
	PM	14.0	B-		14.0	B-		14.0	B-	
Lawrence Expwy. and US 101 SB Ramp	AM	12.4	B		12.4	B		12.9	B	
	PM	12.5	B		12.8	B		13.8	B-	

Source: Barton-Aschman Associates, Inc.

¹ Average stopped delay expressed in seconds per vehicle.

² Increase in critical movement delay and critical volume/capacity value. Reported only for intersections that are projected to operate at unacceptable levels under background conditions.

³ The Central/Wolfe intersection is grade-separated with two signalized ramp intersections located on Wolfe Road. The traffic signals at these ramp intersections are controlled by one signal controller and were evaluated as one intersection, per City staff's direction.

⁴ Intersection levels of service do not reflect programmed improvements.

* Designated CMP intersection.

Intersections with significant impacts are shaded.

Land use assumptions used in the year 2015 analysis have been furnished by the Association of Bay Area Governments (ABAG). ABAG provides a consistent set of forecasts for Bay Area counties and cities internal use, and for regional transportation analysis. These forecasts have in turn been disaggregated by the Santa Clara County Center for Urban Analysis for use in the CMP Countywide Transportation Model. Use of the Countywide Transportation Model for this far-term analysis was deemed appropriate, given the model's incorporation of recent ABAG land use projections (*Projections 98*) and recent efforts by the Center for Urban Analysis to validate and update its model.

Results of far-term cumulative analysis are shown in Table 3.4-10. Key effects include:

- The intersection of Wolfe Road with Fremont Avenue is expected to reach LOS E during the AM peak hour by Year 2015. As mentioned above for the Central Expressway ramps, this diminished LOS would be reached with or without the Applied Materials project. Thus, the incremental effects are estimated to be not cumulatively considerable.
- Lawrence Expressway and Duane Avenue is projected to reach LOS F in the PM peak hour by 2015. This LOS would occur with or without the proposed project. The reduction in service levels satisfies the criteria for a significant impact.
- Bowers Avenue and Central Expressway would continue to operate at LOS F during the PM peak hour, as it does today. The average delay per vehicle would increase from 66.8 seconds to 85.5 seconds during the PM peak hour. This increase in delay is, however, a result of future growth; the proposed project's contribution to this long-term cumulative effect is not considerable.
- The remainder of the intersections would remain at, or better than, the appropriate LOS standard of LOS E during each peak hour of the day.

MITIGATION MEASURES. There are no physical improvements that can be feasibly undertaken by a single development project to significantly improve traffic operations at the intersection of Lawrence Expressway and Duane Avenue. Nevertheless, Applied Materials shall pay for its fair share of the projected impacts. In addition, Mitigation Measure 2.2, Transportation Demand Management, recommended for the proposed project, shall be continued. Because mitigation must rely on improvements that have not been programmed or funded, this cumulative impact would remain significant.

- 10.1 *Fair Share Contribution for Lawrence Expressway and Duane Avenue Improvements.* The City of Sunnyvale's General Plan Circulation Element identifies the need to construct a grade separation (urban traffic interchange) at the intersection of Lawrence Expressway with Duane Avenue to mitigate far-term cumulative traffic conditions. The proposed project would contribute 305 trips to this intersection during the PM peak hour, representing 3.25 percent (308/9,371) of the total traffic volume forecast for 2015. To mitigate the traffic impacts associated with the proposed project, the project sponsor shall make a monetary contribution to the City of Sunnyvale to finance its fair share portion of this urban interchange. The amount, method of payment, and timing of payment shall be specified in a Development Agreement,

pursuant to Government Code Section 65864 *et seq.*, to be entered into between Applied Materials and the City of Sunnyvale.

Notes: Transportation

- 1 Burton-Aschman Associates, Inc., *Transportation Impact Analysis: Applied Materials Arques Campus Specific Plan*, January 12, 1999.
- 2 The Central/Wolfe intersection is grade-separated with two signalized ramps intersections located on Wolfe Road. The traffic signals at these ramp intersections are controlled by one signal controller and were evaluated as one intersection, per City staff's direction.
- 3 *Signal Cycle Lengths.* With the exception of the Lawrence Expressway intersections, signal cycle lengths were measured in the field during the PM peak hour. Several cycles were measured, and the results were averaged. The AM peak hour cycles were assumed to be the same as the PM cycles. The Lawrence Expressway intersections are coordinated and signal cycles of 190 seconds were obtained from County CMP monitoring LOS calculation sheets. There are also five sets of coordinated signals on Fair Oaks Avenue, Wolfe Road and Lawrence Expressway: (1) Fair Oaks Avenue between U.S. 101 and Wolfe Road; (2) Wolfe Road at Arques Avenue, Central Expressway, Kifer Road, Evelyn Avenue, and Reed Avenue; (3) Wolfe Road at Iris Avenue and Maria Lane; (4) Wolfe Road at El Camino Real and Fremont Avenue; and (5) Lawrence Expressway between Duane Avenue and Homestead Road.

These intersections, while coordinated, have a range of cycles at which the coordinated system can operate depending upon the measured traffic volumes. Therefore, average cycle lengths were measured in the field and the same cycle lengths were used for all intersections in each system. A progression factor was assigned to each of the coordinated signals for purposes of analysis.

Lawrence Expressway HOV Lanes. The through volumes along Lawrence Expressway in the peak direction were adjusted to reflect the carpool lanes on Lawrence Expressway. Typically, carpool lanes carry fewer vehicles and have lower delays than regular travel lanes. Inclusion of these lanes in the level of service calculations can result in artificially favorable levels of service. To address this situation, the through volume in the peak direction was reduced by 15 percent to reflect an assumed HOV lane use, and the capacity of the HOV lane was not included in the level of service calculations. In the case of traffic volumes that were obtained from other sources (not obtained through turning-movement counts conducted for this analysis), it was assumed that the 15 percent reduction had already been applied to the appropriate through volumes.

Lawrence Expressway at U.S. 101 NB and U.S. 101 SB. When this analysis was performed, traffic signals had not yet been installed at these intersections. The City of Sunnyvale provided existing counts for these intersections and instructed that the analysis be performed assuming that signals were already in existence and were fully optimized.

Lawrence Expressway/Kifer Road Intersection Westbound Left-Turn Saturation Flow. The saturation flow of the westbound left-turn movement at the Lawrence Expressway/Kifer Road intersection was adjusted based on field observations. The left-most turn lane is only utilized at the beginning of each signal cycle due to the short storage length. The capacity of the two left-turn lanes was reduced from 3,150 vehicles per hour to 2,700 vehicles per hour. This adjustment was based on and is consistent with that developed for the Costco Gas Station traffic study conducted in December 1997. The analysis takes into account a programmed capital improvement to modify and lengthen the westbound turn lane, and to install adaptive traffic signal control.

Lawrence Expressway at Wildwood Avenue. This intersection does not currently exist. City of Sunnyvale staff requested an analysis of a hypothetical intersection at this location for informational and planning purposes. The traffic lane configuration and signal timing assumptions were supplied by the City.

Lawrence Expressway at Duane Avenue. The level of service calculations for this intersection were adjusted to reflect the ability of the westbound right turn movement (on Oakmead Parkway) to operate as a "free" right turn when the opposing eastbound left turns from Duane onto Lawrence Expressway are operational. This adjustment is based on field observation of existing traffic operations. The analysis also takes into account the recent completion of the Lawrence Expressway/U.S. 101 interchange improvement project.

Lawrence Expressway at Arques Avenue. The level of service calculations for this intersection were adjusted to reflect the ability of the eastbound right turn movement to operate as a "free" right turn when the opposing

westbound left turns from Arques onto Lawrence Expressway are operational. This adjustment is based on field observation of existing traffic operations.

Lawrence Expressway at Reed Avenue/Monroe Street. The level of service calculations for this intersection were adjusted to reflect the ability of the westbound right turn movement (on Monroe Street) to operate as a "free" right turn when the opposing eastbound left turns from Reed onto Lawrence Expressway are operational. This adjustment is based on field observation of existing traffic operations.

- 4 This significance criterion is consistent with those typically used by the City of Santa Clara; therefore, it applies to intersections in both Sunnyvale and Santa Clara.
- 5 Santa Clara Valley Transportation Authority. VTA Board of Directors Workshop. Update of the Measure A and B Program, January, 1999.

3.5 AIR QUALITY

Introduction

This section describes the status of the south San Francisco Bay area in regard to the attainment of clean air as defined by the State and Federal Clean Air Acts. Regulatory processes that affect the prospects for attainment are described, and the impacts that the foreseen development of the Applied Materials Arques Campus would have under provisions of the proposed Specific Plan are evaluated. The evaluation is limited to the "criteria" pollutants, i.e., those for which State and Federal ambient air quality standards exist, and to mobile, roadway and construction-activity sources.

Environmental Setting

Surrounding Land Uses

The area around the Arques Campus is generally commercial and light-industrial in character, with the exception of Amphitheater Park, which is immediately south of the project site on the south side of Central Expressway.

Criteria Pollutants

This section presents quantitative information on certain air pollutants, namely ozone, carbon monoxide, airborne particulate matter, and, because of their roles as precursors to ozone, gaseous hydrocarbons and oxides of nitrogen. These pollutants are referred to as "criteria" pollutants because they are among the select air contaminants for which there exist state and federal criteria for acceptable ambient air quality. Gaseous pollutants such as the ozone precursors and carbon monoxide principally evolve from processes that use fossil fuels and other petrochemical products in engines, in industrial processes, and in the generation of electrical power. Small particles are also among the products of combustion processes and they are released into the atmosphere along with flue and tailpipe gases. However, they are principally generated by other processes that are described below.

Airborne concentrations of several pollutants are monitored by the San Francisco Bay Area Air Quality Management District (BAAQMD) at a station in downtown San Jose, which is about seven miles southeast of the Applied Materials Arques Campus. Ozone alone is monitored in Mountain View at a station that is roughly four miles to the west. The highest ozone, carbon monoxide and airborne particulate pollution concentrations that have been recorded at those stations in each of the last eight years are listed in Table 3.5-1, along with the annual numbers of days on which concentrations exceeded the most stringent standards for each of the pollutants.

On June 25, 1998 the U.S. Environmental Protection Agency (US EPA) reclassified the San Francisco Bay Area as being in non-attainment of the federal ambient 1-hour standard for ozone: the basin had been classified as being in attainment for three years during which time too many exceedences of the standard occurred. This reversal in attainment status was likely due to year-to-year variations in atmospheric conditions on the worst days of the year for ozone pollution.¹

**Table 3.5-1
Historical Air Monitoring Data, 1990-1997**

	San Jose		Mountain View	
	Conc.	Exceedances (days)/b/	Conc.	Exceedances (days)/b/
Ozone (in ppm)/a/				
1990	0.12	4	0.10	1
1991	0.10	6	0.12	3
1992	0.12	13	0.11	1
1993	0.11	3	0.11	2
1994	0.11	2	0.08	0
1995	0.13	14	0.12	2
1996	0.11	5	0.11	3
1997	0.07	0	0.11	1
Carbon Monoxide (in ppm)/a/				
1990	11.3	5		
1991	11.0	4		
1992	7.8	0		
1993	6.9	0		
1994	8.1	0		
1995	6.1	0		
1996	6.5	0		
1997	5.8	0		
Airborne Particulate Data (in micrograms per cubic meter)				
1990	165	51		
1991	153	56		
1992	106	83		
1993	92	73		
1994	93	24		
1995	60	24		
1996	76	12		
1997	-	18		

/a/ "ppm" means parts per million.

/b/ These are the number of days on which ozone concentrations exceeded the state's 1-hour criterion; carbon monoxide concentrations exceeded the state and federal eight-hour criterion; and airborne particulates exceeded the State's 24-hour PM₁₀ standard, extrapolated to a 365-day year from approximately 60 samples per year.

The District's application for federal attainment status in regard to carbon monoxide was approved by the US EPA in March 1998. The San Francisco Air Basin has long been in attainment of the federal standards pertaining to airborne particulate matter, but it is technically unclassified for one of the federal criteria for particulate matter. The situation for State standards is different: the Basin does not meet the State's more stringent clean air criteria for ozone and does not meet the State's standard for airborne particulate matter.

Ozone. Summer is the “smog” season, the season for ozone. The upward escape of pollutants from sources near the ground is often hampered by a blanketing layer of warm air aloft, an “inversion” layer. Winds in Sunnyvale are typically light (e.g., 5 to 10 miles per hour) and from the northwest.

Ozone is a colorless gas produced from precursor compounds of hydrocarbons and oxides of nitrogen that react in warm air under sunlight over a period of hours. Ozone is not particularly evident near pollution sources such as roadways because there is a delay of some hours between emissions of the precursors and peak ozone production. That is, the substantial interlude between the earliest AM-commute emissions of the precursors and the subsequent attainment of the daily peak concentration of ozone is ample time for air currents to carry the precursors tens of miles downwind. Consequently, ozone is not found to be particularly concentrated in highly-urbanized areas but is spread out somewhat uniformly, so that it is found even in rural areas that are downwind of heavily urbanized areas.

Because ozone concentrations are not found to be particularly localized but to be widespread, ozone concentrations in Sunnyvale in the vicinity of the Applied Materials Arques Campus are likely well approximated by the recent historical data from Mountain View. (Concentrations in San Jose, Los Gatos, San Martin and Gilroy are not qualitatively different from those in Mountain View.)

Ozone concentrations are not entirely the outgrowths of the local emissions of any County, for there is a sizable component that imported. Some of the ozone precursors from the vehicular and industrial sources within Santa Clara County drift into San Benito County or into Merced County, and Santa Clara County receives some such emissions from San Mateo and Alameda counties.

Days on which ozone concentrations exceed the federal standard do not occur often in Santa Clara County, but the State's criterion level is usually exceeded on at least a day or two each year. Over a period of two decades, there has been a substantial downtrend in concentrations, but the downtrend has not been substantial enough to be manifest in the most recent eight years of data (see Table 3.5-1).

Carbon Monoxide. Winter is the season for carbon monoxide (CO) contamination, as inversion layers are also present on cold, still winter nights. On such nights, downslope “drainage” flows reverse the daytime pattern of up-slope, up-valley flow, and for several interim hours in the late evening the atmosphere is almost completely still. Under these conditions, high concentrations of air contaminants such as carbon monoxide can develop from local pollution emissions, for lack of ventilation. The peak 8-hour concentrations are usually from about 4:00 PM to midnight.

Carbon monoxide is a clear, odorless gas. The principal emissions of this pollutant occur as a component of vehicular tailpipe effluence. Consequently, at any time of the day and in any season of the year, the greatest concentrations are usually found near roadways.

Studies of carbon monoxide pollution by the San Francisco BAAQMD and Caltrans have demonstrated that during evenings on which carbon monoxide concentrations are particularly elevated there is a rather uniform cloud of the gas which persists after commute traffic has waned but which does not extend much beyond heavily urbanized areas.

There are no permanent monitoring stations in Sunnyvale but local concentrations probably generally exceed those indicated in Table 3.5-1, given the high degree of urbanization of the downtown San Jose area.

There appears to be a discernible downtrend in the data in Table 3.5-1. Sometimes such apparent short-term trends can be misleading, but there has clearly been a long-term downtrend in carbon monoxide concentrations. Twenty years ago, concentrations were higher.

Particulate Matter. There are natural processes that cause particulate matter to become airborne, such as wind erosion and fires. However, airborne concentrations of fine particles develop in urban areas mainly because conditions exist that cause dirt to be transported onto roadways where it is pulverized and "re-suspended," and because construction and demolition activities either directly release particles or cause dirt to be deposited on roadways where the same action of pulverization and re-suspension occurs. Tire wear is another source of airborne particulate matter in urban areas. In agricultural areas the tilling of fields is a seasonal source of airborne particulate matter, as is the burning of agricultural wastes.

The station in downtown San Jose is the monitoring station nearest to the Applied Materials Arques Campus. Hence, the airborne particulate data collected there are reported in Table 3.5-1. However, the downtown San Jose data are not necessarily representative of concentrations in the project area, since local sources of particulate matter may sometimes be predominant over the more uniform background concentrations. The state's particulate standard is likely exceeded in the vicinity of the Applied Materials Arques Campus on two dozen or so days of any given year. (Only a few monitoring stations in particularly undeveloped and wet areas of the State consistently report no days on which concentrations exceeded the State's standard for airborne particulate matter.)

Source Inventory of Criteria Pollutants

The BAAQMD and the California Air Resources Board track pollution sources in the San Francisco Air Basin. Roads and vehicles are the predominant sources of reactive organics, carbon monoxide, oxides of nitrogen, and airborne particles. The organic solvents used in glues, paints, and other coatings and for various industrial purposes are also a significant component of the emissions of reactive organics. The component of the particles lifted into the atmosphere and consisting of particles sized at less than ten microns is denoted by PM_{10} . Road dust accounts for the bulk of Santa Clara County's PM_{10} emissions; very little is from tire wear or tailpipe emissions. Sources of air pollutants in Santa Clara County are presented in Table 3.5-2.

Local Stationary Sources of Toxic Air Contaminates — Permitted Releases

In addition to having vehicular traffic as its major source of air pollution, Santa Clara County contains industrial facilities, some of which emit toxic air contaminants (TACs). The BAAQMD has an ongoing program that was established by State legislation (e.g., AB2588) that requires it to obtain emissions estimates from emitters of toxic air contaminants, to prioritize assessment of the reported emissions according to health risks, and to require that the owners or operators of the riskiest sites prepare full health risk assessments.

The District's public listing is not comprehensive: it is limited to sources that present the greatest risk as assessed by the District's staff.² The listing now principally shows the locations of dry-cleaning establishments; industrial sources comprise a prominent minority among the listed sources. The District's rankings of these facilities according to risk do not place any of them in Santa Clara County beyond risk level "0," which is a category for facilities for which risk reduction is not required.

Emissions from stationary sources of air contaminants that might exist in the recently completed Technology Center have already received environmental review. The future emissions from sources within the Technology Center and possibly from other facilities on the site may partly consist of air contaminants classified for regulatory purposes as toxic air contaminants. Such emissions are subject to control by the BAAQMD under the District's Toxic Air Contaminant Control Program. Permits are required from the BAAQMD for such stationary sources before a facility is permitted to construct or operate such sources, and the permitting process involves health risk assessments of all toxic releases to be permitted.

- Table 3.5-2
Santa Clara County Air Emissions (Tons/Day), 1995

	Reactive Organics	Carbon Monoxide	Oxides of Nitrogen	Particulate Matter (PM ¹⁰)
<i>Stationary Sources</i>				
Fuel Combustion	0	11	16	1
Waste Disposal	2	0	0	0
Cleaning & Surface Coatings	15	—	0	0
Petroleum Production & Marketing	2	—	—	—
Industrial Processes	2	0	1	3
<i>Totals:</i>	21	11	17	3
<i>Area-Wide Sources</i>				
Solvent Evaporation	18	—	—	—
Miscellaneous Processes/a/	5	59	5	35
<i>Totals:</i>	23	59	5	35
<i>Mobile Sources</i>				
On-Road Motor Vehicles/b/	76	720	85	2
Other Mobile Sources	7	120	23	1
<i>Totals:</i>	83	840	110	3

Source: The California Air Resources Board (World Wide Web page last updated on 10/16/97 and as shown on 3/19/98)

Note: Roundoff error and idiosyncrasies of the California Air Resources Board's methods prevent the columns from adding up exactly in some cases.

/a/ Particulate matter emissions for this sub-category are dominated by paved-road dust [13 tons/day] and unpaved-road dust [9 tons/day].

/b/ The particulate matter emissions pertain to tire wear and direct tailpipe emissions only.

Likewise, if the Technology Center or other on-site facilities make use of quantities of substances designated as Acutely Hazardous Materials (AHMs), such as chlorine gas, ammonia, or sulfur dioxide, the legislation that established the State's Risk Management Prevention Program requires that Applied Materials assess the risks associated with the use of such AHMs and develop a plan to prevent or minimize potential off-site impacts that may occur in the event of an accidental release. A new Federal law imposes similar requirements.

Regulatory Environment

The BAAQMD primarily has jurisdiction over stationary sources of air pollution but not over mobile sources such as automobiles or emissions from roadways. Construction or installation and subsequent operation of equipment that would produce stationary source air contaminants could proceed only if permitted by the BAAQMD. Among the permitting processes the District administers are those that involve health risk assessments for permitted emissions containing certain especially toxic or hazardous air contaminants, including emissions associated with remediation of contaminated soil or groundwater. Measures to reduce emissions are required if health risks exceed certain bounds and the District's permitting processes usually involve the imposition of controls of some kind on emissions. In general, the District's permitting processes are designed to protect members of the public who are not on the project site from harm due to the emissions that would be produced on the project site.

State and federal ambient air quality standards are listed in Table 3.5-3. There are several state and federal standards that pertain to pollutants other than the three for which historical data have been provided in Table 3.5-2. Data pertaining to the other pollutants have not been given above because the County is already well in attainment of all of the standards that apply to them.

The standards are intended to limit the adverse health affects of the pollutants. The ozone standards also serve to control damage to crops, natural vegetation and materials such as rubber and paint. Attainment of the particulate standards would also place limits on the degradation of visibility— for aviation safety and aesthetic satisfaction.

General Plan Policies

The City of Sunnyvale General Plan *Environmental Management Element, Air Quality Sub-Element* contains the following policies and action statements relevant to development on the project site:

- Require all new development to utilize site planning to protect citizens from unnecessary exposure to air pollutants. (Policy 3.7A.1)
- Evaluate new development with potential sources of odors or criteria air pollutants to determine whether it is appropriate for them to be located near existing or planned residential development or sensitive receptors. (Action Statement 3.7A.1a)
- Reduce automobile emissions through traffic and transportation improvements. Since traffic congestion delays increase the level of emissions, congestion management has air quality benefits. (Policy 3.7A.2)
- Develop and maintain a balanced transportation system in Sunnyvale by promoting pedestrian, bicycle and transit modes of travel. (Action Statement 3.7A.2a)
- The City should give high priority to traffic improvements that improve vehicle operating conditions (average speed, delay) such as signal timing improvements, signal synchronization, turn lanes, etc. BAAQMD guidance developed for the CMP program deficiency plans defines such improvements. (Action Statement 3.7A.2b)
- Utilize land use strategies to reduce air quality impact. (Policy 3.7B.1)

**Table 3.5-3
Ambient Air Quality Standards**

Pollutant	Averaging Time	California	Federal
Ozone	1 hour	0.09 ppm/a/	0.12 ppm
	8 hours		0.08 ppm
Carbon Monoxide	8 hours	9.0 ppm	9.0 ppm
	1 hour	20 ppm	35 ppm
Nitrogen Dioxide	annual arithmetic mean	0.25 ppm	0.053 ppm
	1 hour		
Sulphur Dioxide/b/	annual arithmetic mean	0.04 ppm	0.03 ppm
	24 hours		
	1 hour		
Suspended Particles— PM2.5(< 2.5 microns)	24 hours		65 micro gm/m3/a/
	annual arithmetic mean		15 micro gm/m3
Suspended Particles— PM10(< 10 microns)	annual geometric mean	30 micro gm/m3	150 micro gm/m3
	24 hours		
	annual arithmetic mean		50 micro gm/m3
Sulfates	24 hours	25 micro gm/m3	
Lead	30 days	1.5 micro gm/m3	1.5 micro gm/m3
	calendar quarter		
Hydrogen Sulfide	1 hour	0.03 ppm	
Vinyl Chloride	24 hours	0.010 ppm	
Visibility (Particles)	8 hours	Extinction coefficient of 0.23 per kilometer when the RH is less than 70%.	
	(10AM to 6PM PST)		

Sources: "California Air Quality", Volume XXIX, Annual Summary, California Air Resources Board, and, the Federal Register of July 18, 1997.

/a/ A "ppm" is a part per million; a micro gm/m3 is a microgram per cubic meter.

/b/ There is also a Federal "secondary" standard for sulfur dioxide, which is a goal which is to be pursued after the primary standard is attained. The criterion level is 0.5 ppm (3-hour).

- Promote extension of transit systems, and locate higher density development/redevelopment along transit corridors. (Action Statement 3.7B.1a)
- Promote mixed land use development that provides commercial services such as day care, restaurants, banks and stores near employment centers, reducing auto trip generation by promoting pedestrian travel.... (Action Statement) 3.7B.1b)
- Assist employers in meeting requirements of Transportation Demand Management (TDM) plans for existing and future large employers and participate in the development of TDM plans for employment centers in Sunnyvale. (Policy 3.7B.2)

- Enforce the provisions of the City's TDM ordinance covering businesses employing 100 or more persons. (Action Statement 3.7B.2a)
- Apply the Indirect Source Rule to new development with significant air quality impacts. Indirect Source review would cover commercial and residential projects as well as other land uses that produce or attract motor vehicle traffic. (Policy 3.7B.3)
- Increase densities near transit stations. (Action Statement 3.7B.3a)
- Require site design to encourage transit circulation and stops/waiting areas for transit and carpools. (Action Statement 3.7B.3c)
- Improve opportunities for citizens to live and work in close proximity. (Policy 3.7C.2)
- In the long term, the City should encourage a better balance between jobs and housing than currently exists in Sunnyvale to reduce long distance commuting. (Action Statement 3.7C.2a)
- Contribute to a reduction in regional vehicle miles traveled. (Policy 3.7C.3)
- The City should be a leader in implementing the Transportation Control Measures (TCM's) that are included in the Bay Area '91 Clean Air Plan, the regional plan required under the California Clean Air Act.... (Action Statement 3.7C.3b)

Impacts and Mitigation Measures

Significance Criteria

CEQA prescribes the scope and contents of environmental assessments and requires that the assessments include declarations of significant adverse impacts and prescriptions of feasible measures to mitigate the impacts. For air quality, the term 'significant' may be interpreted to mean an adverse effect which exceeds an existing state or regional agency standard governing that change. The BAAQMD has published *CEQA Guidelines* for the environmental assessment of urban projects [1996]. The guidelines suggest that the Applied Materials Arques Campus Specific Plan would have a significant impact if:

- local carbon monoxide concentrations would be substantially increased to cause the state and federal 8-hour criterion level of 9.0 ppm to be exceeded; or
- project-generated emissions of reactive organics (reactive forms of hydrocarbons), nitrogen oxides, or airborne particulate matter (PM10) from project-related sources would exceed 80 pounds per day.

Environmental Analysis

1. *Project-generated traffic would not result in local carbon monoxide concentrations that would exceed the state or federal standards for ambient air quality. (I)*

Because the proposed Applied Materials Arques Campus Specific Plan would increase the building floor area within the site by 593,600 square feet, there would be new vehicle trips to and

from the site. The estimated future carbon monoxide concentrations with and without the proposed Specific Plan development are shown in Table 3.5-4. The predicted concentrations in the years 2003 and 2015 would not exceed the state or federal standard of 9.0 parts per million (8-hour average) or the state's 20 ppm standard (1-hour). (The estimated project-generated increase in vehicular emissions of carbon monoxide would exceed 550 pounds per day, as shown in Table 3.5-5. The BAAQMD's guidelines state that when this occurs, then a microscale carbon monoxide analysis should be performed in order to determine if local concentrations would not exceed State or Federal ambient air quality standards. The results of the required analysis are presented in Table 3.5-4.)

The California Air Resources Board continues to forecast dramatically lower per-vehicle-mile emissions of carbon monoxide in future years, extending out to 2020 and beyond. Thus, the long-term prognosis for reduced carbon monoxide exposures in the project area is good—overall decreases are expected as fleet turnover occurs, in spite of ongoing regional growth in roadways and real estate development. For these reasons, the impact of the project would be expected to be insignificant.

2. *Project-generated increases in emissions of certain criteria pollutants would adversely affect regional air quality. (S)*

Buildout of the Arques Campus under the proposed Specific Plan would generate an estimated 3,751 new vehicular trips per day (a round trip is counted as two trips, one coming and one going).³ Emissions of air contaminants that would be associated with that vehicular travel are estimated in Table 3.5-5. The projected increases in oxides of nitrogen would exceed the BAAQMD significance threshold of 80 pounds per day. Therefore, the project, together with other development and growth in the region, would result in a significant air quality impact. PM₁₀ emissions would likely be less than the significance level of 80 pounds per day.

Table 3.5-5 omits non-vehicular on-site emissions such as those that would be generated by space heating, the use of solvents and paints, and the operation of engines. Such sources principally contribute emissions of reactive organics, so that, although the emissions of reactive organics associated with vehicular travel is estimated to be 65 pounds per day, there is a possibility that the total daily amount of reactive organic emissions that would be associated with the proposed project would also exceed the BAAQMD's threshold of significance for those contaminants (which is also 80 pounds per day). Nonetheless, vehicular emissions of reactive organics would be expected to account for the majority of such emissions.

Table 3.5-4
Local Carbon Monoxide Concentrations With and Without The Proposed Project

Intersection/a/		Scenarios			
		Back-ground	With Project/b/	Near-Term Cumulative	Far-Team Cumulative
		<i>Parts per Million 50' From Curb</i>			
	Year:	2003	2003	2003	2015
Wolfe Rd. & El Camino Real	Peak 8-hr (9ppm std.):	6.6	6.6	6.6	5.2
	Peak 1-hr (20 ppm std.):	10.9	10.9	11.0	8.7
Lawrence Expwy. & Duane Ave.	Peak 8-hr (9ppm std.):	7.0	7.1	7.3	5.6
	Peak 1-hr (20 ppm std.):	11.6	11.7	12.0	9.3
Lawrence Expwy. & Arques Ave.	Peak 8-hr (9ppm std.):	6.8	6.9	7.1	5.5
	Peak 1-hr (20 ppm std.):	11.3	11.5	11.6	9.2
Lawrence Expwy. & Kifer Rd.	Peak 8-hr (9ppm std.):	6.8	6.9	7.0	5.4
	Peak 1-hr (20 ppm std.):	11.3	11.4	11.5	9.1
Bowers Ave. & Central Expwy	Peak 8-hr (9ppm std.):	6.9	6.9	6.9	5.4
	Peak 1-hr (20 ppm std.):	11.4	11.4	11.5	9.1

Source: mo'c Physics Applied

/a/ The intersections selected for study are the five that have the highest amounts of delay per vehicle subsequent to completion of the project, as determined in "Transportation Impact Analysis: Applied Materials Arques Campus Specific Plan", which was prepared for Applied Materials and the City of Sunnyvale by Barton-Aschman Associates, Inc. (Parsons Transportation Group), January 12, 1999.

/b/ The carbon monoxide estimates do not have the accuracy which is implied by the given number of digits. In past examinations of the uncertainty which is attached to such estimates, which examinations were performed in similar circumstances, mo'c Physics Applied has estimated that the odds that estimated concentrations would be less than 20% off the mark were no better than two out of three.

Note: These estimates were made using the method suggested in the BAAQMD's CEQA Guidelines [1996]. The assumed operating speed was 30 mph, the background concentrations in 2003 were taken to be 5.0 ppm (8-hour) and 8.7 ppm (1-hour); for 2015 the corresponding concentrations were taken to be 4.4 ppm and 7.5 ppm, respectively. The assumed temperature was 55 degrees Fahrenheit. The traffic volumes were derived from the applicant's traffic study cited above. Other assumed factors were a 'cold start' percentage of 50%, a 'hot start' percentage of 10%, and fleet mix percentages as in the Urbemis7G model of the California Air Resources Board (CARB). The assumed temperature and the various vehicular parameters other than the estimated numbers of vehicle trips lead to an emissions factors of 9.1 grams per mile in year 2003 and 4.8 grams per mile in 2015, which were determined using "CT Emfac," a Caltrans program recommended by the CARB for application to microscale carbon monoxide analyses. A printout of the inputs and outputs from the CT Emfac program is available for review at the City's Community Development office.

Table 3.5-5
Proposed Project Vehicular Air Emissions, Year 2003

Pollutant	Emissions (pounds per day)
Reactive Organics	63
Oxides of Nitrogen	103
Carbon Monoxide	654
PM10 Particulates (including road dust)	39

Source: mo'c Physics Applied.

Note: These estimates were made using the Urbemis7G software of the California Air Resources Board, a method recommended in the BAAQMD's CEQA Guidelines [1996]. The estimates depend on a number of assumed factors that are not known to high accuracy. Thus the estimates do not have the accuracy implied by the given number of digits. The assumed winter temperature for the carbon monoxide estimate was 50 degrees Fahrenheit and the assumed summer temperature for the other contaminants was 75 degrees Fahrenheit. Other parameters were given the default values. Trip generation was assumed to amount to 3,751 vehicle trips per day, per the traffic study for the project. The printout of the Urbemis7G inputs and outputs is available for review at the City's Community Development office.

MITIGATION MEASURES. The following measures would reduce this air quality impact, but it would not be sufficient to diminish the effect to less than significant.

2.1 Vehicular Trip Reduction Measures. The Applied Materials Arques Campus Specific Plan incorporates vehicular trip reduction measures that are credited with achieving a 5% reduction in total trip generation and that are described in Section 3.4, Transportation. The emissions estimates in Table 3.5-5 incorporate the estimated trip reduction that would be brought about by these measures. To achieve greater emissions reduction, Applied Materials will develop their Transportation Demand Management Strategy to achieve a 15 percent reduction in total trip generation. Applied Materials shall employ a variety of techniques to accomplish this trip reduction. Such measures could include vanpools, subsidized transit passes, staggering work hours to reduce travel during the peak commute hours, and shuttles to transit stops and centers.

3. Emissions of particulate matter during construction could bring about locally poor air quality. (PS)

The most noticeable effect of construction activities on air quality would be that of dust being raised by the demolition, and the hauling, filling and grading needed to remove existing structures and pavements and prepare the site for the new buildings, parking areas and internal roadways. Some dust would become airborne directly from those activities, but other dust would be raised because dirt would be tracked onto roadways where it would be pulverized and thus suspended in the air as fine particles.

Dust emissions due to construction are difficult to quantify, as there are many unknowns: the winds and relative humidity during the future construction period, the soil conditions, the exact earth-moving and grading activities that would occur, the schedule of construction activities, etc. Because it is not possible to know all of the many variables that affect the lofting of dust at construction sites, only rough estimates of dust emissions can be made. The US EPA has estimated that heavy construction produces roughly 1.2 tons of particulate matter (of all particle sizes) per acre per month of activity,⁴ which is equivalent to about 40 pounds per day per acre of PM₁₀. The figure pertains to a semi-arid climate, 30% silt content of the soils, a medium activity level, with no watering as mitigation. For example, about 80 pounds per day of PM₁₀ emissions would be predicted if construction of the proposed project were to proceed at a pace that would cause two acres to be under a moderate amount of heavy construction activity (earth moving and grading) at one time.

Such emissions could temporarily cause local concentrations of airborne particles to exceed the state's criterion for acceptable ambient air quality in the immediate vicinity of the construction site. However, the State and Federal ambient air quality standards are not intended to be directly applied to construction impacts at a given site, as such impacts are temporary and localized. Instead, the BAAQMD has an opacity rule, which provides a process whereby excessive dust emissions at a construction site can be ordered abated if the dust is seen blowing off-site.

MITIGATION MEASURES. The following measures would reduce this impact to a less-than-significant level.

3.1 Construction Best Management Practices. Applied Materials will implement on-site measures for dust control during construction:

- a. temporary erosion protection with mulches, fiber mats, dust palliatives, etc.,
- b. timely plantings to permanently abate wind erosion
- c. washing or sweeping the access roadways and preventing mud from accumulating on the streets of the area during construction
- d. when there is a substantial amount of exposed earth, have on site a water truck or other means of readily watering exposed surfaces.

The following other measures or conditions would have a favorable effect on dust and could be performed instead of watering some portions of the site during some phases of construction:

- (1) seed and water inactive portions of the site until grass growth has taken hold;
- (2) refrain from grading, earth-moving or excavation activities during periods of high winds unless the earth is too damp to give off dust that could become airborne;
- (3) cover, in some way, piles of loose material that could blow away in the wind;
- (4) cover the beds of trucks hauling any sands or soils; and
- (5) provide stations for washing truck wheels and for wetting down truck beds. It is difficult to quantify the effects of such mitigation measures on 'fugitive' emissions

of PM₁₀, but it is reasonable estimate a 50% reduction rate in PM₁₀, mainly due to watering loose earth and washing or sweeping streets.

4. *Cumulative development, along with the proposed project, in the near-term and far-term scenarios would not result in significant local carbon monoxide concentrations in excess of state or federal ambient air quality standards. (I)*

Future traffic volumes associated with development in the years 2003 and 2015 are presented in Section 3.4, Transportation. The project-related traffic has been added to these volumes, and projections of local roadside carbon monoxide concentrations have been made. The results are presented in Table 3.5-4 and indicate that none of the five study intersections would be expected to have carbon monoxide concentrations that exceed the 9 ppm 1-hour standard or the 20 ppm 8-hour standard. In the near term, the highest concentrations are projected at the intersection of Lawrence Expressway and Duane Avenue, 7.3 ppm for the 8-hour period and 12.0 ppm for the 1-hour period. In the far-term cumulative scenario for the year 2015, this intersection would still have the highest concentrations of the five intersections examined, but concentrations would have lowered to 9.3 ppm for the 1-hour period and 5.6 ppm for the 8-hour period. For these reasons, this impact would be insignificant.

Notes: Air Quality

- 1 The real condition of the Basin is "borderline" in regard to the federal 1-hour standard for ozone. For example, there were no days of exceedence of the federal 1-hour ozone standard in 1997, but there were at least 4 days of exceedence at one station or another station in Santa Clara County in 1998 (*Air Currents*, a publication of the BAAQMD, May, June and July/August editions of 1998). The US EPA has recently promulgated a new ozone standard, an 8-hour standard, which is more stringent than the existing 1-hour federal standard. It took effect on September 16, 1997 (*Federal Register*, July 18, 1997).
- 2 "Toxic Air Contaminant Control Program—Annual Report 1996 Volumes I & II," BAAQMD.
- 3 *Transportation Impact Analysis: Applied Materials Arques Campus Specific Plan*, prepared for Applied Materials and the City of Sunnyvale by Barton-Aschman Associates, Inc. (Parsons Transportation Group), January 12, 1999.
- 4 "Compilation of Air Pollutant Emission Factors— Volume 1: Stationary Point and Area Sources," US EPA, AP-42 Fourth Edition, September 1985 (and later amendments).

3.6 WASTEWATER SERVICES

Introduction

The City's Initial Study identified capacity constraints in the wastewater collection system. This section of the EIR describes the wastewater collection and treatment services provided by the City of Sunnyvale. Estimates of future flows are compared to the existing capacity in the collection system and recommendations are offered to assure adequate capacity when Applied Materials seeks to develop its project. Other utilities typically assessed were found not to be potentially affected (see further discussion in Section 4.5 of this EIR).

Environmental Setting

The City of Sunnyvale is responsible for the collection, treatment, and disposal of wastewater for a service population of about 100,000 persons. Wastewater flows are conveyed by gravity to the City of Sunnyvale Water Pollution Control Plant (WPCP), located at the northern end of the City, adjacent to San Francisco Bay. The City operates an advanced treatment plant that can process up to 29.5 million gallons per day (mgd).¹ As of 1997, the treatment plant processed average dry weather flows of about 18 mgd. Given the available capacity, the City is investigating opportunities to generate revenues by processing wastewater for other jurisdictions.

Wastewater from the project site is collected in a 10-inch collector sewer main in Arques Avenue and then pumped into the Lawrence Trunk Sewer to be conveyed to the Sunnyvale WPCP. Current capacity in the Arques line is 0.8 mgd (or about 560 gallons per minute (gpm), a metric that is conventionally used to describe peak flows). The City has estimated that peak flows in the Arques line total 360 gpm, including 180 gpm from the Applied Materials Arques Campus and 180 gpm from other sources. Accordingly, the available capacity in the Arques line is 200 gpm. The Lawrence Trunk Sewer is already near capacity during peak periods of the day (8:00 AM to 10:00 AM weekdays). In general, the City seeks to maintain a 10% margin of available capacity in existing wastewater lines to provide a "safety" margin for peak flows.

When the projects under construction at the Arques Campus become operational, additional wastewater generation will occur. The estimated wastewater flow is 39,000 gpd of domestic effluent (based on an onsite population of 1,500 employees and 25 gallons per capita per day,² and 150 visitors at 10 gpd) and 142,100 gpd of industrial/process wastewater,³ for a total average dry weather flow of 181,100 gpd. To derive an estimate of peak flows, the domestic wastewater generation has been increased by a factor of 3. Because Applied Materials has the flexibility to schedule its processes and thus the generation of its industrial wastewater to avoid the peak period, it is not necessary to apply a peaking factor as is done for domestic wastewater; however, to be conservative in estimating these flows, a peaking factor of 1.25 is applied.⁴ The resulting peak flow from the Arques Campus would be 203 gpm. Combined with the 180 gpm from other sources, the Arques line will have baseline wastewater flows of 384 gpm, and available remaining capacity of 177 gpm.

Given the capacity constraints at the Lawrence Trunk Sewer, the increment of wastewater flow associated with the projects under construction at the Arques Campus would have adversely affected

the wastewater collection system. Therefore, as a condition of project approval for the Technology Center and related improvements, the City secured a payment from Applied Materials to upgrade the diversion pump station on the Arques line and to help pay for a future Fair Oaks Avenue diversion sewer that will enable the City to divert up to 3 mgd from the Lawrence Trunk Sewer to the underutilized Borregas Sewer. The upgrade to the pump station was completed in August 1998 and the Fair Oaks Avenue diversion sewer is projected to be completed in approximately one year. These improvements are anticipated to provide sufficient capacity to accommodate the Technology Center and other facilities approved for the Arques Campus in 1997.⁵

General Plan Policies

The City of Sunnyvale General Plan *Environmental Management Element, Sanitary Sewer System Sub-Element* contains the following policies and action statements pertinent to project-related wastewater issues.

- City shall provide for limitations on flow generated by new industries and enlargements of existing industries so that the total flow to the Water Pollution Control Plant will not exceed the safe operating capacity of the plant but under no circumstances is it to exceed 29.5 MGD. (Policy 3.3A.1)
- Monitor the generation of industrial wastes by new industries and enlargements of existing industries to insure that the safe treatment capacity is not exceeded at any time. (Action Statement 3.3A.1a)
- Maintain a fair and equitable allocation system of Water Pollution Control Plant treatment capacity to land use category. (Action Statement 3.3A.1c)
- Develop and implement an information system to inform sewer users of prohibited discharges, pretreatment methods, and reporting requirements. (Action Statement 3.3A.2b)
- Inspect critical points in the sewerage system annually to insure that the proper level of maintenance is being provided and that the flow in sewers does not exceed design capacity. (Action Statement 3.3B.1)
- Monitor locations where the capacity is critical in the sewerage system. (Action Statement 3.3B.1b)
- Ensure that City's 10-year Capital Plan provides for necessary Capital Improvements and Replacements. (Action Statement 3.3B.1h)

Impacts and Mitigation Measures

Significance Criteria

For purposes of this EIR, proposed development would have a significant adverse wastewater impact if it would result in:

- average dry weather wastewater flows that exceed treatment capacity of the City of Sunnyvale Water Pollution Control Plant; or
- average dry weather wastewater flows that consume more than 90% of available wastewater collection capacity of the Arques Avenue Collector Sewer Main or Lawrence Trunk Sewer.

Environmental Assessment

1. *Buildout of the proposed project would generate average dry weather flows of about 376,900 gpd (or about 0.4 mgd). This increase over baseline flows would not create a significant impact on the treatment capacity of the WPCP. (I)*

Remaining average dry weather capacity in the Sunnyvale Water Pollution Control Plant is approximately 6.25 mgd.⁶ At buildout, the Arques Campus is projected to accommodate 2,800 employees. At 25 gallons of wastewater per capita per day, domestic wastewater flows would total 72,800 gpd. Industrial wastewater is assumed to increase proportionately as a function of developed floor area and would total 304,100 gpd at buildout. The net increase from the baseline average dry weather flow of 181,000 gpd is 195,800 gpd, or nearly 0.2 mgd. There is sufficient capacity at the wastewater plant to treat this volume and thus development associated with the Arques Campus Specific Plan would have less-than-significant effects on wastewater treatment.

2. *The proposed project would generate peak wastewater flows that would consume more than 90% of available capacity of the Arques Avenue Collector Sewer Main. (S)*

The Arques Avenue Collector Sewer Main has a design capacity of 560 gpm. Remaining available capacity of the Arques wastewater line is estimated at 176 gpm. The proposed project at buildout would have onsite population of 2,800 employees and 280 visitors per day, and developed floor space of 1,114,600 square feet. Using the same per capita generation assumptions and peak factor as described in the Environmental Setting, the projected domestic wastewater flow would be 72,800 gpd. Assuming industrial wastewater generation increases proportionately with developed floor space and using a peak factor of 1.25, the industrial wastewater flow at buildout would be 304,100 gpd. The combined wastewater flow from the Arques Campus totals 376,950 gpd, for a net increase over baseline conditions of about 195,800 gpd, or 212 gpm at peak flow. This flow rate of wastewater would exceed the remaining capacity in the Arques line and result in a significant impact on the local collection system. The planned diversion of wastewater from the Lawrence Trunk Sewer to the Borregas Sewer would provide sufficient capacity in the Lawrence Trunk Sewer to accommodate the projected growth at the Applied Materials Arques Campus.

Stage I development would have an onsite population of 1,800 employees and 180 visitors, and developed floor space of 770,200 square feet. The net increase in peak wastewater flows, using the same assumptions as above, would be about 76 gpm. Thus, at Stage I development, there would be no capacity constraints in the local wastewater collection system.

MITIGATION MEASURES. The following mitigation measures would reduce the significant wastewater collection impacts of the proposed project to less than significant. Mitigation Measures 2.2 and 2.3, below, are options and either can be implemented in combination with Mitigation Measure 2.1 to effectively minimize the impact.

- 2.1 *Regulation of Industrial Processes.* Applied Materials shall conduct its industrial processes such that release of industrial wastewater does not coincide with weekday peak flows in the Lawrence trunk sewer, from 8 AM to 10:00 AM.
- 2.2 *Collection System Upgrade.* Applied Materials shall contribute funds to the City to make improvements to the 10-inch sewer capacity line in Arques Avenue, the sewer force main diversion facilities, the proposed Fair Oaks Avenue diversion facility, or other facilities, as determined appropriate by the City Public Works Department, to mitigate the peak flow impacts from buildout of the Arques Campus. The payment shall be determined based on the proportional share of Applied Materials Arques Campus peak flow to total peak flow in the Arques line. The method and timing of payment shall be specified in a Development Agreement, pursuant to Government Code Section 65864 *et seq.*, to be entered into between Applied Materials and the City of Sunnyvale.
- 2.3 *Onsite Retention.* As an option to, or perhaps in combination with, Mitigation Measure 2.2, Applied Materials can develop onsite storage facilities that will enable wastewater to be detained on site for discharge into the collection system during non-peak periods. The design, storage capacity, and discharge schedule will be subject to review and approval by the City Public Works Department, and the size, phasing, and operations of the facility shall be specified in a Development Agreement, pursuant to Government Code Section 65864 *et seq.*, to be entered into between Applied Materials and the City of Sunnyvale.
3. *The proposed development envisioned by the Arques Campus Specific Plan, in combination with other nearby development, would result in significant cumulative wastewater effects. (S)*

Proposed development in the vicinity of the Arques Campus would increase wastewater flows in the Arques line and the Lawrence Trunk Sewer. Given that the capacity of the Arques line would be exceeded under buildout of the Arques Campus and diversion is already required for the Lawrence Trunk Sewer, the proposed project in combination with other development projects contributing to these sewer mains would result in significant cumulative effects.

MITIGATION MEASURES. The same mitigation measures identified for the proposed project are applicable for the cumulative projects. Individual development applications as they are submitted to the City should be requested to control discharge of wastewaters to avoid peak periods, to improve or upgrade the collection system, or to make appropriate contributions that the City will use to make facility improvements.

Notes: Wastewater Services

- 1 Lee & Ro, Inc., Lawrence Trunk Line Capacity Study, July 15, 1997.
- 2 Robert Gallo, Senior Industrial Waste Inspector, City of Sunnyvale, telephone conversation with EIP Associates, February 5, 1999. The City uses an average wastewater generation factor of 20-25 gpd per

person. A wastewater generation factor of 25 gpd is used in this EIR analysis to present a conservative estimate.

- 3 Mike Smith, Senior Engineer, City of Sunnyvale Public Works Department, fax, March 26, 1999.
- 4 Marty Parissenti, Brian Kangas Foulk, telephone conversation and facsimile transmittal, March 25, 1999.
- 5 Marty Parissenti, Brian Kangas Foulk, and Mike Smith, City of Sunnyvale Public Works Department, telephone conversation with EIP Associates, March 25, 1999.
- 6 Agreement for Contribution of In-Lieu Funds between Applied Materials, Inc. and City of Sunnyvale, January 16, 1998; Mike Smith, City of Sunnyvale Public Works Department, telephone conversation with EIP Associates, March 25, 1999.

3.7 HYDROLOGY AND WATER QUALITY

Introduction

This section describes existing storm drainage, flood control, and water quality conditions and potential impacts resulting from adoption of the Arques Campus Specific Plan. Appropriate mitigations are proposed to address identified significant or potentially significant impacts. The analysis was based on review of existing background information provided by the project applicant, USDA Soil Conservation Service (Natural Resources Conservation Service - NRCS), and personal communication with the Santa Clara Valley Water District (SCVWD) and the City of Sunnyvale.

Environmental Setting

Hydrology

Topography and Climate. The Arques Campus Specific Plan area consists of approximately 35.5 acres located in Sunnyvale, approximately 5 miles south of the San Francisco Bay. The project site was originally developed for industrial use in 1967 and currently is used for high-technology research and development operations. Elevations at the site range from 45 to 55 feet above mean sea level (MSL). The Arques Campus site slopes gently down to the north toward San Francisco Bay.

The majority of rainfall occurs between the winter months of October and March, with relatively dry conditions for the remainder of the year. Average annual rainfall for the site is approximately 15 inches, wetter years can provide up to 25 inches.¹ Temperatures range from below freezing in the winter to approximately 100 degrees Fahrenheit during the summer months.²

Regional Surface Hydrology. Stormwater runoff in Sunnyvale is collected in the City's master storm drainage system which drains into the conduits of Sunnyvale East Channel, Sunnyvale West Channel, and Calabazas Creek, toward San Francisco Bay. Runoff from the project site drains via the City's storm drainage facilities into the Calabazas Creek channel. The City of Sunnyvale controls and maintains the storm drains that discharge to Calabazas Creek.³ Calabazas Creek drains a watershed of 21.8 square miles and is characterized as predominantly urban development including industrial, commercial and residential uses.⁴ Calabazas Creek originates in the hillsides of Table Mountain, just east of the Santa Cruz Mountains, and flows north through the Cities of San Jose, Cupertino, Santa Clara, and Sunnyvale. Downstream of Central Expressway in the City of Sunnyvale, Calabazas Creek runs directly north along the Sunnyvale-Santa Clara city boundary receiving urban stormwater runoff from both cities' storm drainage systems. Approximately 2,000 feet downstream of State Route 237 at its confluence with San Tomas Aquino Creek, Calabazas Creek drains into Guadalupe Slough which directly discharges into the Bay. The SCVWD controls and maintains all creeks within Santa Clara County.

Surface Drainage Characteristics. The Arques Campus is located in the lower watershed of Calabazas Creek. The project site is an industrial park setting dominated by low-rise industrial buildings surrounded by mixed commercial and light industrial development. The majority of the site is composed of impervious surfaces associated with existing buildings, parking lots, and related paved areas. The only pervious portions of the site are those that are landscaped. The average surface

drainage gradient across the site is approximately 6 feet/1,000 feet (0.6 percent slope).⁵ Surface runoff collects in the curbside gutters and storm drain inlets throughout the project site, discharging via the existing project storm drainage system into the existing City storm drainage facilities along Arques Avenue. The existing on-site storm drainage system is privately maintained. The City facilities along Arques Avenue consist of a 36-inch reinforced concrete pipe which extends east and discharges into Calabazas Creek. According to Sunnyvale's Public Works Department, there are no current capacity concerns with the city storm drainage facilities downstream of the Arques Campus.⁶

Soils

The site is underlain by very deep, level, somewhat poor to poorly drained soils identified as the Sunnyvale-Castro-Clear Lake Association. This association developed in alluvium and occupies low-lying positions on the alluvial plains of the valley floor extending from San Jose northwesterly to the tidal marsh areas of the San Francisco Bay and southeast of Gilroy. The soils of this association consist of silty clay and clay surface soils and mottled, calcareous silty clay and clay subsoils. The fine-textured clays commonly contain sandy, gravelly, and silty lenses interbedded within the upper 10 feet.⁷ These soils typically exhibit very slow infiltration and high shrink-swell potential.⁸ The hazard of erosion is none to slight.⁹

Surface Water Quality

The water quality of the region is monitored by the Regional Water Quality Control Board, San Francisco Bay Region (Regional Board). The Regional Board implements a Water Quality Control Plan (Basin Plan) to achieve the maximum possible benefit to water quality throughout the region. Present and potential water quality problems identified by the Regional Board in the Basin Plan include the disposal of municipal wastes and wastewater, and leaking underground tanks.

Within the lower Calabazas watershed, urban runoff from the project site and immediate vicinity collects in the storm drainage lines along Arques Avenue. No studies have been made of the water quality of the stormwater discharge associated with Calabazas Creek.¹⁰ Calabazas Creek is not used as a source of municipal water. Beneficial uses of the surface waters of Calabazas Creek include recreation, fish migration and habitat, industrial water supply, and aesthetic enjoyment.¹¹ Given the current land use and adjacent areas, stormwater runoff from the project area would be typical of urban watersheds. As such, the quality of surface water leaving the site and surrounding urban area is affected primarily by non-point source pollutants.

Nonpoint-source pollution consists of materials and chemicals that are washed from the Sunnyvale storm drainage system into Calabazas Creek from a variety of sources. These pollutant sources are the industrial and commercial zones, freeways, streets, residential neighborhoods, construction sites, and parking lots. Pollutants enter the drainage system through a variety of sources, such as industrial/commercial wastes, custodial/household products, building/home maintenance supplies, landscape materials and products (pesticides, herbicides, and fertilizers), oil and grease from automobiles, heavy metals found in exhaust, weathered paint, tires, and other constituents associated with current land use in the City.

Applicable Plans and Regulations

Drainage. Development standards in the City of Sunnyvale require that culverts and drainage systems be designed to accommodate the runoff from the 10-year recurrence interval storm event. Proposed drainage plans must be approved by the Building Department.¹²

Water Quality and Stormwater Discharge Permitting Regulations. The federal Clean Water Act prohibits the discharge of pollutants to navigable waters from point and non-point sources unless authorized by a National Pollutant Discharge Elimination System (NPDES) permit. Point-source discharges generally pertain to discharges from wastewater treatment facilities or other identifiable dischargers. Non-point discharges generally pertain to areawide or stormwater discharges. Point-source discharges are generally regulated by individually issued NPDES permits, whereas stormwater discharges are generally regulated by general NPDES permits that have been issued to states by the U.S. EPA. NPDES permits contain discharge prohibitions, effluent limitations, and necessary specifications and provisions that ensure proper treatment, storage, and disposal of wastewater. In California, NPDES permits are issued and enforced by the Regional Water Quality Control Boards. The Arques Campus is not a point-source discharger; wastewater from the Arques Campus is collected and treated by the City of Sunnyvale, which discharges treated wastewater under an individual NPDES permit.

With respect to stormwater discharges, the Phase I stormwater regulations in the federal Clean Water Act require two sizes of municipalities—large (population of 250,000 or more) and medium (population 100,000 to 250,000), certain construction activities, and certain industrial activities to obtain NPDES permit coverage. Municipal stormwater discharges in the City of Sunnyvale are covered under a stormwater NPDES permit issued to the countywide Santa Clara Valley Nonpoint Source Pollution Control Program. This program was instituted in 1990 to meet the Clean Water Act Phase I stormwater requirements, and is composed of the SCVWD, Santa Clara County, and 13 cities within the County (including Sunnyvale), with the SCVWD functioning as the program manager. The program operates as a collective discharger of stormwater to San Francisco Bay.

Stormwater runoff from construction sites of 5 acres or more must be covered under the State's General Construction Activity Storm Water Permit and must be managed by a Storm Water Pollution Prevention Plan (SWPPP). An SWPPP describes measures to control or minimize pollutants from entering stormwater. Stormwater runoff from industrial facilities must be covered under the State's General Industrial Storm Water Permit and also must be managed by a SWPPP. Because Applied Materials is preparing to begin operations in the recently constructed Technology Center, Applied Materials is an industrial stormwater discharger and is in the process of preparing a SWPPP for the Arques Campus. The SWPPP would be amended later to include changes in project site drainage created by the project and the State Water Resources Control Board would be notified.¹³

Under this program, the City of Sunnyvale has individual program and permit responsibilities to address stormwater quality problems within the city limits. Generally, the City has the responsibility to conduct public education programs; institute or enhance programs such as street sweeping, storm drain maintenance, and erosion control projects; identify illicit pollutant discharges to the storm drain system; and require new development and industrial discharge controls. The City meets this responsibility through the passage of resolutions and/or ordinances.

General Plan Policies

The City of Sunnyvale General Plan *Environmental Management Element, Water Resources Sub-Element* contains the following policies and action statements pertinent to project-related hydrology and water quality issues.

- Implement appropriate pollution prevention activities for targeted pollutants to comply with regulatory requirements. (Action Statement 3.4A.2b)
- When evaluating pollutant control measures, consider all potential impacts including effects on the storm drain system, sanitary sewer system, and groundwater. (Action Statement 3.4A.2d)
- Ensure that Best Management Practices (BMPs) are implemented to reduce the discharge of pollutants in storm water to the maximum extent practicable. (Policy 3.4A.3)
- Inspect industrial and commercial businesses for potential discharges to storm drains as part of industrial pretreatment inspections for the WPCP. (Action Statement 3.4A.3a)
- Modify Industrial Pretreatment permits to also require BMPs to control the discharge of pollutants to city-owned storm drains. (Action Statement 3.4A.3b)
- Continue outreach programs to industrial and commercial businesses to educate them on proper disposal of waste to the sanitary sewer and storm drains. (Action Statement 3.4A.3d)
- Encourage private property owners to label storm drain inlets. (Action Statement 3.4A.3f)
- Modify new development and re-development permitting procedures to require developers and contractors to implement BMPs before, during, and after construction to minimize pollutants discharged in storm water runoff. The report titled "Storm Water Quality Controls for New Developments in Santa Clara Valley and Alameda County: A Guide for Controlling Post-Development Runoff" will be used as guidance to achieve post-development controls. (Action Statement 3.4A.3i)
- Continue to participate with the SCV NPS Control Program to hold workshops to notify developers, consulting firms, and contractors of the General Construction Activity Storm Water Permit; to notify industries of industrial NPDES storm water permit requirements and everyone about the requirements of the City's area-wide municipal storm water NPDES permit. (Action Statement 3.4A.3j)
- In addition to sweeping streets for aesthetic purposes, sweep to prevent pollutants from entering storm drain inlets. Similarly, in addition to cleaning storm drain inlets to prevent flooding, clean inlets to remove pollutants from the storm drain system. The "BMPs for Street Cleaning and Storm Drainage Facilities" developed by the Alameda County Urban Runoff Clean Water Program may be used as guidance. (Action Statement 3.4A.3m)
- Effectively prohibit illicit discharges and improper disposal into the storm drain system. (Policy 3.4A.4)

- Encourage all residents, industrial and commercial facilities, and public agencies to report spills and illegal dumping incidents to the WPCP in order to initiate an immediate response and log spills. (Action Statement 3.4A.4a)
- Perform tests and inspections to discover unauthorized discharges into storm drains. (Action Statement 3.4A.4b)
- Track reports of spill incidents received at the WPCP. (Action Statement 3.4A.4c)
- Consider possible improvements to ordinances to more clearly spell out the requirements for implementing BMPs and for providing the authority to request monitoring or technical reports that might be necessary from dischargers to the City's storm drainage system. (Action Statement 3.4A.4e)
- Prevent accelerated soil erosion. (Policy 3.4A.5)
- Require developers and contractors to implement Association of Bay Area Governments (ABAG) soil erosion control measures. (Action Statement 3.4A.5a)
- Encourage property owners to maintain vegetative cover. (Action Statement 3.4A.5b)
- Consider the impacts on the water quality of surface runoff as part of land use and development decisions and implement BMPs to minimize the total volume and rate of runoff. (Policy 3.4D.1)
- Assure that all applicable development projects (those disturbing 5 acres or greater of land) obtain coverage under the State Water Board's general construction activity storm water NPDES permit or under a similar Regional Board permit if one is adopted in the future. (Action Statement 3.4D.1b)

Impacts and Mitigation Measures

Significance Criteria

For the drainage and water quality issues that this EIR focuses on, impacts would be significant if one or more of the following conditions would result from implementation of the proposed project.

- Significant change in rate and amount of surface runoff or change in amount of water in any water body; or
- Substantial degradation of water quality.

Environmental Analysis

1. *The proposed project would not substantially alter runoff rates or volumes into Calabazas Creek. (I)*

The majority of the Arques Campus is composed of impervious surfaces associated with the industrial park. Under the proposed project, the area of impervious surface would decrease slightly due to the increased site landscaping of approximately 15,000 square feet. Therefore, the

proposed project would not alter existing runoff conditions and would not increase the surface runoff peak flows that currently leave the site. In addition, the City has confirmed that there are no existing capacity problems with the downstream City storm drainage facilities.¹⁴ Adverse effects caused by increases in project site peak runoff or additional stormwater runoff volumes to the Calabazas Creek watershed are not anticipated.

2. *Grading and construction activities associated with the Arques Campus Specific Plan could create short-term increases in erosion and sedimentation due to non-point source pollution. (PS)*

Although the project soils are characterized by minimal erosion hazard, during the construction period, soils at the site would be exposed to the erosive forces of wind and storm runoff to a potentially significant degree. The demolition of existing buildings and paved areas, and the excavation required for new building foundations could create this exposure. Project site soils could be subject to gullying under the influence of moderate to heavy rains if preventive action were not taken. Grading activities on the site for foundations, structures, parking lots, and basement construction could affect downstream water quality adversely through erosion, the transport of sediments, and dissolved constituents entering Calabazas Creek and increasing turbidity and contaminant load.

Because the area disturbed by the proposed construction would be more than 5 acres, Applied Materials would need to seek coverage under the State's General Construction Activity Storm Water Permit prior to any site grading or construction proposed under the Specific Plan. As required by regulation, Applied Materials would file a Notice of Intent with the State Water Resources Control Board and would prepare a Construction SWPPP, which would include an erosion and sedimentation control plan. Construction and post-construction water quality control measures would be identified in the SWPPP. During construction, structural controls such as silt fences, mulching, erosion control matting, temporary gravel entrances/exits, temporary sediment basins, straw bale dikes, straw wattles, and/or drop/curb inlet sediment barriers may be used. Other construction Best Management Practices (BMP) could include practices such as restricting construction activity from the wet months of October through May, controlling dust by spraying with water, protection of soil stockpiles from rainwater, regular sweeping, and/or off-site washing of construction vehicles.

MITIGATION MEASURES. The following measures would ensure that the SWPPP meets City requirements and would reduce this potentially significant impact to less than significant.

- 2.1 *Preparation of SWPPP.* Applied Materials shall be responsible for having the construction Storm Water Pollution Prevention Plan (SWPPP) prepared by, or under the direction of, an individual who is qualified as a Certified Professional in Erosion and Sediment Control or a Registered Civil Engineer.
- 2.2 *Review and Approval of SWPPP.* The exact locations, extent, nature and details of erosion controls and Best Management Practices (BMP) shall be developed in consultation with the City of Sunnyvale. The SWPPP shall conform to City requirements for pollution prevention in construction contracts. The SWPPP shall be submitted to the City of Sunnyvale for review and approval prior to issuance of grading or construction permits.

3. *Urban runoff from impermeable surfaces associated with development pursuant to the Arques Campus Specific Plan could lower the quality of stormwater runoff entering Calabazas Creek and the Bay. (PS)*

Pollutants contained in urban stormwater include street litter, sediment, oil and grease, oxygen-demanding substances, pathogenic microorganisms, toxic metals, and pesticides. These pollutants build up on impervious surfaces during dry periods when there is little or no rain to wash them away. Sources of urban pollutants include vehicles, maintenance and landscaping practices, industrial activities, construction, non-stormwater connections to the drainage system, accidental spills, and illegal dumping. Stormwater pollutants contributed by the Arques Campus are mainly limited to oil and grease from the parking areas and pesticides and fertilizers from landscaped areas. In addition, operations associated with the existing Technology Center may also contribute stormwater pollutants. Such pollutants are addressed in Applied Materials' SWPPP, which is under preparation.

Likely sources of oil and grease from the proposed project are the surface parking lots and rooftop surfaces of the parking structures. Under the proposed project, there would be a net decrease in exposed parking surfaces. Therefore, it is expected that the project would decrease the amount of oil and grease in runoff from parking areas, and no mitigation for oil and grease is required. However, the City of Sunnyvale would likely require, through its building permit review process, stormwater quality controls to address sediment and oil and grease from the proposed parking areas.

The City of Sunnyvale is encouraging new development to divert runoff into vegetated areas for infiltration so that urban runoff pollution is minimized. Infiltration through the soil column removes pollutants from stormwater as contaminants are adsorbed onto soil particles and sometimes broken down through biological processes. At the Arques Campus, the proposed landscaping plan could be amended to integrate landscaping with the parking lots such that landscaped areas are used to detain and infiltrate parking lot runoff. This amendment could be added to the SWPPP that is currently being prepared by Applied Materials.

Landscaped areas on the project site would increase by 15,000 square feet and could potentially contribute higher amounts of pesticides and fertilizers in runoff from these vegetated areas, especially if excessive amounts were applied. This could potentially increase the pesticide and fertilizer load in stormwater runoff from the site.

MITIGATION MEASURES. The following mitigation measure would reduce potentially significant water quality impacts to less than significant.

- 3.1 *Minimize Use of Pesticides and Fertilizers.* Applied Materials shall use the minimum amount of pesticides and fertilizers necessary to properly maintain landscaping at the Arques Campus. Applied Materials shall not apply pesticides and fertilizers to its grounds if rain is imminent.

4. *The proposed development envisioned by the Arques Campus Specific Plan would not combine with other nearby development to cumulatively result in significant stormwater flows. (I)*

The proposed development at the Arques Campus would result in decreased stormwater runoff and would not combine with other development projects to cause significant effects on local drainage facilities and water quality. In addition, future development would need to comply with stormwater requirements assuring the proposed project would not contribute to degraded water quality in Calabazas Creek and the Bay. Given these requirements to be imposed on the Applied Materials Arques Campus, the fact that similar regulations will apply to other nearby development sites, and the available capacity in the drainage facilities, cumulative storm drainage and water quality impacts would not be expected to occur.

Notes: Hydrology and Water Quality

- 1 USDA, Soil Conservation Service, *Soils of Santa Clara County*, June 1968.
- 2 USDA, Soil Conservation Service, *Soils of Santa Clara County*, June 1968.
- 3 Dean Hunter, Sunnyvale Department of Public Works, Corporation Yard, telephone conversation, December 23, 1998.
- 4 Santa Clara Valley Water District, Flood Control Division, *Calabazas Creek Planning Study-Guadalupe Slough to Miller Avenue Consisting of the Combined Engineer's Report and FEIR*, April 1992; and Roy Reese, Santa Clara Valley Water, Civil Engineer, telephone conversation, December 24, 1998.
- 5 Weiss Associates, *Stormwater Pollution Prevention Plan for Applied Materials Arques Campus Site Construction*, prepared for E.A. Hathaway and Company, July 7, 1997.
- 6 Dean Hunter, Sunnyvale Department of Public Works, Corporation Yard, telephone conversation, December 23, 1998; and Brian Kangas Foulk, *Response to EIP Associates, Letter to Jerry Haag*, November 13, 1998.
- 7 Weiss Associates, *Stormwater Pollution Prevention Plan for Applied Materials Arques Campus Site Construction*, prepared for E.A. Hathaway and Company, July 7, 1997.
- 8 USDA, Soil Conservation Service, *Soils of Santa Clara County*, June 1968.
- 9 USDA, Soil Conservation Service, *Soils of Santa Clara County*, June 1968.
- 10 Beau Goldie, Supervising Engineer, Santa Clara Valley Water District, Environmental Compliance Unit, telephone conversation, December 28, 1998.
- 11 Weiss Associates, *Stormwater Pollution Prevention Plan for Applied Materials Arques Campus Site Construction*, prepared for E.A. Hathaway and Company, July 7, 1997.
- 12 Richard Bell, Civil Engineer, Sunnyvale Department of Public Works, telephone conversation with EIP Associates, January 19, 1999.
- 13 Susan Wilson, Environmental Engineer, Applied Materials, telephone conversation, February 23, 1999.
- 14 Martin B. Parissenti, P.E., Project Manager, Brian Kangas Foulk, letter to Jerry Haag, Applied Development, re: Arques Campus EIR.

3.8 HEALTH AND SAFETY

This section describes available information about chemicals in the soil and groundwater at the project site, and components of the existing buildings that could contain hazardous materials. It also describes regulatory requirements for hazardous materials management, and health and safety measures implemented by Applied Materials and its contractors. For purposes of this EIR, a "hazardous material" is any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a substantial hazard to human health or safety, or to the environment, if released. "Hazardous wastes" are hazardous materials that are to be treated, stored, transported, or otherwise managed for recycling or disposal.

Environmental Setting

Site History

The project site supported agricultural uses before it was developed for industrial uses in the 1960s. The site can be described as two parcels, an eastern parcel and a western parcel. United Technology Corporation developed the eastern parcel in 1963, and Fairchild Camera and Instrument Corporation developed the western parcel in 1967.

From about 1963 to 1982, United Technology operated on the eastern parcel, using it as a research, development, and small-scale testing facility for rocket propellants. United Technology built and maintained a laboratory building and test building, and operated three acid waste neutralization sumps, several solvent drum storage areas, and a drainage trench. The acid waste neutralization sumps and drainage trench were removed in 1983.

From 1967 to 1972, Fairchild operations included metal plating, etching and alodining, photo resist applications, screen printing, and spray painting. To support these operations, Fairchild built and operated a chemical storage area, an acid waste line, and an acid waste neutralization sump.

Hewlett-Packard purchased the western parcel in 1972 and the eastern parcel in 1984. From 1972 to 1976, Hewlett-Packard operations included wave soldering, component loading, and assembly of electronic measurement instruments. In 1976, Hewlett-Packard built a chemical yard to store hazardous materials and wastes on site. Between 1976 and 1986, Hewlett-Packard fabricated and assembled computer cabinets. Process operations included sheet metal fabrication and metal finishing operations. In 1979, Hewlett-Packard constructed the eastern side of what is now the large office/prototype lab building on site. Hewlett-Packard manufactured printed circuit boards from 1980 to 1993. During this period, Hewlett-Packard operated photographic printing processes, silk screen printing, plating lines, lamination, drilling, and finishing processes. The basement of what is now the main office/prototype lab building contained industrial wastewater treatment equipment, a chemical make-up area consisting of above-ground tanks for mixing and supplying chemicals to the manufacturing lines, boilers, chillers, and other industrial support equipment. Hewlett-Packard also operated a vehicle service center consisting of a maintenance garage, car wash, and fueling station with underground fuel storage tanks and an underground waste oil storage tank. These structures have been decommissioned. In recent years, Applied Materials acquired both parcels from Hewlett-Packard.

Some past activities have resulted in releases of hazardous materials to soil and groundwater at the project site. The *Comprehensive Environmental Response, Compensation, and Liability Act* of 1980 and the *Superfund Amendments and Reauthorization Act* of 1986 (together commonly referred to as "Superfund") establish a regulatory process to address the release of hazardous substances that may be harmful to public health or the environment. This process requires responsible parties to clean up contamination and enables parties harmed by hazardous materials releases to be compensated. The eastern portion of the project site is within a Superfund site appearing on the National Priorities List as a result of its degraded environmental conditions.¹ The western portion of the site does not appear on the National Priorities List, but it is subject to cleanup under the *Comprehensive Environmental Response, Compensation, and Liability Act*.

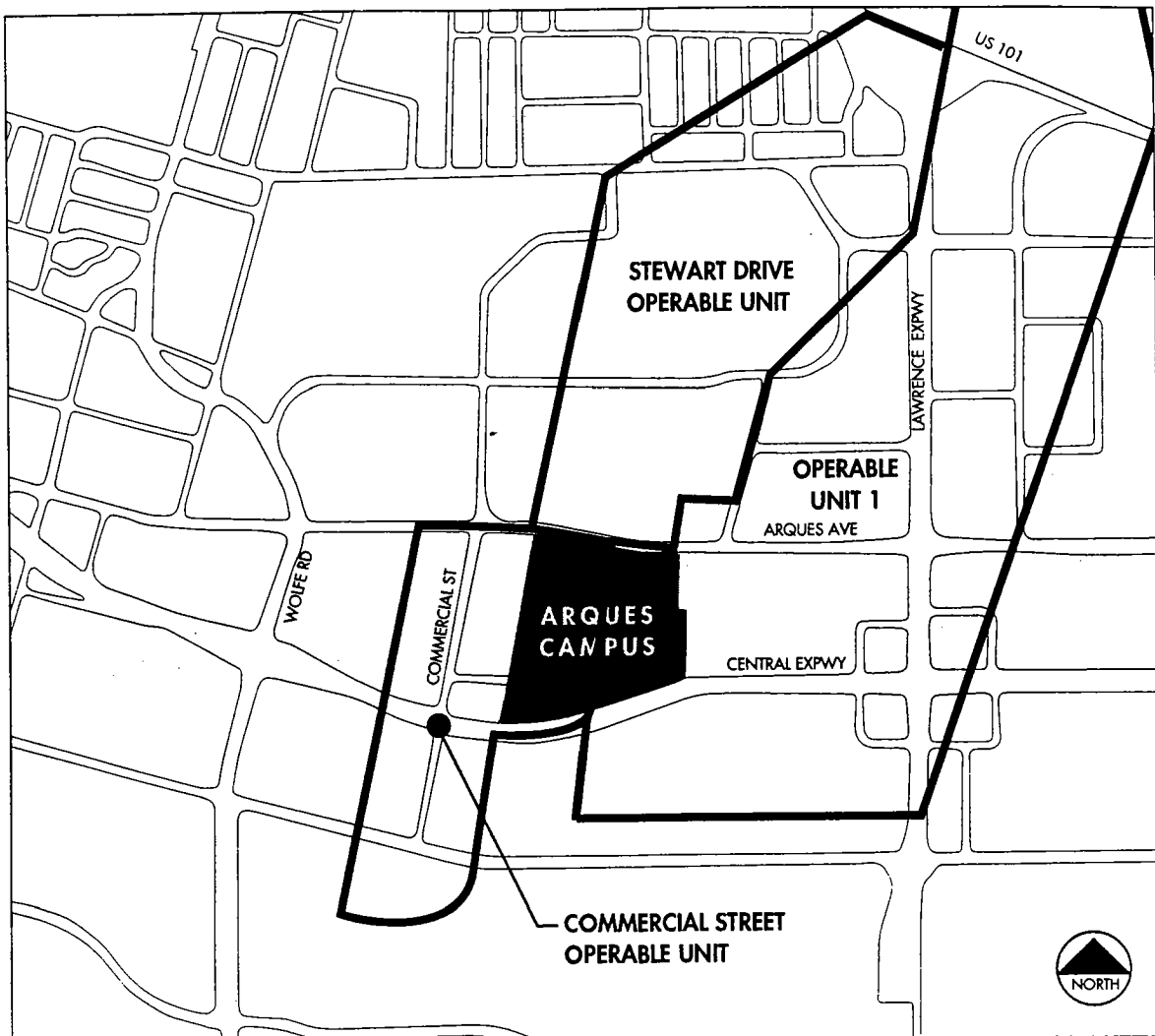
Site Conditions

A portion of the project site appears on the *State of California Hazardous Waste and Substances Sites List* as 1050 East Arques Avenue. Nearby properties, such as 928 East Arques Avenue, also appear on the list as a result of leaking underground storage tanks.² Soil and groundwater conditions at the Arques Campus are described below.

Soil and Groundwater. Groundwater in the area surrounding and including the project site has been subjected to multiple releases of volatile organic compounds, including dichloroethene, trichloroethene, and tetrachloroethene. Shallow soils in the eastern portion of the site have been found to contain total volatile organic compounds in excess of 1 part per million (ppm). Polynuclear aromatic hydrocarbons have been detected in one shallow soil sample.³ Other chemicals of concern include benzene, vinyl chloride, chloroform, dichlorobenzene, dichloroacetic acid, trichloroacetic acid, pentachlorophenol, chloromethane, Freon 113, xylenes, and ethylbenzene.⁴

Site Cleanup Orders. The oversight of sites where hazardous materials have been released to the environment often involves several agencies with sometimes overlapping authority and jurisdiction. At the project site, the San Francisco Bay Regional Water Quality Control Board (RWQCB) acts as the Administering Agency, taking preemptive authority over the cleanup of the site. The RWQCB supervises soil and groundwater investigations and, as necessary, remedial actions. It consults with other agencies when issuing permits or other authorizations not normally within its jurisdiction. It has the lead role in deciding how environmental and health risks at the site are to be managed.

The RWQCB has divided the area surrounding and including the project site into operable units to facilitate the management of the area's contamination. In identifying the operable units, the RWQCB tried to separate the facilities that were the major contributors to soil and groundwater contamination. As shown in Figure 3.8-1, the operable units include Operable Unit 1, the Stewart Drive Operable Unit, and the Commercial Street Operable Unit. The Arques Campus straddles both Operable Unit 1 and the Commercial Street Operable Unit. National Semiconductor is the responsible party for the portion of the project site in Operable Unit 1. Fairchild/Schlumberger is the primary responsible party for the portion of the project site in the Commercial Street Operable Unit.



SOURCE: Erler & Kalnowski, January 1998

APPLIED MATERIALS ARQUES CAMPUS SPECIFIC PLAN EIR
FIGURE 3-8.1 APPROXIMATE BOUNDARIES OF SOIL AND GROUNDWATER OPERABLE UNITS

EIP

3.8-3

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The cleanup order for Operable Unit 1 selects a remedy that includes signing a deed restriction to prevent water supply wells in shallow water-bearing zones and to provide a warning for any subsurface construction, excavating surface soil contamination, treating subsurface soil with *in situ* vapor extraction, reducing total volatile organic compound concentrations in soil to at most 1 ppm, monitoring groundwater conditions, extracting groundwater and treating it by air stripping, and discharging treated groundwater to Calabazas Creek.⁵ The cleanup order for the Commercial Street Operable Unit requires a workplan to control the migration of the contaminant plume, implementation of plume migration control measures, and compliance with final remedial actions and cleanup standards.⁶

Deed Restriction. A deed restriction has been placed on the portion of the project site within Operable Unit 1. The purpose of the deed restriction is to prevent activities that could endanger public health, the environment, or water quality. Among other things, the deed restriction restricts the use of shallow groundwater below the site by prohibiting the use of the underlying aquifers as sources of drinking water until groundwater cleanup standards have been achieved and contaminant levels have been stabilized. Written notice is to be provided to the RWQCB at least 30 days before any drilling or excavation can occur on this portion of the project site.⁷ Deed restrictions have not been placed on the Commercial Street Operable Unit.

Wells. At least seven deep agricultural water wells exist on site.⁸ Applied Materials believes some of these wells may have been improperly closed or abandoned. Groundwater collected from a basement de-watering sump in 1995 is believed to be representative of groundwater quality below the existing office/prototype lab building. Volatile organic compounds have been detected in a sample of this groundwater. An improperly abandoned deep well located either beneath the existing office/prototype lab building or elsewhere on site could potentially serve as a vertical conduit for the transport of contaminated shallow groundwater into the deeper subsurface aquifers that supply a portion of the drinking water for the City of Sunnyvale and the City of Santa Clara.

As a result of 1996 geophysical surveys, two deep groundwater wells were discovered to be leaking on the eastern portion of the site. Contaminants associated with shallow groundwater were found in the deeper subsurface aquifers. Applied Materials physically closed one of these wells with the approval of the Santa Clara Valley Water District. Applied Materials is in the process of closing the second leaking well. Hewlett-Packard has a limited agreement with Applied Materials for closing deep agricultural wells discovered on Applied Materials property (Applied Materials having purchased the property from Hewlett-Packard). After Applied Materials took possession of the property, Hewlett-Packard reviewed site drawings and noticed a reference to an agricultural well near the existing electrical substation. The Santa Clara Valley Water District granted Hewlett-Packard an administrative closure for this agricultural well.⁹

A total of 65 active shallow groundwater monitoring wells are located at the project site.¹⁰ As of 1995, the Santa Clara Valley Water District had not issued permits for five of these wells. As with deep agricultural wells, shallow monitoring wells that are improperly maintained and sealed may act as vertical conduits for the vertical transport of contaminated shallow groundwater into deeper subsurface aquifers. Applied Materials is pursuing closure of the wells not listed with the Santa Clara Valley Water District.¹¹

Ongoing Cleanup Operations. Remediation activities at Operable Unit 1 are farther along than at the Commercial Street Operable Unit. Conditions at Operable Unit 1 are stabilized and ongoing remediation consists primarily of pumping and stripping groundwater. Contamination sources within the portion of the Commercial Street Operable Unit at the project site have been addressed. Hewlett-Packard excavated a substantial volume of contaminated soil and shipped it offsite. Hewlett-Packard also installed an iron filing wall as a passive treatment system for contaminated groundwater entering the site. The effectiveness of this system has not been determined.¹²

Because contaminants in groundwater at the project site were detected migrating north into the Stewart Drive Operable Unit, the RWQCB ordered Fairchild to reduce contaminant concentrations leaving the site. As a result, Fairchild installed two extraction wells and an air stripper on site. NCH Corporation (formerly Mohawk Laboratories, a responsible party for part of the Commercial Street Operable Unit immediately west and southwest of the project site) is planning to install two piezometers to measure groundwater movements on the western portion of the site. Other site cleanup activities are possible if the RWQCB finds them necessary. For example, the RWQCB could order NCH Corporation to take additional actions at the Applied Materials site if contaminated groundwater from its portion of the Commercial Street Operable Unit migrates to project site.¹³

Building Materials. In 1990, friable (easily crumbled) asbestos-containing materials were identified in sprayed ceiling material in the reception area of the existing office/prototype lab building; nonfriable asbestos was found in floor coverings, pipe insulation, mastic, and pipe wrap. Although no friable asbestos-containing materials were found in the corporate garage, nonfriable asbestos-containing material was identified in sprayed ceiling materials. Friable asbestos-containing materials in the now obsolete conference center were identified and abated, but nonfriable asbestos remains in floor tiles and vinyl flooring. In 1995, additional samples were collected, but none contained more than 1% asbestos (the California Environmental Protection Agency's definition of "asbestos-containing"). Some plaster and drywall samples contained between 0.1% and 1% asbestos. The California Division of Occupational Safety and Health considers these materials to be "asbestos-containing."¹⁴ Non-friable asbestos-containing materials in floor coverings and associated mastics in the office/prototype lab building, some pipe insulation in its boiler room, and pipe wrap tape in its roof penthouse were abated in 1997.¹⁵ Buried fire line piping and dewatering system piping may also be constructed with asbestos-containing materials.¹⁶

Regarding other potential contaminants sometimes found in building materials, lead-based paints have been applied to the office/prototype lab building and the obsolete conference center. Where necessary, the lead-based paint has been abated during building reconstruction.¹⁷ These buildings do not contain PCB-containing light fixtures.¹⁸ No formal survey has been undertaken for mercury-containing equipment, but mercury is commonly present in electrical switches and fluorescent light bulbs.

Regulatory Framework

Oversight of Hazardous Materials Release Sites. The RWQCB serves as the Administering Agency for the project site, implementing applicable soil and groundwater cleanup laws, including Superfund. The current regulatory view of site development where chemical constituents exist in the soil or groundwater is that decisions regarding cleanup and future site use should be based on the actual and reasonably projected risks presented by individual sites. This site-specific, risk-based decision-making process is often referred to as Risk-Based Corrective Action. This approach focuses on the level of

risk acceptable for the planned land uses and recognizes that all sites do not present the same risk, that the actual risks posed by a site are a function of the populations that could be present at the site and the activities they could engage in, and that many risks can be reduced or eliminated by implementing risk management strategies.

Risk estimates identified through the Risk-Based Corrective Action process consider such factors as the concentration and further migration of contaminants, potential hazards to remediation workers and nearby populations, and potential exposure of the public based on future land use. Depending on the types of chemicals present and the potential pathways through which individuals could be exposed to the chemicals, contaminants in soil or groundwater can often be left in place or cleaned up to a degree that does not pose a substantial threat to human health or the environment.

Hazardous Waste Management. The California Department of Toxic Substances Control implements the *California Hazardous Waste Control Law*, which applies when characteristics of soil, groundwater, or other materials to be removed from a site meet statutory and regulatory definitions for hazardous waste. Regulations govern the generation, transportation, treatment, and disposal of hazardous wastes. These regulations are intended to ensure that hazardous wastes are handled in a manner that protects human health and the environment. As a Certified Unified Program Agency, Santa Clara County oversees hazardous waste management requirements in the project area.

Air Quality Controls. The Bay Area Air Quality Management District is primarily responsible for planning, attaining, and enforcing federal and state ambient air quality standards in the San Francisco Bay Area. The Bay Area Air Quality Management District regulates both criteria air pollutants (e.g., particulate matter, carbon monoxide) and toxic air contaminants (e.g., asbestos), including volatile contaminants released through excavation or remediation of contaminated soil. Contaminated soil treatment processes that have the potential to emit toxic air contaminants may be subject to Bay Area Air Quality Management District permit requirements. As part of the permit process, the Bay Area Air Quality Management District may require a risk screening evaluation to determine the potential human health risks attributable to emissions from processes or devices. Bay Area Air Quality Management District Regulation 11, Rule 2, addresses demolition, renovation, and removal of asbestos-containing materials.

Hazardous Materials Transportation. Hazardous materials excavated from construction or remediation activities sometimes require off-site transportation for disposal or treatment. Transportation and disposal of hazardous waste would be subject to federal and state regulations. The U.S. Department of Transportation regulates hazardous materials transportation between states, including the types of hazardous waste containers to be used by licensed hazardous waste haulers. The California Highway Patrol and the California Department of Transportation are the state agencies with primary responsibility for enforcing federal and state regulations related to hazardous waste transportation within California. These agencies also respond to hazardous materials transportation emergencies.

Worker Safety. Occupational safety standards in federal and state laws are designed to minimize worker safety risks from both physical and chemical hazards in the workplace. The California Division of Occupational Safety and Health is principally responsible for assuring worker safety. To protect workers and the public from exposure to potential hazards, a site health and safety plan is typically prepared prior to commencing any work at a contaminated site. Title 8 of the *California Code of*

Regulations contains numerous workplace safety requirements that are to be implemented to protect construction workers from residual contaminants that may be present in soil, groundwater, and buildings. Under the Hazard Communication Standard, workers are to be informed about hazardous substances that they may encounter in the workplace. Injury Illness Prevention Program requirements are intended to ensure that workers are properly trained to recognize workplace hazards and to take appropriate steps to reduce potential risks due to such hazards. Most workers at hazardous waste sites must also receive at least 40 hours of hazardous waste operations training. Specific standards also apply to lead and asbestos abatement activities.

Structural Building Components. Structural building components sometimes contain such hazardous materials as asbestos, polychlorinated biphenyls (PCBs), lead, and mercury. These materials are subject to various regulatory schemes.

Asbestos. Asbestos is regulated both as a hazardous air pollutant and as a potential worker safety hazard. Bay Area Air Quality Management District and California Division of Occupational Safety and Health regulations restrict asbestos emissions from demolition and renovation activities, and specify safe work practices to minimize the potential for release of asbestos fibers. These regulations prohibit emissions of asbestos from asbestos-related manufacturing, demolition, or construction activities; require medical examinations and monitoring of employees engaged in activities that could disturb asbestos; specify precautions and safe work practices that must be followed to minimize the potential for release of asbestos fibers; and require notice to federal and local government agencies prior to beginning renovation or demolition that could disturb asbestos. California requires licensing of contractors who conduct asbestos abatement activities.

PCBs. The California Department of Toxic Substances Control has classified PCBs as a hazardous waste when concentrations exceed 5 parts per million (ppm) in liquids or 50 ppm in nonliquids. Fluorescent light ballasts may contain PCBs, and regardless of size or quantity, they are regulated as hazardous waste and must be transported and disposed of as hazardous waste. Ballasts manufactured after January 1, 1978, should not contain PCBs and are required to have a label clearly stating that PCBs are not present.

Lead. California Division of Occupational Safety and Health standards establish a maximum safe exposure level for types of construction work where lead exposure may occur, including demolition of structures where materials containing lead are present; removal or encapsulation of materials containing lead; and new construction, alteration, repair, or renovation of structures with materials containing lead. Inspection, testing, and removing lead-containing building materials must be performed by state-certified contractors who are required to comply with applicable health and safety and hazardous materials regulations. Typically, building materials with lead-based paint attached are not considered hazardous waste unless the paint is chemically or physically removed from the building debris. The U.S. Department of Housing and Urban Development has developed Guidelines for Evaluation and Control of Lead-Based Paint Hazards.¹⁹

Mercury. Spent fluorescent light tubes and other electrical equipment contain heavy metals that, if disposed of in landfills, can leach into soil and groundwater. Lighting tubes typically contain concentrations of mercury that may exceed regulatory thresholds for hazardous waste and, as such, must be managed in accordance with hazardous waste regulations. Elemental mercury can be found in many electrical switches, and when disposed of, such mercury is considered hazardous waste.

Environmental Safety and Health Plan

Applied Materials recently constructed a new Technology Center, parking garage, and recreation center. To provide a healthy and safe work environment for all employees during construction, Applied Materials and its contractor, E.A. Hathaway and Company, prepared an *Environmental Safety and Health Plan*.²⁰ The plan establishes a review process for any below-grade construction activities to protect workers when handling and disposing of contaminated soil and groundwater. The plan satisfies certain requirements of RWQCB Order No. 91-137 (Site Cleanup Requirements), which requires the preparation and regulatory approval of safety plans whenever construction involving site soil or groundwater is proposed.²¹ Although Order 91-137 applies to Operable Unit 1 and not the Commercial Street Operable Unit (see Figure 3.8-1), the *Environmental Safety and Health Plan* addresses both portions of the project site.²² In addition to providing a historical overview of site conditions, the plan describes primary site hazards and environmental issues pertaining to construction. It identifies key personnel and their responsibilities in implementing the plan, and lists their qualifications and training requirements. It describes site control and the use of personal protection equipment, and it includes a medical surveillance program and sampling and air monitoring protocols. The plan also outlines procedures to be followed in the event of an emergency.

According to the *Environmental Safety and Health Plan*, all excavation work, including coring, trenching, and cutting foundations, is to be approved by E.A. Hathaway and Company prior to beginning work. Contractors and subcontractors who are considering demolition or construction activities that would remove pavement, excavate soil, or contact groundwater are to notify E.A. Hathaway and Company. Applied Materials and its contractors are then to compare areas of planned demolition and excavation with areas of potential soil and groundwater contamination to identify areas that pose potential threats to workers or require special materials handling or disposal. The plan covers shallow excavations that do not extend farther than the first occurrence of groundwater (typically 8 to 10 feet), but includes contingency measures in the event that groundwater is encountered at higher levels. If any contractor or subcontractor observes conditions indicative of soil or groundwater contamination, such as strong solvent odors, soil staining, or buried materials (e.g., pipelines), the project superintendent is to be notified immediately.²³

General Plan Policies

The City of Sunnyvale General Plan *Community Development Element, Safety and Seismic Safety Sub-Element* contains the following policy pertinent to hazardous materials use in the project vicinity:

- Promote a living and working environment safe from exposure to hazardous materials. (Policy 2.4A.3)

Impacts and Mitigation Measures

Due to the presence of contaminants in groundwater at the project site, and of the potential for hazardous materials to exist within buildings to be renovated, construction workers, future site occupants, visitors, or adjacent neighbors could be exposed to hazardous materials during and after project implementation. Similarly, certain hazardous materials on site could, if not properly managed, find their way into the air or local groundwater, thereby potentially exposing ecological communities. The following analysis evaluates these potential human health and environmental effects.

The analysis does not discuss the potential for health or safety effects associated with project-related hazardous materials use because project-related activities would not involve any substantial use, production, or disposal of hazardous materials. Project-related hazardous materials use would primarily support offices, prototype labs, and campus amenities, and therefore be limited to the occasional use of common maintenance supplies, such as paints, cleaners, disinfectants, and pesticides, most of which would be consumed through their use. The greatest use of hazardous materials on site would be associated with the existing recently constructed Technology Center, which is not part of the development anticipated under the proposed Specific Plan project.

Significance Criteria

For purposes of this EIR, the project would be considered to pose a potentially significant impact if it were to:

- create a substantial hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- create a substantial hazard to the public or the environment through reasonably foreseeable upset or accident conditions involving the release of hazardous materials to the environment; or
- impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Environmental Analysis

1. *Project-related construction could disturb existing contaminated soils or groundwater and thereby cause adverse health or safety effects. (PS)*

As is typical of many locations in the project vicinity, soil and groundwater at the project site are environmentally impaired. As a result of past activities at the site, the most common contaminants are volatile organic compounds, but other contaminants have been detected, as identified above under Environmental Setting.²⁴ On-site remediation is planned with or without the proposed project. The areas surrounding and including the project site are subject to RWQCB cleanup orders. Ongoing remediation within the Operable Unit 1 portion of the project site consists primarily of pumping and stripping groundwater. An iron filing wall serves as a passive treatment system for contaminated groundwater entering the site. Two piezometers will also be installed. Other site cleanup activities are possible if the RWQCB finds them necessary.²⁵

The cleanup standards established for the east side of the project site (within Operable Unit 1) will result in maximum carcinogenic health risks within the U.S. Environmental Protection Agency's acceptable range.²⁶ The groundwater cleanup standards established for the west side of the project site (within the Commercial Street Operable Unit) include chemical-specific objectives defined by the California Department of Health Services and risk-based standards.²⁷ Such standards typically result in maximum carcinogenic health risks between 1 and 100 cancer cases in one million exposed individuals.

If contaminated areas were to be excavated as a result of the project, contaminated soil or groundwater could be encountered. Applied Materials intends to restrict project-related

excavation to within 8 feet of the surface to minimize the potential for contact with contamination. In limited circumstances, however, deeper excavation and dewatering could be necessary. As stated above, the most likely contaminants that could be encountered during earth-moving activities would be volatile organic compounds.

Without appropriate safeguards, earth-moving activities could potentially expose workers and possibly the public to chemical compounds in soils, soil gases (gases or vapors, mostly air, trapped within soil), or groundwater, or to airborne chemicals. Exposure would be most likely to occur through skin contact or inhalation. Ingestion would be far less likely. Workers directly engaged in on-site activities would face the greatest potential for exposure. The public could be exposed to contaminants during construction if access to the project site were insufficiently controlled.

Exposure to hazardous materials could cause various short-term or long-term health effects specific to each chemical present if of sufficient concentration and duration. Dichloroethene, trichloroethene, and tetrachloroethene can affect liver, kidney, and central nervous system functions.²⁸ At concentrations much greater than those at the project site, they can cause abnormal heartbeat, coma, and death. Lesser exposures can result in dizziness, headaches, sleepiness, confusion, nausea, or difficulty in speaking or walking. Skin or eye exposure can lead to rashes and irritation. Chronic exposure can lead to cancer.

Worker and public health and safety requirements would apply during earth-moving activities. Potential adverse impacts would be reduced through required safety and hazardous waste handling precautions. For hazardous waste workers, California Division of Occupational Safety and Health regulations mandate an initial 40-hour training course and subsequent annual training review. Additionally, site-specific training would be required for some workers. Treatment of the extracted groundwater could be required if contaminant concentrations exceed regulatory action levels. Discharge of contaminated water to either the sanitary or storm sewer would require a local permit.

When Applied Materials constructed its new Technology Center, parking garage, and recreation center, it prepared an *Environmental Safety and Health Plan* that established a review process for below-grade construction activities. The plan called for documentation of below-grade activities through notification forms to be reviewed by Applied Materials environmental staff. Measures similar to those set forth in the *Environmental Safety and Health Plan*, along with application of cleanup standards subject to review by responsible agencies, would protect human health and the environment, thereby minimizing potential impacts. Implementing a plan similar to the *Environmental Safety and Health Plan* would be necessary to ensure that the project would not create any substantial hazard to the public or the environment through any exposure to hazardous materials during project construction. Without the implementation of such a plan, the project could potentially pose a significant environmental impact.

MITIGATION MEASURES. The following mitigation measure would reduce this potential impact to a less-than-significant level.

- 1.1 *Environmental Safety and Health Plan.* The *Environmental Safety and Health Plan*²⁹ prepared for the construction of the new Technology Center, parking garage, and recreation center will be revised, updated, or amended to address the worker, public, and

environmental health and safety issues related to the potential for project-related construction to disturb existing contamination or interfere with ongoing remediation activities. Copies of the revision, update, or amendment to the plan will be provided to the City of Sunnyvale and the San Francisco Bay Regional Water Quality Control Board prior to beginning any project-related earth-moving activities. The plan will be implemented throughout project construction.

2. *Although the project would increase the on-site population potentially exposed to existing soil and groundwater contamination, the potential for exposure would be insufficient to pose any substantial health or safety risks. (I)*

The population that would be present on site upon project completion would include workers employed at the site and visitors. In the future, potential health effects could occur if any of these individuals were to be exposed to elevated levels of contaminants in the soil or groundwater. Exposure could occur primarily through inhalation of soil or groundwater vapors migrating to the surface. Direct contact with soil or groundwater would be unlikely because the contaminants are about 8 feet below the surface and the site would remain mostly paved. As discussed in Impact 1, the RWQCB will ensure that remediation plans adequately consider the proposed use of the site for primarily office-based industrial operations. Remediation will ensure that groundwater contamination is treated to chemical-specific standards defined by the California Department of Health Services or risk-based standards. For this reason, employees and visitors at the site would not be exposed to substantial health risks related to soil and groundwater at the site. Because the project would not create any substantial hazard to the public or the environment through any ongoing and routine exposure to hazardous materials, it would not result in a significant environmental impact.

3. *Project-related demolition or renovation could disturb hazardous materials in existing building components and thereby cause adverse health or safety effects. (PS)*

Building components in older buildings at the project site (e.g., the large office/prototype lab building and the obsolete conference center) could contain hazardous materials. These materials could cause adverse health impacts if human exposure were to occur during demolition or renovation. The hazardous materials most likely to be encountered would be asbestos, lead, and mercury. PCB-containing materials are not present at the project site.

Asbestos poses health hazards only when inhaled; therefore, friable asbestos, which is easily crumbled, is potentially hazardous if not encapsulated. Non-friable asbestos or encapsulated asbestos does not pose substantial health risks. Only non-friable asbestos remains in existing buildings at the project site. Upon building renovation or demolition, however, asbestos fibers could be released unless proper precautions were taken. Government regulations limit asbestos emissions from asbestos-related demolition or construction activities, and specify precautions and safe work practices that must be followed to minimize the potential release of asbestos fibers. For these reasons, the project would not likely create any substantial hazard to the public or the environment through any routine exposure to asbestos during project construction, or through any reasonably foreseeable upset or accident conditions involving the potential release of asbestos. Therefore, it would not result in a significant environmental impact.

Building components containing lead or mercury could also be located in some existing buildings. In sufficient concentrations, lead and mercury are regulated as hazardous waste. The U.S. Department of Housing and Urban Development has prepared *Guidelines for Evaluation and Control of Lead-Based Paint Hazards*.³⁰ Applicable health and safety requirements would minimize any risks from handling these materials, unless they fail to be identified adequately prior to demolition or renovation. If any unidentified hazardous materials were to remain in the existing buildings when renovation or demolition occurred, these hazardous materials could create worker health hazards or result in environmental release (or inappropriate disposal) of these hazardous materials. For this reason, the project could create a substantial hazard to the public or the environment through routine exposure to hazardous materials during project construction, or through some possible upset or accident condition involving the potential release of hazardous materials. Therefore, it could pose a potentially significant impact if not mitigated.

To the extent that the project could involve removing hazardous materials within existing buildings, it could be beneficial over the long term. It could reduce potential health threats posed by hazardous materials on site and prevent individuals on and off site from encountering such materials in the future. Properly handling and disposing of contaminated materials would protect the environment and prevent potential future adverse health, safety, or environmental effects related to them.

MITIGATION MEASURES. The following mitigation measure would reduce this potential impact to a less-than-significant level.

3.1 Hazardous Materials Surveys. Existing buildings will be inspected by a qualified environmental specialist for the presence of as yet unidentified asbestos, PCBs, mercury, lead, or other hazardous materials. If found, these materials will be managed as required by law and according to federal and state guidelines. Health and safety measures to address possible building contaminants discovered through this process will be incorporated into the revised, updated, or amended *Environmental Safety and Health Plan* described in Mitigation Measure 1.1, or into a new plan implemented to address these issues.

4. *Potential accidents when transporting project-related hazardous materials or wastes would be unlikely, and required packaging would minimize the potential to expose the public or the environment to health or safety risks. (I)*

Potential accidents when transporting project-related hazardous materials or wastes could expose the public or the environment to health or safety risks, but transportation accidents are relatively infrequent. In California, vehicle accidents occur about once for every million vehicle miles traveled.³¹ The consequences of potential accidents involving project-related hazardous materials or wastes would likely be minimal because the U.S. Department of Transportation promulgates hazardous materials and waste packaging standards. Any hazardous soil or groundwater requiring removal from the site would be transported in appropriate containers under manifest by a licensed waste hauler. For these reasons, the project would not create any substantial hazard to the public or the environment through any reasonably foreseeable upset or accident conditions involving the potential release of hazardous materials to the environment. Therefore, the project would not result in a significant environmental impact related to hazardous materials transportation.

5. *Health and safety effects related to project activities would be unlikely to combine with those of other developments to pose any substantial cumulative effects. (1)*

The nearest development proposed in the vicinity of the project site would be at the southeast corner of Santa Trinita and Kern Avenues, about 1,000 feet northeast of the project site. This distance is too great to allow any substantial interaction between construction-related soil and groundwater impacts. Individuals at the two sites would be too distant to experience any substantial health or safety effects as a result of activities occurring at the other site.

The potential impacts of hazardous materials in building components would be local and would pose little or no potential to combine in any cumulative context. While hazardous materials or wastes from different projects could be transported on the same roads, the potential for cumulative risks would be minimized by low accident probabilities and U.S. Department of Transportation packaging requirements. Because the project would not substantially affect the locations of roadways off site or site access points, it would not impair the implementation of, or physically interfere with, any emergency response plans or emergency evacuation plans implemented at other locations in the City of Sunnyvale.

Notes: Health and Safety

- 1 San Francisco Bay Regional Water Quality Control Board, Order No. 91-137, "Site Cleanup Requirements for National Semiconductor Corporation, United Technologies Corporation, Hewlett-Packard, and Shahinian Trust, Subunit 1, Operable Unit 1, Santa Clara and Sunnyvale, Santa Clara County," p. 3.
- 2 California Department of Toxic Substances Control, State of California Hazardous Waste and Substances Sites List, April 1998, p. 249.
- 3 Weiss Associates, Environmental Safety and Health Plan for Applied Materials Arques Site Construction, 974 East Arques Avenue, Sunnyvale, California, prepared for E.A. Hathaway and Company, July 7, 1997, Table 1 and Figure 4.
- 4 San Francisco Bay Regional Water Quality Control Board, Order No. 91-137, "Site Cleanup Requirements for National Semiconductor Corporation, United Technologies Corporation, Hewlett-Packard, and Shahinian Trust, Subunit 1, Operable Unit 1, Santa Clara and Sunnyvale, Santa Clara County," p. 12-13.
- 5 San Francisco Bay Regional Water Quality Control Board, Order No. 91-137, "Site Cleanup Requirements for National Semiconductor Corporation, United Technologies Corporation, Hewlett-Packard, and Shahinian Trust, Subunit 1, Operable Unit 1, Santa Clara and Sunnyvale, Santa Clara County," p. 9.
- 6 San Francisco Bay Regional Water Quality Control Board, Order No. 97-113, "Revision to Site Cleanup Requirements and Rescission of Order No. 96-059 for Fairchild Semiconductor Corporation, Applied Materials Incorporated, NCH Corporation, and Mohawk Laboratories for the property located at 974 East Arques Avenue, Commercial Street Operable Unit, Subunit 2, Sunnyvale, Santa Clara County," p. 7-8.
- 7 Hewlett-Packard Company and San Francisco Bay Regional Water Quality Control Board, "Covenant and Agreement to Restrict the Use of Property," November 23, 1998, p. 5 (attachment to letter from Steven Ritchie, San Francisco Bay Regional Water Quality Control Board, to Richard Etheredge, National Semiconductor Corporation, Roy West, Hewlett-Packard Company, and Dr. Lee Shahinian, Shahinian Management).

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- 8 Jerry Haag, Urban Planner, letter and attachments, November 18, 1998; Weiss Associates, Environmental Safety and Health Plan for Applied Materials Arques Site Construction, 974 East Arques Avenue, Sunnyvale, California, prepared for E.A. Hathaway and Company, July 7, 1997, Figure 10.
 - 9 Susan Wilson, Applied Materials, telephone conversation with Bill Johnson, EIP Associates, January 20, 1999.
 - 10 Weiss Associates, Environmental Safety and Health Plan for Applied Materials Arques Site Construction, 974 East Arques Avenue, Sunnyvale, California, prepared for E.A. Hathaway and Company, July 7, 1997, Figure 9.
 - 11 Jerry Haag, Urban Planner, letter and attachments, November 18, 1998.
 - 12 Susan Wilson, Applied Materials, telephone conversation with Bill Johnson, EIP Associates, January 20, 1999.
 - 13 Susan Wilson, Applied Materials, telephone conversation with Bill Johnson, EIP Associates, January 20, 1999.
 - 14 Robert Spence & Associates Inc., Applied Materials Environmental Assessment Investigations: Asbestos Building Materials Assessment, Indoor Air Quality Sampling, Wipe Sampling for Metals, 974 East Arques Avenue, Sunnyvale, California, August 14, 1995.
 - 15 Robert Spence & Associates Inc., Asbestos Abatement Project Report, Asbestos Building Materials Abatement, Applied Materials, Floor Tile and Mastic, Sheet Vinyl and Mastic, 974 East Arques, Sunnyvale, January, 22 1996, pp. 2-5.
 - 16 Weiss Associates, Environmental Safety and Health Plan for Applied Materials Arques Site Construction, 974 East Arques Avenue, Sunnyvale, California, prepared for E.A. Hathaway and Company, July 7, 1997, p. 23.
 - 17 Jerry Haag, Urban Planner, letter and attachments, November 18, 1998.
 - 18 Susan Wilson, Arques Environmental Health and Safety, Applied Materials, letter, December 22, 1998; Jerry Haag, Urban Planner, letter and attachments, November 18, 1998.
 - 19 U.S. Department of Housing and Urban Development, Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, June 1995, Chapter 7, revised 1997.
 - 20 Weiss Associates, Environmental Safety and Health Plan for Applied Materials Arques Site Construction, 974 East Arques Avenue, Sunnyvale, California, prepared for E.A. Hathaway and Company, July 7, 1997.
 - 21 San Francisco Bay Regional Water Quality Control Board, Order No. 91-137, "Site Cleanup Requirements for National Semiconductor Corporation, United Technologies Corporation, Hewlett-Packard, and Shahinian Trust, Subunit 1, Operable Unit 1, Santa Clara and Sunnyvale, Santa Clara County," p. 18.
 - 22 San Francisco Bay Regional Water Quality Control Board, Order No. 97-113, "Revision to Site Cleanup Requirements and Rescission of Order No. 96-059 for Fairchild Semiconductor Corporation, Applied Materials Incorporated, NCH Corporation, and Mohawk Laboratories for the property located at 974 East Arques Avenue, Commercial Street Operable Unit, Subunit 2, Sunnyvale, Santa Clara County."

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- 23 Weiss Associates, Environmental Safety and Health Plan for Applied Materials Arques Site Construction, 974 East Arques Avenue, Sunnyvale, California, prepared for E.A. Hathaway and Company, July 7, 1997, p. 17-30.
 - 24 Weiss Associates, Environmental Safety and Health Plan for Applied Materials Arques Site Construction, 974 East Arques Avenue, Sunnyvale, California, prepared for E.A. Hathaway and Company, July 7, 1997, Table 1 and Figure 4; San Francisco Bay Regional Water Quality Control Board, Order No. 91-137, "Site Cleanup Requirements for National Semiconductor Corporation, United Technologies Corporation, Hewlett-Packard, and Shahinian Trust, Subunit 1, Operable Unit 1, Santa Clara and Sunnyvale, Santa Clara County," p. 12-13.
 - 25 Susan Wilson, Applied Materials, telephone conversation with Bill Johnson, EIP Associates, January 20, 1999.
 - 26 San Francisco Bay Regional Water Quality Control Board, Order No. 91-137, "Site Cleanup Requirements for National Semiconductor Corporation, United Technologies Corporation, Hewlett-Packard, and Shahinian Trust, Subunit 1, Operable Unit 1, Santa Clara and Sunnyvale, Santa Clara County," p. 13.
 - 27 San Francisco Bay Regional Water Quality Control Board, Order No. 97-113, "Revision to Site Cleanup Requirements and Rescission of Order No. 96-059 for Fairchild Semiconductor Corporation, Applied Materials Incorporated, NCH Corporation, and Mohawk Laboratories for the property located at 974 East Arques Avenue, Commercial Street Operable Unit, Subunit 2, Sunnyvale, Santa Clara County," p. 6.
 - 28 Agency for Toxic Substances and Disease Registry, Fact Sheets ("1,1-Dichloroethene," "Trichloroethylene (TCE)," and "Tetrachloroethylene"), <http://atsdr1.atsdr.cdc.gov:80801>, September 1997.
 - 29 San Francisco Bay Regional Water Quality Control Board, Order No. 97-113, "Revision to Site Cleanup Requirements and Rescission of Order No. 96-059 for Fairchild Semiconductor Corporation, Applied Materials Incorporated, NCH Corporation, and Mohawk Laboratories for the property located at 974 East Arques Avenue, Commercial Street Operable Unit, Subunit 2, Sunnyvale, Santa Clara County."
 - 30 U.S. Department of Housing and Urban Development, Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, June 1995, Chapter 7, revised 1997.
 - 31 California Department of Transportation, 1996 Accident Data on California State Highways (Road Miles, Travel, Accidents, Accident Rates), 1997, p. 6

Section 4

Other CEQA Topics

4.1 SIGNIFICANT UNAVOIDABLE ENVIRONMENTAL EFFECTS

Section 21100(b)(2)(A) of CEQA requires that an EIR identify any significant environmental effects that cannot be avoided if the project were implemented. Significant unavoidable impacts are identified in Section 3 whenever the mitigation measures would not ensure that a potential impact would be reduced to an insignificant level. Section 3 identifies significant unavoidable impacts related to regional air emissions of nitrogen oxides, and possibly project-related and cumulative traffic impacts on the U.S. 101 freeway. All other potential impacts can be avoided or alleviated by implementing the mitigation measures identified in Section 3. Additional strategies for avoiding or alleviating significant impacts are described in Section 5, Project Alternatives.

4.2 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

Section 21100(b)(2)(B) of CEQA requires that an EIR identify any significant irreversible changes that would result from implementing the project. Section 15126.2(c) of the CEQA Guidelines suggests that irreversible environmental changes may involve uses of nonrenewable resources or irreversible damage resulting from environmental accidents. Since the project site is already developed and the proposed expansion would involve research, testing, and support uses, none of which would involve hazardous or dangerous materials, the proposed project would not result in such effects. The facilities to be constructed would likely change the site irreversibly since their removal would be unlikely, and the project would involve some commitment of nonrenewable resources for construction and operation.

4.3 GROWTH-INDUCING IMPACTS

Section 15126.2(d) of the CEQA Guidelines states that an EIR should discuss "...the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment."

Employment. The growth-inducing impacts of the proposed Arques Campus Specific Plan would consist of 1) indirect and secondary employment increases, and 2) associated increases in housing demand in the City of Sunnyvale. The project would provide jobs for approximately 2,800 employees at the Arques Campus. The net growth at the project site of 1,300 jobs (2,800 forecast with the project less estimated 1,500 currently employed¹) represents 0.9% of the City's projected number of jobs of 141,660 in 2010, and about 3.8% of the projected 34,130-employee increase between 1995 and 2010. Based on these statistics, the proposed project would not constitute a substantial proportion of the growth projected for the City.²

To estimate the potential multiplier effect associated with project-related jobs, the Association of Bay Area Governments has developed economic multipliers for the San Francisco Bay Region based on an input-output model.³ The jobs expected to be created by the proposed project (i.e., computers and

electronics) have a multiplier of 1.48. This means that for every job created with the implementation of the project an additional 0.48 indirect jobs would be formed. For example, indirect services, such as restaurants or dry cleaners, would expand based on the type of employment created by the project. The proposed project would generate about 624 indirect jobs in the region. A second type of multiplier, the "Type II" multiplier, measures direct, indirect, and induced employment. This multiplier allows an estimation of the regional effect of new jobs. Applying a 9.39 multiplier for a high-technology type development⁴ results in a total regional economic growth of 12,207.

Housing. The project-related job increase would in turn generate an increased demand for an estimated 73 additional new housing units in Sunnyvale (1,300 net new employees X 8 percent = 104 employees living in Sunnyvale; 104 employees divided by 1.42 employees/household = 73 households, or housing units).⁵ This housing demand could be served by the 6,530 housing units projected to be built in Sunnyvale between 1995 and 2010 by ABAG.⁶

Utilities. Growth-inducing effects can also occur when basic utilities, such as water or sewer lines, are extended into undeveloped areas. The available capacity becomes an attraction for new, and sometimes premature, development seeking to take advantage of utility service. Because the Applied Materials Arques Campus Specific Plan is an "infill" project (i.e., occurs within an already developed area within existing infrastructure), no significant, potentially growth-inducing extension of new infrastructure would be necessary to serve the project.

Land Use Policy. The intensification of the Applied Materials Arques Campus raises potential local growth-inducing issues. From a local perspective, it may signal a City policy change to allow substantial floor area ratio increases beyond 45% in industrial zones with current maxima of 35%, given the appropriate circumstances and conditions (currently FARs up to 45% are allowed under a conditional use permit). Discrete areas of "industrial intensification" have been approved in other areas of the City: 55% FAR at El Camino Real/Bernardo; 100% and 70% FAR at Mathilda Avenue between Maude and Highway 101; 50% FAR at Third between Mathilda and N. Fair Oaks. According to the City's Community Development Element of the General Plan, 58 percent of the industrial area parcels are developed with less than a 35% FAR and almost 93% of the industrial parcels are developed. With little room left to expand onto vacant land, other businesses may follow Applied Materials and seek to intensify properties outside the designated intensification zones. Action Statement C4.2.2 from the Community Development Element recommends that the City study criteria to allow industrial floor area ratios up to 45% by use permit in 35% zones, as discussed in Section 3.2, Land Use. Thus, there is local precedent to intensify development, but the allowable increase would be less than 10%. The current proposal by Applied Materials for its Arques Campus seeks to increase the floor area ratio to 72%.

The balance between encouraging economic growth, in part by allowing existing businesses to increase the floor area ratio, and maintaining adequate service levels in the transportation system and in the community's provision of public services is currently being considered as part of the City's Economic Prosperity Program. The program seeks to retain and encourage local company expansion, maintain a positive business climate, and strategically attract new businesses to Sunnyvale. At the same time, the program acknowledges that economic development is but one factor in determining Sunnyvale's future land use pattern and must be evaluated along with other General Plan goals and policies, the capacity of the transportation network, environmental considerations (such as air quality), site design and architecture, and other community factors (such as availability and affordability of housing).

In summary, the proposed project fosters economic and population growth both in the City and the region. Much more far reaching, however, are the current discussions in the City about citywide policy changes to allowable floor area ratios. In accordance with the State CEQA Guidelines, Section 15126.2, this discussion of growth inducement is not intended to be characterized as necessarily beneficial, detrimental, or of little significance to the environment. It is provided for information purposes so that the public and local decision-makers have an appreciation of the potential long-term growth implications of the project.

4.4 CUMULATIVE IMPACTS

The CEQA Guidelines (Section 15355) define “cumulative impacts” as “...two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.” In the case of the proposed project, cumulative impacts could result from the project impacts in combination with other recently approved and pending development in Sunnyvale and nearby Santa Clara (see Section 3.1 of this EIR). The cumulative effects of the project and surrounding local and subregional development on land use, aesthetics, traffic, air quality, sewer capacity, stormwater management, and health and safety are discussed where applicable in Section 3 of this EIR. Significant cumulative impacts are identified for traffic, regional air emissions, and wastewater collection lines. Section 3 identifies mitigation measures, to the extent feasible, to address these cumulative impacts.

4.5 EFFECTS FOUND NOT TO BE SIGNIFICANT

The City of Sunnyvale completed an initial study to determine whether the project could potentially result in any significant environmental impacts warranting further analysis in this EIR.⁷ At that time, the following issues were determined to pose no potential for significant adverse impacts.

Population and Housing. The population growth and related housing demand created by the project would be within population projections used for planning purposes, including those of the Association of Bay Area Governments (see Section 4.3, Growth-Inducing Impacts).

Public Services. The potential for the project to adversely affect local schools, fire safety, public safety, or recreational opportunities would be less than significant for the following reasons.

- The project would not directly add to the housing stock available in the City of Sunnyvale, but population growth resulting from the project could increase the number of children attending local schools. However, this population growth would be within the projections anticipated and planned for by local school districts; therefore, school children would be accommodated through existing planning efforts. Applied Materials would be subject to a housing mitigation fee of \$3.00 per square foot for each square foot above 35% effective FAR. Effective FAR is based on employee generating space and does not include space not associated with an employee population.
- The Sunnyvale Fire Department enforces portions of the Sunnyvale Municipal Code pertaining to building and fire safety (Titles 20 and 21). It also oversees compliance with Sunnyvale’s

Toxic Gas Ordinance. (Toxic gases are used at the Technology Center.) Sunnyvale Fire Department Station 2 (at Wolfe Road and Arques Avenue) serves the project site. Assuming that the probability of fire and other emergency incidents would increase in rough proportion to the increase in space at buildout, the probability of such events at the Arques Campus could be expected to double over existing conditions. Nevertheless, this increase would not be expected to substantially increase the demand for emergency fire response services within the entire City of Sunnyvale. Applied Materials also staffs an in-house emergency response team composed of Applied Materials employees, and this staff would likely be expanded, as necessary, to address any needs for emergency services. Together with other proposed projects, however, the demand for fire protection services would increase incrementally, but not sufficiently to be considered a significant impact.

- The Sunnyvale Department of Public Safety serves the project site. Assuming that the probability of property and person crimes would increase in rough proportion to the increase in onsite population at buildout, the probability of such crimes at the Arques Campus could be expected to almost double over existing conditions. Nevertheless, this increase would not be expected to substantially increase the demand for police services within the entire City of Sunnyvale. Applied Materials also maintains its own in-house security force, and this force would likely be expanded, as necessary, to address any needs for public safety services. Together with other proposed projects, however, the demand for public safety services would increase incrementally, but not sufficiently to be considered a significant impact.
- The recreational facilities and open space called for by the Specific Plan would serve the employees on the Arques Campus, development of which should not affect existing Sunnyvale parks within about a mile of the site: Fair Oaks Park, Braly Park, Ponderosa Park, Murphy Park, and Lakewood Park.

Public Utilities. The potential for the project to adversely affect gas, electricity, telecommunications, water, sewer, and solid waste services would be less than significant for the following reasons.

- Pacific Gas & Electric transmission facilities are adequate to serve the project site. Applied Materials recently completed a 115 kV substation at the project site to accommodate all of the foreseeable electricity infrastructure needs of the site.
- Pacific Bell would continue to provide necessary telecommunications infrastructure.
- The Santa Clara Valley Water District and the Sunnyvale wastewater treatment plant would continue serving the project site. Water mains have adequate capacity to serve the site. Wastewater sewer capacity is discussed in Section 3.6, Wastewater Services. The 29.5-million-gallons-per-day capacity Sunnyvale Water Pollution Control Plant treats about 18 million gallons per day during dry weather. Therefore, capacity is adequate to serve the project.
- Because project-related excavation would be minimal (limited to about 8 feet), the project would not affect local groundwater flows, discharges, withdrawals, or quality. Issues related to storm water runoff are discussed in Section 3.7, Hydrology and Water Quality.
- The proposed project would generate about 700 cubic yards of solid waste each month. Assuming that the density of solid waste from the site is less than 2,000 pounds per cubic yard

(a conservative assumption; typically solid waste is much lighter), then the project could generate up to 8,400 tons of refuse each year. This is less than the 30 tons per year available for the proposed project and other development. Bay Counties Waste Services would continue to transport solid waste from the project site to the Sunnyvale (SMaRT®) Station, which minimizes the volume of waste sent to the Kirby Canyon Landfill in San Jose.⁸

Biological Resources. The project site is already developed, and no endangered, threatened, or rare species are known to occur onsite. The project would not affect any locally designated species or natural communities, and would not affect any agricultural resources because none exist on site. The project would involve the removal of trees located in the vicinity of proposed new buildings and roads. Trees located within pedestrian and landscape areas would be incorporated into the landscape design to the extent feasible. The Specific Plan includes standards for replacing Heritage Trees when necessary. The removal and replacement of "significantly sized trees" is regulated under Title 19, the Uniform Planning and Zoning Code.

Noise. Increases in ongoing site operations would not be expected to increase noise levels. Increases in traffic-related noise would be expected, but average daily traffic volumes would need to increase nearly three-fold to make a substantive change in the ambient noise environment. The proposed project would not result in trip generation of this magnitude.

Energy and Mineral Resources. The project would employ energy-efficient construction techniques and is required to comply with the energy standards of Title 24 of the California Code of Regulations. The Transportation Demand Management Plan would reduce the use of vehicle fuels by project-related vehicles, thereby reducing the use of energy resources. Based on a review of the City of Sunnyvale General Plan, there are no known mineral resources at the project site.

Cultural Resources. The potential for the project to adversely affect cultural resources would be minimal because the project site is already developed, and because further construction would involve excavation limited to about 8 feet. The project would not affect any City of Sunnyvale Heritage Landmarks or Cultural Resources Inventory structures or trees.

Notes – Other CEQA Topics

- 1 Draft Arques Campus Specific Plan, October 23, 1998, p. 2-8.
- 2 City forecasts of population and jobs are from the Association of Bay Area Governments *Projections '98 Forecasts for the San Francisco Bay Area to the Year 2020*, December 1997.
- 3 Association of Bay Area Governments, "1987 Input - Output Model and Economic Multipliers for the San Francisco Bay Region," March 1995.
- 4 As a research and development and prototype manufacturing facility, the campus represents "computers and electronics" Based on telephone conversation with Chin Ming Yang, Ph.D., Projections Research Staff, Association of Bay Area Governments, January 21, 1999.
- 5 Based on the Association of Bay Area Governments *Projections '98*, 71,800 employed residents divided by 50,710 households = 1.42 employed residents per household in Sunnyvale in 1995; approximately 76 of 950

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- (8%) Applied Materials employees live in Sunnyvale, Jerry Haag, Urban Planner for Applied Materials, January 28, 1999.
- 6 Association of Bay Area Governments, *Projections '98*, Forecasts for the San Francisco Bay Area to the Year 2020, December 1997.
 - 7 City of Sunnyvale, Initial Study Checklists, August 1998.
 - 8 Mark Bowers, City of Sunnyvale Solid Waste Program, memorandum, March 5, 1999.

Section 5

Project Alternatives

5.1 INTRODUCTION

This section evaluates alternatives to the proposed project as required by the California Environmental Quality Act (CEQA). The State CEQA Guidelines (Section 15126.6) require that an EIR describe and evaluate the comparative merits of a reasonable range of potentially feasible alternatives to the project. The alternatives are to be selected so as to feasibly attain most of the basic objectives of the project while avoiding or substantially lessening its significant effects. These guidelines further require that the discussion focus on alternatives capable of eliminating significant adverse impacts of the project, or reducing them to a level of insignificance, even if these alternatives would impede to some degree the attainment of the project objectives or would be more costly. EIRs are not required to consider alternatives that are infeasible. Factors that may be considered in addressing feasibility are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and whether the proponent can reasonably acquire, control, or otherwise have access to an alternative site (State CEQA Guidelines, Section 15126.6(f)(1)).

This EIR notes that traffic queues at one local intersection, freeway congestion, regional air emissions, peak flows in the wastewater collection system, stormwater runoff, and hazardous materials in existing buildings would be significant adverse effects of the proposed project. Consequently, the alternatives presented in this section are formulated to lessen these effects to the extent possible. According to the State CEQA Guidelines, the range of alternatives required in an EIR is governed by the rule of reason, which requires the EIR to set forth only those alternatives necessary to provide the decision-makers with an understanding of the potential ways to accomplish the project objectives while reducing impacts, and with an appreciation of the tradeoffs among the different alternatives.

In accordance with CEQA, this alternatives analysis identifies significant effects that may result from alternatives. It also identifies an environmentally superior alternative.

5.2 ALTERNATIVES DESCRIPTIONS AND RATIONALES

Alternatives to the proposed project, as defined and evaluated in this EIR, include:

- No Project
- Reduced Development
- Stage I Development
- Off-Site Development

The No Project alternative essentially maintains the status quo at the Arques Campus; the Reduced Development alternative considers less intensive development of the site; the Stage I Development alternative includes only Stage I of the proposed project and no subsequent development; and the Off-Site Development alternative emphasizes development at a location other than the project site. Each of

these alternatives is described below. Table 5-1 summarizes key characteristics of each alternative. The alternatives provide a broad range of development schemes and assumptions about developed space at the Arques Campus, ranging from no new square footage at the Arques Campus (the No Project and Off-Site Development alternatives), to about 42% of the net new construction envisioned by the Specific Plan (the Stage I Development alternative), to about 66% of the net new construction under the proposed project (the Reduced Development alternative).

Table 5-1
Project Alternatives Development Programs

Use	Proposed Project	No Project	Reduced Development	Stage I Development	Off-Site Development
Net New Construction (gsf)					
Administration/ Research Office	352,400	0	216,400	126,400	352,400
Prototype Lab	190,000	0	122,900	78,600	190,000
Tool Testing/Demonstration	0	0	0	0	0
Central Utility	0	0	0	0	0
Materials Storage	0	0	0	0	0
Cafeteria	10,200	0	10,200	10,200	10,200
Recreation Center	4,000	0	4,000	4,000	4,000
Conference Center	30,000	0	30,000	30,000	30,000
Training Rooms	7,000	0	7,000	0	7,000
Total Net New Floor Area (gsf)	593,600	0	390,500	249,200	593,600
Total Floor Area (gsf) /a/	1,114,600	521,000	911,500	770,200	1,114,600
Floor Area Ratio /a/	0.72	0.34	0.59	0.50	0.42
Effective Floor Area Ratio /b/	0.64	0.28	0.50	0.42	0.38
Increase in Employment	1,300	0	916	300	1,300
Total Employee Population /c/	2,800	1,500	2,416	1,800	2,800
Net New Parking Spaces	950	0	892 /d/	0 /e/	1,381

Source: EIP Associates

Notes:

- /a/ The total floor area of the Off-Site Development alternative combines the floor areas for the Arques Campus and the off-site location. The FAR cited in the table for the Off-Site Development alternative is only for the off-site location. The FAR at the Arques Campus would remain 0.34.
- /b/ Effective Floor Area Ratio does not include tool testing/demonstration, cafeteria, recreation center, conference center, or training rooms in the estimate of the floor area.
- /c/ The total population of the Off-Site Development alternative combines the population at the Arques Campus with the population at the off-site location on Aster Avenue. The population at the Aster Avenue site would be 1,300 employees.
- /d/ Most new parking spaces would be accommodated within a new 5-story parking structure.
- /e/ The increased population could be accommodated by the existing 2,025 parking spaces. Some of these parking spaces could be relocated to conform to the new site plan.

No Project

Definition. The No Project alternative would result in no net increase in development at the site. The Arques Campus floor area ratio (FAR) would remain at about 34%. Development proposed for the Arques Campus could occur at other Applied Materials sites or new sites to be occupied by Applied Materials.

Rationale. The State CEQA Guidelines require the identification and analysis of the No Project alternative to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the project.

Description. Future development at the Arques Campus would occur in accordance with the City of Sunnyvale Zoning Code (Title 19) and the general development standards for the M-S zoning district. New building space, if any, could only be accommodated by demolishing existing space since the campus is virtually at the maximum allowable FAR of 35% without a use permit. Because Applied Materials would have little incentive to invest in such construction, no substantive changes to the existing site conditions are assumed for this No Project alternative. The onsite population would remain at about 1,500 employees.

If Applied Materials were to grow, it would have to occupy a site or sites elsewhere in Sunnyvale or the greater Santa Clara Valley area (refer to the Off-Site Development alternative). If the square footage being sought were not approved for the Arques Campus site, it could be occupied (either lease of existing space or construction of new space) in reasonable proximity to the Technology Center. Whether this scattered site development and/or occupancy would occur would depend on the accuracy of Applied Materials' growth projections. These projections reflect historical experience, and the company's investment in the Technology Center is based on such projections.

Reduced Development

Definition. Whereas the project would increase the allowed FAR from 35% to 72% at the Arques Campus, this Reduced Development alternative proposes an FAR of 59%. This increase in FAR from the existing 34% would permit a total of 911,500 square feet, or about 82% of the total floor area that would exist with the proposed project.

Rationale. The Reduced Development alternative was formulated to determine to what extent reducing the square footage at the Arques Campus would lessen potential impacts identified for the proposed project, particularly those related to traffic, regional air emissions, and wastewater generation, which may be related to the magnitude of the development. This alternative was designed to carry out the proposed site plan at an intermediate level of development between Stage I of the proposed project and project buildout.

Description. Under this alternative, the Arques Campus would be developed in a manner similar to the proposed project. The same demolition would occur, and new buildings would be sited in roughly the same locations and occupy the same building footprints as proposed for the project. The primary difference between this alternative and the proposed project would be the square footage and heights of the new buildings and the number of employees at buildout. As with the project, about 85,800 square feet would be demolished, but about 476,300 square feet of new space would be constructed, a net increase of 390,500 square feet. Because less space would be developed, this new space would consist of three 2-story office/prototype lab buildings, as opposed to the 5-story structures proposed for the project. The 2-story buildings would stand about 30 feet tall. Because of the reduced development under this alternative compared to the proposed project, the space for on-site amenities may be less than with the proposed project. The Reduced Development alternative would support an increase in employment of about 916, from the existing 1,500 to a total population of about 2,416 at buildout. The population increase would require about 892 new parking spaces in the proposed garage. With this scenario, the garage would need 5 parking levels (standing about 55 feet high), as opposed to a 7-level structure as proposed for the project.

If Applied Materials were to grow beyond the capacity of this Reduced Development alternative, it would have to consider placing operations elsewhere in Sunnyvale or the greater Santa Clara Valley

area (refer to the Off-Site Development alternative). In this case, Applied Materials would likely seek to occupy space in the vicinity of the Technology Center.

Stage I Development

Definition. The Stage I Development alternative would cap development at the Arques Campus at Stage I and include no subsequent development. Under this scenario, the allowed FAR would increase from 35% to about 50%. The increase from the existing 34% FAR would permit a total of 770,200 square feet, or about 69% of the total floor area that would exist with the proposed project.

Rationale. A Stage I Development alternative is presented to determine the effects of limiting development at the Arques Campus to Stage I of the proposed project. The rationale for considering this alternative is similar to the rationale for considering the Reduced Development alternative. It is intended to investigate to what extent reducing the level of development could lessen or avoid potentially significant impacts, particularly impacts related to traffic, regional air emissions, stormwater runoff, wastewater generation, and hazardous materials in existing buildings. These impacts may be related to the magnitude of the development, the proposed demolition, or the extent to which the property is covered by impervious surfaces.

Description. Development under this alternative would increase the existing square footage at the Arques Campus by about 249,200 square feet. The majority of this space (215,000 square feet) would be office/prototype lab space, assumed to be accommodated in two 2-story structures (as opposed to one 5-story building under the proposed project). The 2-story buildings would be about 30 feet tall. Two office/prototype lab buildings are proposed to accommodate the new developed space to better fulfill the site organization and layout recommended in the Specific Plan. Stage I of the project could involve demolishing the roughly 13,800 square feet of space in the existing cafeteria and recreation center, and assumes that these buildings would be replaced with new and larger facilities, as they would with the proposed project. The space allotted for such amenities could actually be less than presented in Table 5-1, given the reduced development under this alternative. This alternative further assumes that Applied Materials would also construct a new conference center. There would be a central commons, but it would be roughly half the size of the central commons with the proposed project because it would have to be accommodated by the Stage I Development site plan.

Stage I Development would not involve demolishing any portion of the existing office/prototype lab building, which is necessary under the proposed project to create space for the second garage. Therefore, under this alternative, no new parking garage would be constructed. The existing number of parking spaces on site (2,025) would adequately accommodate the roughly 300 new employees associated with Stage I Development. If Applied Materials were to grow beyond the capacity of the Stage I Development alternative, it would have to consider placing operations elsewhere in Sunnyvale or the greater Santa Clara Valley area (refer to the Off-Site Development alternative). In this case, Applied Materials would likely seek to occupy space in the vicinity of the Technology Center.

Off-Site Development

Definition. Assuming no further development would occur at the Arques Campus because of FAR limitations, this alternative assumes that Applied Materials would construct about the same amount of net new space as proposed for the project (593,600 square feet) at a different location. A possible

location exists on Aster Avenue at Lawrence Expressway, as shown in Figure 5-1. Applied Materials would need to acquire this 32.6-acre site, which is currently used for manufacture and storage of construction materials. The site is not currently on the market for sale; therefore, it may be infeasible for Applied Materials to purchase the site. The FAR at this off-site location would be about 42%.

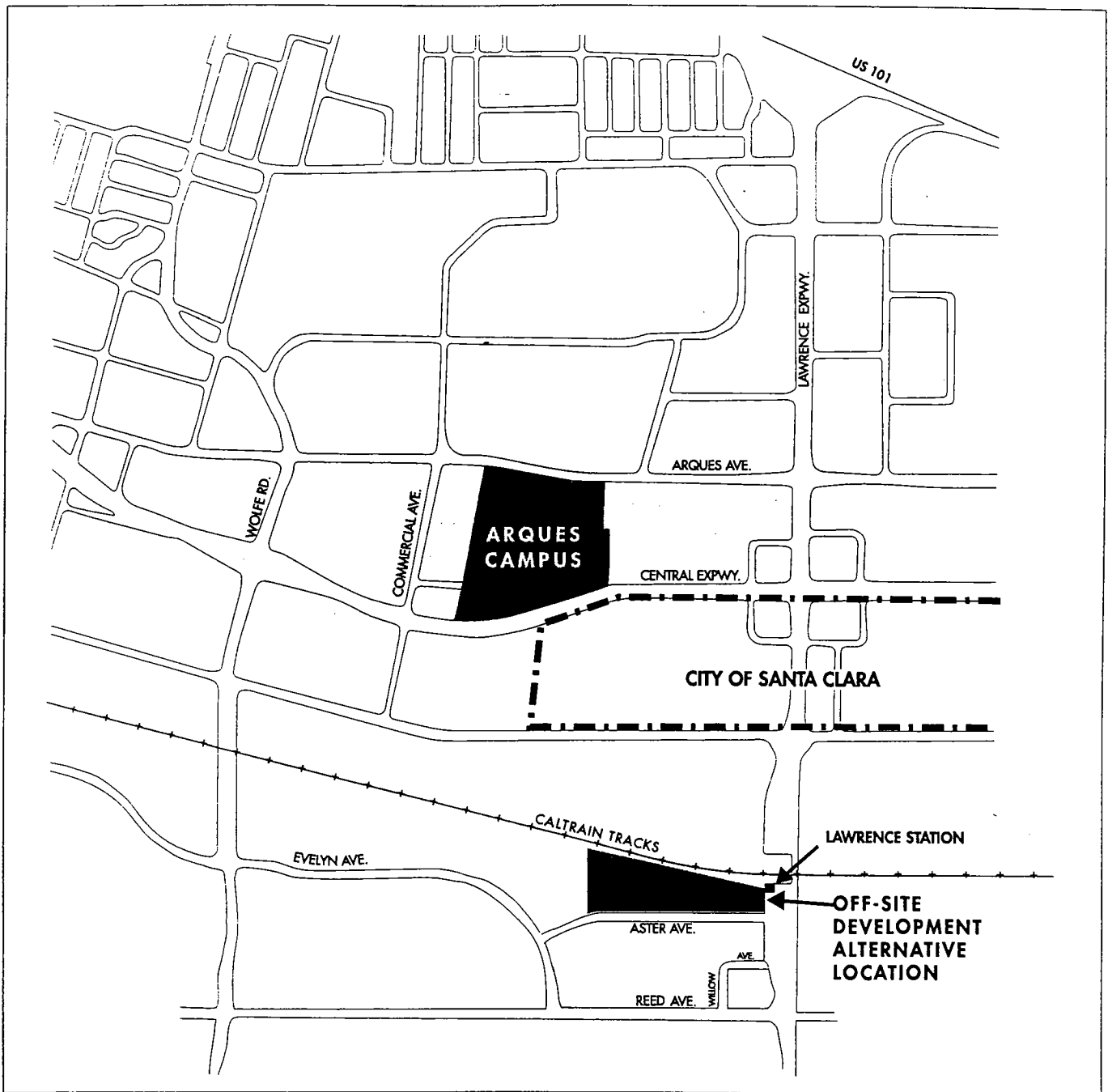
Rationale. The Off-Site Development alternative is intended to investigate to what extent selecting a different site for development could lessen potentially significant impacts identified for the proposed project, particularly traffic, stormwater runoff, wastewater generation, and hazardous materials in existing buildings. These impacts are specific to the project site and may be avoided by shifting the proposed development to an alternative location.

Description. Possible locations for off-site proposals were identified by searching the City of Sunnyvale's geographic information system (GIS) database. The GIS search yielded a list of all sites within the City of Sunnyvale that are vacant or underutilized, within 7.5 miles of the Arques Campus (to be close to the Technology Center at the Arques Campus), and zoned for industrial use (either M-S or M3). At an FAR no greater than 35%, Applied Materials would require a site of about 40 acres to construct the new facilities proposed for the Arques Campus. To locate sites large enough to accommodate such development, the GIS search included sites at least 14 acres in size. In theory, two or more sites could be developed together, since the purpose of this alternative is to accommodate the square footage of the proposed project by developing one or more satellite campuses. Employees at these satellite campuses would coordinate with those remaining at the Arques Campus.

The GIS analysis identified one site that meets most of the selection criteria.¹ As shown in Figure 5-1, the site at 1155 and 1175 Aster Avenue is less than one mile from the Arques Campus and is immediately west of Lawrence Expressway and immediately south of the Caltrain commuter rail line. A Caltrain station is located just east of the site under Lawrence Expressway. The Aster Avenue property consists of two 16.3-acre parcels that, combined, provide 32.6 acres of land for development. The site is occupied by Peninsula Materials Hardware and Calstone Company, which manufacture and store brick, concrete, and other construction materials. The existing FAR is about 2%.

The Aster Avenue site is zoned ITR, Industrial to Residential. This zone is intended to allow industrial, office, commercial and residential uses to exist within the same zoning district, and to allow industrial, office, or commercial uses to gradually convert to residential use. Light industrial development lies to the south across Aster Avenue, and multifamily residential development lies west and southwest of the site.

With the Off-Site alternative, Applied Materials would acquire and remove the existing structures at the Aster Avenue site to construct its new facilities. There would be three office/prototype lab buildings and some amenities. The result would be about 593,600 square feet of new space at this off-site location. The three office/prototype lab buildings could be somewhat smaller than those of the proposed project because no office/prototype lab space would be demolished at the Arques Campus. Nevertheless, the three buildings would be about five stories (about 75 feet) tall. Because this site covers about 32.6 acres, the FAR would need to be about 42%. The 1,500 employees currently at the Arques Campus would remain there, and the population at the Off-Site Development would be about 1,300. About 1,300 parking spaces would be provided in a 7-level parking garage (about 75 feet), as proposed for the project. A small number of parking spaces would be placed at a visitor entrance. Like the project, the Off-Site Development alternative would be designed with a consistent architectural and landscape theme. Open space would be maximized, and a central commons would be created.



SOURCE: EIP Associates

APPLIED MATERIALS ARQUES CAMPUS SPECIFIC PLAN EIR
FIGURE 5-1 OFF-SITE DEVELOPMENT ALTERNATIVE LOCATION

EIP

5.3 COMPARATIVE ANALYSIS OF ENVIRONMENTAL IMPACTS

The following analysis evaluates each of the alternatives for their potential environmental impacts and compares the alternatives relative to the proposed project.

No Project

If the Arques Campus Specific Plan were not approved, none of the environmental impacts associated with the proposed project would occur. There would be no change to existing conditions aside from those that would occur with or without the project.

Background traffic levels would rise with or without the project, resulting in increased delays at intersections surrounding the project site. The level of service at the Lawrence Expressway/Arques Avenue intersection would decrease from C to D without the proposed project in the a.m. peak hour, and the Lawrence Expressway/Duane Avenue intersection would decrease from D to E in the p.m. peak hour. Under No Project conditions, the left turn queues at Wolfe/Arques and Lawrence/Arques would increase to exceed the available storage capacity. This is not expected to adversely affect traffic flows at Wolfe/Arques since the through volume is projected to be relatively minor and can clear the intersection using the right-most lane. The left-turn queue at the southern approach of the Lawrence/Arques intersection would grow from 25 vehicles under existing conditions to 35 vehicles, exceeding the storage capacity by 4 vehicles. This may adversely affect through movements in the a.m. peak hour. Background conditions would also increase emissions of criteria air pollutants. Nevertheless, there would be no project-related traffic or air quality effects; thus, the No Project alternative would avoid these significant effects of the proposed project. The same is true for wastewater generation, water quality, and health and safety, i.e., the No Project alternative would avoid significant effects identified for the proposed project.

Reduced Development

Land Use and Planning

The Reduced Development alternative would result in construction-related nuisances that would be similar to those identified for the proposed project and would likewise not be considered significant because of their temporary nature. As with the proposed project, the Reduced Development alternative would not result in permanent, on-going land use conflicts with adjacent development, since the proposed office and manufacturing activities at the Arques Campus would be compatible with the surrounding light industrial, business park, and service commercial uses. Although the proposed FAR of 59% is greater than that of surrounding development, the intensity and scale of development under this alternative, with two-story office/prototype lab buildings and a five-story parking garage, would be more consistent with surrounding development than the proposed project.

This alternative, similar to the proposed project, appears to be consistent with applicable policies and goals of the City of Sunnyvale General Plan to provide a research and development campus, maintain industrial uses, and enhance the character of the neighborhood. Like the project, this alternative would also require a use permit to increase the FAR above 35% to 59%. For informational purposes, the average FAR previously granted by the City through the use permit process is 47% and an absolute FAR approved through this process is 55%. Since the proposed project did not identify a significant

land use effect as a result of onsite operational impacts, this alternative with reduced development at the Arques Campus would also not have a significant effect. In particular, this alternative's operational effects of noise, traffic, and service demand would be less than identified for the proposed project.

Aesthetics

Like the proposed project, the Reduced Development alternative would not adversely affect any scenic vista or detract from scenic resources but would likely enhance the existing visual character of the site by providing an organized campus setting with 2-story office/lab buildings and a 5-story parking garage. Although no significant impacts were identified for the proposed project, the massing and height of development under this alternative would be more consistent with neighboring development because the new office/prototype lab buildings along the Arques Avenue frontage would be two stories high, rather than five stories (with upper stories set back) under the proposed project. Since this alternative would include all the design features of the project (e.g., the use of non-reflective surfaces, etc.), it would be consistent with the Community Design Sub-Element of the General Plan and the Industrial Design Guidelines. Specifically, this alternative would fulfill the proposed project's site plan, improve the streetscape, and maintain the existing height and intensity of development along Arques Avenue. The Reduced Development alternative would result in about the same level of light and glare as the proposed project, but this effect would be insignificant under both alternatives.

Transportation

The Reduced Development alternative would result in fewer vehicle trips than would the proposed project. Table 5-2 shows a net new trip generation of 2,487 trips per day, compared to 3,751 trips per day under the proposed project. As with the proposed project, there are no level of service impacts at Congestion Management Program (CMP) intersections. There would be no non-CMP intersections that deteriorate from LOS D (under background conditions), which is the City of Sunnyvale standard, to LOS E (under the project alternative condition). Also, all non-CMP intersections would maintain the same level of service compared to background conditions, with the exception of Wolf Road at Marie Lane, where congestion would increase from LOS C to LOS D. Under City of Sunnyvale policy, mitigation measures are proposed when the level of service at an intersection deteriorates a grade, where reasonable mitigation measures can be identified. However, the Reduced Development alternative would add less than 1% to the total intersection volume (31 trips). Average delay under background conditions is 24.0 at this intersection, which is the lower threshold for LOS C. Given the degree of change at this intersection, no mitigation measures are proposed. Signal timing and phasing modifications would be expected to sufficiently maintain the existing level of service.

Under this scenario, two freeway segments on U.S. 101 (U.S. 101-Great America Parkway to Montague Expressway and U.S. 101-South of Montague) would be significantly affected compared to three segments under the proposed project. The same mitigation measure identified for the proposed project would be applicable for this alternative (i.e., a contribution towards future roadway improvements and implementation of a TDM program targeting a 15% trip reduction in the automobile mode share). As noted for the proposed project, the feasibility of the roadway improvement is uncertain, so this impact would remain significant.

As with the proposed project, there would be a significant impact to the south approach of Lawrence Expressway and Arques Avenue. The increase of six vehicles from background conditions (35 vehicles) to project conditions (41 vehicles) exceeds the criterion for queue-related impacts. The

proposed mitigation measure is to lengthen the northbound dual left-turn lanes from approximately 320 feet to approximately 520 feet. This action would accommodate left turn storage capacity for 41 vehicles, the design queue identified under the Reduced Development alternative.

As with the proposed project, this project alternative would not affect transit service or facilities as stipulated by Santa Clara Valley Transportation Authority (VTA) guidelines; disturb existing or preclude future bicycle or pedestrian facilities; or increase congestion during construction (an estimated 109 trips, compared to 170 trips under the proposed project). The rationale for these summary assessments is the same as that provided for the proposed project in Section 3.4, Transportation.

With respect to on-site parking, the Reduced Development alternative would add 892 parking spaces to the existing supply for a total of 2,917 parking stalls. The City of Sunnyvale off-street parking ordinance would require between 1,823 and 3,646 spaces for this 911,500 square foot facility. The proposed number of parking spaces falls within the acceptable range.

Table 5-2
Project Alternatives Trip Generation Estimates – Net Added

Alternative	FAR	Size (gsf)	Daily Trips	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Proposed Project	0.72	593,600	3,751	641	81	722	123	562	685
Reduced Development	0.59	390,500	2,487	426	53	479	79	374	453
Stage 1 Development	0.50	242,200	1,599	274	33	307	50	240	291
Off-Site Development	0.42	593,600	3,751	641	81	722	123	562	685

Source: Barton-Aschman Associates.

Air Quality

The Reduced Development alternative would result in fewer vehicle trips and relatively less intersection congestion than the proposed project. Because vehicle trips and criteria pollutant emissions are roughly proportional to the developed space, the increase in air emissions for the Reduced Development alternative would be about 66% of the increase for the project. About 103 pounds of nitrogen oxides would be emitted by the proposed project; therefore, about 68 pounds per day would be emitted by the Reduced Development alternative. These emissions would not exceed the 80 pound per day significance threshold; therefore, the regional emissions of criteria air pollutants for this alternative would be less than significant. The Reduced Development alternative would also result in lower carbon monoxide concentrations at nearby intersections than would the proposed project, although under both scenarios state and federal carbon monoxide standards would not be exceeded. As with the proposed project, the Reduced Development alternative would generate emissions of particulate matter during construction that could pose potentially significant impacts. The same mitigation measures identified for the proposed project would be applicable for this alternative and reduce particulate

emissions to less-than-significant levels. Cumulative development would not result in local carbon monoxide concentrations that exceed state or federal standards.

Wastewater Services

The Reduced Development alternative would generate less wastewater than would the proposed project. On the basis of the same assumptions used to estimate peak wastewater flows for the proposed project, the Reduced Development alternative would generate peak flows of about 364 gallons per minute (gpm) for the Arques Campus. With the 180 gpm associated with other existing dischargers, the total peak flow would be about 544 gpm, or about 16 gpm below the capacity of the Arques sewer. Therefore, the impact of this alternative, by itself, on the Arques line would be less than significant. Its cumulative impact, taken with other foreseeable development in the vicinity, could potentially be significant, depending on the wastewater flows generated by the cumulative development, the sewer system improvements associated with other projects, and any on-site retention facilities installed at contributing facilities. Because wastewater generation with the Reduced Development alternative would be less than with the proposed project, this alternative's impact on the capacity of the wastewater treatment plant would be less than the insignificant impact of the proposed project.

Hydrology and Water Quality

With the Reduced Development alternative, the area of the site to be covered by impervious surfaces would be similar to the proposed project. Therefore, as with the project, stormwater runoff volumes under this alternative would decrease slightly as the proportion of the site allocated for landscaping (i.e., pervious surfaces) increases. Given that this alternative would not result in any increases in stormwater runoff volumes, it would not combine with other nearby development to cumulatively result in significant stormwater flows.

In spite of the minimal change in stormwater runoff volumes, the Reduced Development alternative could lower stormwater runoff quality in a manner similar to the proposed project (i.e., through increased concentrations of fertilizers, pesticides, and herbicides related to landscaping). Mitigation measures identified for the proposed project would also be applicable to the Reduced Development Alternative, so that the effect on Calabazas Creek, the receiving water body, would be insignificant under both the proposed project and the Reduced Development alternative. Because this alternative would have roughly the same level of earth-moving activities as the proposed project, grading and construction activities would result in roughly the same potentially significant short-term increases in erosion and sedimentation. Mitigation identified for the proposed project would also be appropriate for this alternative.

Health and Safety

Because the Reduced Development alternative would involve building footprints similar to that of the proposed project, its potential to disturb existing contaminated soils or groundwater would also be similar and, therefore, potentially significant. Constructing the Reduced Development alternative would involve demolishing the same structures as would the proposed project; therefore, this alternative's potential to disturb hazardous materials in existing building components would be the same as for the proposed project (i.e., potentially significant). Mitigation measures identified for the proposed project would also be appropriate for the impacts of this alternative. While the Reduced Development alternative, like the proposed project, would involve transportation of potentially

hazardous materials on public roads, the potential for accidents involving hazardous materials under this alternative would also be considered insignificant. The Reduced Development alternative would result in a smaller increase in the on-site population potentially exposed to existing site hazards (e.g., soil or groundwater), but as with the proposed project, this impact would not be significant.

Stage I Development

Land Use and Planning

The Stage I Development would pose construction-related nuisances for neighboring land uses. These effects, less than significant under the proposed project, would be less disturbing under the Stage I Development alternative because it would involve less developed space and therefore a shorter duration over which construction nuisances would be experienced. Similar to the proposed project, this alternative would not result in long-term land use conflicts with adjacent development since the proposed office and manufacturing activities would be similar to the surrounding land uses. In particular, this alternative's operational effects of noise, traffic, and service demand, which are important aspects of land use compatibility, would be less than identified for the proposed project because the Stage I Development alternative proposes less floor area, fewer onsite employees, and a likely reduced scale of operations.

As with the proposed project, this alternative appears to be consistent with applicable policies and goals of the City of Sunnyvale General Plan to provide a research and development campus, retain industrial uses, and enhance the character of the neighborhood. At an FAR of 50%, this alternative would require a use permit to increase the FAR at the Arques Campus beyond 35%. Like the proposed project, the Stage I Development alternative would need to satisfy four criteria to obtain a use permit: (1) minimum development size, (2) lot consolidations, (3) project intended for a single use, and (4) overall positive community benefit. As noted previously for informational purposes, the FARs approved by the City through the use permit process have averaged 47%.

Aesthetics

The Stage I Development alternative, similar to the proposed project, would not adversely affect any scenic vista or detract from scenic resources. Instead, the proposed site plan, which mirrors that of the proposed project, could improve the existing visual character of the site, especially along the Arques Avenue frontage. The two office/prototype lab buildings under this alternative would stand two stories tall, compared to five stories under the proposed project. Although no significant impacts were identified for the proposed project, the massing and height of this alternative would be more consistent with those of neighboring development. Since this alternative is assumed to be developed following the site plan and architectural guidelines of the proposed project (e.g., the use of non-reflective surfaces, etc.), it would be consistent with the Community Design Sub-Element of the General Plan and the Industrial Design Guidelines. The Stage I Development alternative would result in about the same level of light and glare as the proposed project, which would be insignificant.

Transportation

The Stage I Development alternative would generate 58% less traffic overall than the proposed project (see Table 5-2). Under guidelines established by the VTA, there would be no significant project impacts at any of the CMP intersections. The level of service at non-CMP intersections would remain

constant compared to background conditions, with the exception of Wolfe Road and Maria Lane, where congestion would increase from LOS C to LOS D. Under City of Sunnyvale policy, mitigation measures are proposed when the level of service at an intersection deteriorates a grade, where reasonable mitigation measures can be identified. Because this project alternative would add 19 trips to the total intersection volume (less than 1% of the total volume), and average delay under background conditions would be 24.0 seconds at this intersection, which is the lower threshold for LOS C, no mitigation is proposed. Signal timing and phasing modifications would be expected to maintain the existing level of service.

The reduction in floor area under the Stage I Development alternative would avoid the significant impacts on U.S. 101 identified for the proposed project.

As with the proposed project, there would be a significant impact to the south approach of Lawrence Expressway and Arques Avenue. The increase of four vehicles from background conditions (35 vehicles) to project conditions (39 vehicles) meets the criterion established for queue-related impacts. The proposed mitigation is to lengthen the northbound dual left-turn lanes from approximately 320 feet to approximately 480 feet, which would accommodate left turn storage capacity for 39 vehicles, the design queue identified under the Stage I Development alternative.

Impacts of this project alternative on transit service, bicycle and pedestrian facilities, site circulation and access, and the street network during the construction period (71 daily trips) would be less than significant, as they would be for the proposed project.

This project alternative proposes no new parking spaces over and above the existing 2,025 stalls. City standards require between 1,540 and 3,081 parking spaces for a project of this magnitude. Thus, the existing 2,025 parking spaces meet the City's standards for off-street parking, and there would be no parking impact.

Air Quality

The Stage I Development alternative would result in fewer vehicle trips and relatively less intersection congestion than the proposed project. Because vehicle trips and criteria air pollutant emissions are roughly proportional to increases in developed space, the increase in emissions for the Stage I Development alternative would be about 42% of the increase for the project. About 103 pounds of nitrogen oxides would be emitted by the proposed project; therefore, about 43 pounds per day would be emitted by the Stage I Development alternative. These emissions would not exceed the 80 pound per day significance threshold; therefore, the regional emissions of criteria air pollutants for this alternative would be less than significant. The Stage I Development alternative would also result in lower carbon monoxide concentrations at nearby intersections than would the proposed project; these emissions would be insignificant under both alternatives. Even though the extent of ground disturbance would be considerably less under the Stage I Development alternative, emissions of particulate matter during construction could pose potentially significant impacts. The same mitigation measures identified for the proposed project would be applicable for this alternative and reduce particulate emissions to less-than-significant levels. Cumulative development would not result in local carbon monoxide concentrations that exceed state or federal standards.

Wastewater Services

The Stage I Development alternative would generate less wastewater than would the proposed project. On the basis of the same assumptions used to estimate peak wastewater flows for the proposed project, the Stage I Development alternative would generate peak flows of about 279 gallons per minute (gpm) for the Arques Campus, as indicated in Section 3.6. With the 180 gpm associated with other existing dischargers, the total peak flow would be about 459 gpm, or about 101 gpm below the capacity of the Arques sewer. Therefore, the impact of this alternative on the Arques line would be less than significant. Its cumulative impact, taken with other foreseeable development in the vicinity, would probably also be insignificant. The 101 gpm of capacity that would remain after Stage I Development would be sufficient to accommodate a substantial amount of additional development. Because wastewater generation with the Reduced Development alternative would be less than with the proposed project, this alternative's impact on the capacity of the wastewater treatment plant would be less than the insignificant impact of the proposed project.

Hydrology and Water Quality

Under the Stage I Development alternative, the area of the site to be covered by impervious surfaces would be similar to the proposed project. Therefore, stormwater runoff volumes under this alternative would be similar to that of the proposed project. Since this alternative would not result in significant increases in stormwater runoff volumes, the Stage I Development alternative would not combine with other nearby development to cumulatively result in significant stormwater flows.

The Stage I Development alternative could lower stormwater runoff quality in a manner similar to the proposed project (i.e., through increased fertilizers, pesticides, and herbicides washed from landscaped areas). The mitigation measure recommended for the proposed project is applicable for this alternative and would reduce potential water quality effects on Calabazas Creek, the receiving water body, to less than significant. This alternative would involve less earth-moving activities than the proposed project, but grading and construction activities under the Stage I Development alternative would result in similar potentially significant short-term increases in erosion and sedimentation. Mitigation identified for the proposed project would also be appropriate for this alternative.

Health and Safety

Because Stage I Development would involve earthwork similar to that of the proposed project, the potential to disturb existing contaminated soils or groundwater would also be similar and, therefore, potentially significant. Constructing Stage I Development would involve demolishing less existing space than the proposed project; therefore, this alternative's potential to disturb hazardous materials in existing building components would be less than with the project. Exposure to hazardous materials under this alternative would, however, still be potentially significant. Mitigation measures identified for the proposed project would also be appropriate for the impacts of this alternative. Although Stage I Development, like the proposed project, would involve transportation of hazardous materials on public roads, the potential for accidents involving hazardous materials would be considered insignificant. The Stage I Development alternative would result in a smaller increase in the on-site population potentially exposed to existing site hazards (e.g., soil or groundwater), but as with the proposed project, this impact would not be significant.

Off-Site Development

Land Use and Planning

The Off-Site Development alternative would pose construction-related nuisances similar to the proposed project. These nuisances would be more likely to disturb nearby land uses than the proposed project, because the Off-Site Development location is adjacent to existing residents. These nuisances would not be considered significant, however, due to the temporary nature of the disturbance and the availability of nearby major roadways to handle truck traffic. The Off-Site Development alternative could also result in long-term, permanent land use conflicts with the adjacent Willowbend Apartment Homes complex to the west, although the parking-area and recreation center of the residential complex help attenuate visual impacts and noise levels for residents further west. The Off-Site Development alternative would be consistent with the commercial, industrial, and office uses permitted in the ITR zoning; however, it would not foster the gradual conversion of the site to residential development. The increased investment and intensification of the site for office and laboratory space would reduce the likelihood that this site would convert to housing. Like the project, this alternative would require a use permit to increase the FAR above 35%.

Like the proposed project, this alternative appears to be consistent with applicable policies and goals of the City of Sunnyvale General Plan to provide a research and development campus, and enhance the character of the neighborhood; it would not support policies pertaining to the residential conversion of ITR districts. Operational effects of noise, traffic, and service demand could be potentially significant for this alternative due to the proximity of residential uses.

Aesthetics

The Off-Site Development alternative would not adversely affect any scenic vista or detract from scenic resources. The site abuts the Caltrain rail line and a Lawrence Expressway overpass, both of which serve as visual and physical buffers for land uses to the north and east. Residences to the west and southwest may be visually affected by development at the Aster Avenue site. The five-story office/prototype lab buildings would be visually prominent from surrounding uses and from Lawrence Expressway. Development to the south and west consists of one- and two-story buildings that would be generally smaller in scale than most of the proposed Applied Materials development. The Off-Site Development alternative would change the visual setting from an active manufacturing facility visually characterized by manufacturing equipment and outdoor storage to a modern business park organized to create a campus atmosphere. The site lacks visual amenities and is separated from the residents to the west by an 8-foot to 10-foot masonry wall. The site and architectural design recommendations of the proposed project (e.g., the use of non-reflective surfaces, etc.) would apply here and would be expected to enhance the existing visual character or quality of the site and its surroundings. Development at the Aster Avenue site in accordance with these guidelines would also indicate that this alternative would be consistent with the Community Design Sub-Element of the General Plan and the Industrial Design Guidelines. It would result in about the same level of light and glare as the proposed project. Although this light and glare would be closer to residential neighborhoods, this effect would be less than significant due to the distance from the residential windows.

Transportation

The Off-Site Development alternative would result in roughly the same number of vehicle trips as the proposed project would (see Table 5-2), but these trips would be to and from the Off-Site Development site and not the Arques Campus. There would be an additional increment of trips that would be generated as a result of interaction between the Arques Campus and the off-site location at Aster Avenue. These trips would result from normal interactions among research development staff and use of the Technology Center. This project alternative would not create any level of service impacts at any of the CMP study intersections. For non-CMP intersections, congestion at Lawrence Expressway and Reed Avenue would increase from LOS D to LOS E in the PM peak period. In addition, as under project conditions, Wolfe Road and Maria Lane, and Lawrence Expressway and Kifer Road, deteriorate from LOS C to LOS D. As noted for the preceding project alternatives, no mitigation is proposed for Wolfe Road and Maria Lane. The City of Sunnyvale has programmed improvements at the intersection of Lawrence Expressway and Kifer Road that would maintain the existing LOS.

Site access could be less direct than for the project. Traffic off Lawrence Expressway would exit at Reed Avenue, then turn right (north) on Willow Avenue or continue to Evelyn Avenue before turning right. From Evelyn Avenue, traffic would turn right (east) on Aster Avenue to reach the site. If taking Willow Avenue, traffic would turn sharply to the right off Reed Avenue. Willow Avenue is narrow and bends as it approaches Aster Avenue at the east side of the site. Both Willow Avenue and Aster Avenue are local two-lane streets that may have difficulty accommodating the vehicle trips and any large truck traffic associated with the development. Under the Off-Site Development alternative, the intersections of Evelyn Avenue and Aster Avenue, Reed Avenue and Evelyn Avenue, and Reed Avenue and Willow Avenue would be anticipated to experience a decrease in level of service.

The same three freeway segments affected by the proposed project would be significantly affected by the Off-Site Development alternative. As specified for the proposed project, this project alternative would contribute its fair share to projects that would improve traffic conditions along the affected freeway segments. Because these improvements are uncertain and a funding mechanism has not been established, this impact would remain significant.

The Off-Site Development alternative would eliminate the need for left-turn capacity improvements at the south approach of Lawrence Expressway and Arques Avenue. However, it would create the need for additional left turn capacity at Wolfe Road and Reed Avenue, and Lawrence Expressway and Reed Avenue. The west approach of Reed Avenue at Wolfe Road would need to be increased by an additional 100 feet to accommodate PM peak hour traffic. The east approach of Reed Avenue and Lawrence Expressway would need to be increased by 250 feet in each of the dual left turn lanes to accommodate PM peak project traffic.

Transit services would accommodate potential increases in demand, similarly to the proposed project. The opportunity to divert a greater percentage of trips from automobiles to rail transit is high, given the Caltrain station located near the northeast corner of the site.

The off-site location at Aster Avenue has no existing sidewalks or bicycle facilities, nor are there any planned bicycle facilities along this roadway. Consequently, no significant effects are identified for these facilities. Like the proposed project, the Off-Site Development alternative is estimated to generate 170 daily construction trips. Although most trips would occur in off-peak periods, Aster Avenue, unlike Arques Avenue, has a significant residential component. Also, the character of Aster Avenue is that of a two lane local roadway. Accordingly, there could be significant increased traffic

congestion and deterioration of the study area roadbed. This potentially significant impact could be mitigated by the developer (Applied Materials) repairing the roadway or the City of Sunnyvale could maintain the roadway through its Pavement Management System of ongoing street repairs.

The Off-Site Alternative would provide parking facilities sufficient to satisfy parking needs within a new parking structure, estimated to be 7 levels, the same as the proposed project. The proposed 1,381 parking stalls for this project alternative falls within the acceptable range of 1,187 to 2,374 spaces established by the City of Sunnyvale; parking impacts would therefore be less than significant.

Air Quality

Because the Off-Site Development alternative would accommodate the same net new square feet as the proposed project, it would also result in about the same number of vehicle trips as the project. The level of intersection congestion may be different than the proposed project because it would affect different intersections. Because increases in vehicle trips and criteria pollutant emissions are roughly proportional to increases in developed space, the increase in emissions for the Off-Site Development alternative would be about the same as for the project. Therefore, this alternative would result in similar significant impacts to regional air quality. As with the proposed project, mitigation measures are available to reduce vehicle trips and therefore air emissions, but are not likely to reduce the emissions to below the significance thresholds of the Bay Area Air Quality Management District. As a result, air quality impacts would remain significant. The Off-Site Development alternative could result in different carbon monoxide concentrations at nearby intersections than would the proposed project (because it would affect different intersections), but like the project, these emissions would probably be insignificant. As with the project, emissions of particulate matter during construction could pose a potentially significant impact. Mitigation measures identified for the proposed project would reduce particulate matter emissions for this alternative to less than significant levels. Cumulative development would not result in local carbon monoxide concentrations that exceed state or federal standards.

Wastewater Services

The Off-Site Development alternative would generate about the same amount of wastewater as the proposed project would. Therefore, its impact on the capacity of the wastewater treatment plant would be about the same as the insignificant impact identified for the proposed project. The local sewer lines that would receive wastewater from the Aster Avenue site are the Arques Avenue Collector Sewer Main and the Lawrence Trunk Sewer, the same lines affected by the proposed project. As indicated in Section 3.6, these lines do not have sufficient capacity to serve this projected demand. Therefore, this alternative would result in the same significant impact to the local sewer system as the proposed project. This alternative would also contribute to cumulative impacts on wastewater facilities.

Hydrology and Water Quality

The site selected for the Off-Site Development is presently paved and impervious. New landscaping would decrease the amount of impervious surfaces resulting in a decrease in stormwater runoff from the Aster Avenue site. The net effects in terms of stormwater runoff volumes would be no change at the Arques Campus and a relatively small reduction at the off-site location. The Off-Site Development alternative would probably affect stormwater runoff quality by decreasing particulates and sediments associated with the existing building materials operations and increase oil and grease from parked cars and nutrients from fertilizers and pesticides used for landscaping. Oil and grease pollutant loadings

would not necessarily increase with the proposed project because surface parking at the Arques Campus would decrease. However, at the Off-Site Development location, surface parking would increase. Mitigation to minimize the use of nutrient-rich fertilizers and pesticides, and to minimize oil and grease in site runoff, would lessen the potential impact on water quality. This alternative would require earth-moving activities, and grading and construction activities would result in short-term increases in erosion and sedimentation. This impact could be potentially significant, although mitigation identified for the proposed project would also be appropriate for this alternative and would reduce such effects to less than significant levels.

Health and Safety

The Off-Site Development alternative would not be constructed within any of the operable units in the vicinity of the project, including Operable Unit 1, the Commercial Street Operable Unit, or the Stewart Drive Operable Unit. An Environmental Site Assessment would be needed to determine the potential for contamination at the site, but the site does not appear on the *State of California Hazardous Waste and Substances Sites List*.² Constructing the Off-Site Development alternative would mean none of the existing buildings at the Arques Campus would need to be demolished, but demolition of the existing structures at the Aster Avenue site would be necessary. Therefore, like the project, this alternative could disturb hazardous materials in existing building components, which could constitute a potentially significant impact. While the Off-Site Development alternative, like the proposed project, could involve transportation of potentially hazardous materials associated with remediation of site hazards, if any, on public roads, the roads in the immediate vicinity of the alternative site also serve residential uses, which may raise short-term concerns regarding the potential for public exposure to hazardous materials removed from this location. However, like the proposed project, the potential for accidents involving hazardous materials under this alternative would be considered insignificant because accidents involving hazardous materials would continue to be uncommon and required packaging would minimize the potential for adverse health effects to result in such an accident. The Off-Site Development alternative would result in the same increase in population, but in this case, the population would be located at a site where specific site hazards (e.g., soil or groundwater) have not been identified. Site hazards, if any, would be identified and remediated, if necessary, prior to occupancy, and clean up and monitoring standards would account for foreseeable site uses. Mitigation identified for this proposed project (updating the existing *Environmental Safety and Health Plan*) would be appropriate for this alternative. With such mitigation, this impact would not be significant, just as it would not be significant with the project.

5.4 COMPARATIVE ANALYSIS OF ATTAINMENT OF PROJECT OBJECTIVES

The proposed project, the No Project alternative, the Reduced Development alternative, the Stage I Development alternative, and the Off-Site Development alternative are compared in this section to assess how well they attain Applied Materials' project objectives for the Specific Plan. Each project alternative is rated to either fully satisfy the project objectives, moderately satisfy the project objectives, minimally satisfy, or fail to satisfy project objectives or change existing conditions. The results of this analysis are summarized in Table 5-3 and discussed below.

1. Transforming a loose configuration of poorly organized work spaces, originally designed for light industrial use, into an integrated, high-technology research and development campus that sets a standard for design quality and workplace environment. The project would transform the

existing loose configuration of poorly organized work spaces into an integrated, high-technology research and development campus. The Reduced Development alternative, and to a lesser extent the Stage I Development alternative, could accomplish this objective as well, although project economics could dictate that the central commons be smaller than with the proposed project. Neither the No Project alternative nor the Off-Site Development alternative would improve the existing campus. The Off-Site Development alternative could achieve a high-quality campus setting at the off-site location and therefore is rated as minimally satisfying this objective.

2. Facilitating the phased expansion of existing research and development operations to an ultimate size of approximately 1.1 million gross square feet of floor space. The project would facilitate the phased expansion of existing research and development operations, resulting in approximately 1.1 million gross square feet of floor space. The Reduced Development alternative would also facilitate the expansion of existing research and development operations, but it would result in an ultimate campus development of about 911,500 gross square feet. Because the Stage I Development alternative would follow the same site plan and development guidelines as the proposed project, it also allows for phased expansion of the Arques Campus; however, the reduced developed space of 770,200 square feet means much less expansion at the Arques Campus. No expansion would occur under the No Project alternative. Expansion resulting from the Off-Site Development alternative would not expand the existing research and development operations at the Arques Campus, but enables Applied Materials to attain its desired buildout space. This alternative is considered to moderately satisfy this objective since the two campuses together would meet the floor area goals but their physical separation means a less efficient operation.

3. Providing a state-of-the-art facility to attract and retain highly qualified personnel in the semiconductor industry. The project would provide a state-of-the-art facility at the project site to attract and retain highly qualified personnel in the semiconductor industry. The Reduced Development alternative, and to a lesser degree the Stage I Development alternative, could achieve the same objective. The Off-Site Development alternative could involve the development of state-of-the-art facilities, but these facilities would not be located at the project site. The No Project alternative would not provide any new state-of-the-art facilities.

4. Providing for increased employment activity in the proximity of regional vehicular and rail transportation corridors, but separated from residential neighborhoods. The project would provide for increased employment activity in the proximity of regional vehicular and rail transportation corridors (separated from residential neighborhoods). The Arques Campus is about one mile from Caltrain and is located along two major roads, Lawrence and Central Expressways. Applied Materials provides a shuttle service to nearby transit stations. The Reduced Development and Stage I Development alternatives would accomplish the same objective, although they result in less employment activity than the proposed project. The No Project alternative would not necessarily increase employment. The Off-Site Development alternative would also be located near regional vehicular and rail corridors. The possible site at Aster Avenue is located immediately west of the Caltrain Lawrence Expressway stop and is accessed from the Lawrence Expressway.

5. Consolidating within a single-use campus workplaces that would otherwise be scattered throughout the community. The project would consolidate within a single-use campus workplaces that would otherwise be scattered throughout the community. The Reduced Development alternative would also allow the consolidation of workplaces, but to a lesser degree because of the reduced buildout size. The Off-Site Development alternative could also accommodate some consolidation, but much of this consolidation would not occur at the Arques Campus and its Technology Center. The

Stage I Development alternative would provide the least amount of net new floor area and accommodate the fewest new employees, compared to the other "build" alternatives. Consequently, it is rated the least successful at meeting this project objective. The No Project alternative would not satisfy this project objective since it would not facilitate any consolidation of Applied Materials' workplace.

6. Optimizing site accessibility and minimizing project-related traffic on surrounding roadways in accordance with Valley Transportation Authority standards. Given the size of the proposed development, the project would optimize site accessibility and minimize traffic on surrounding roadways to the extent possible. The Reduced Development alternative, with its reduced population at buildout of the Specific Plan, would reduce traffic-related impacts on local intersections. Similarly, the Stage I Development alternative would further minimize traffic-related impacts. The Off-Site Development alternative would minimize traffic-related impacts at intersections near the Arques Campus; however, it would affect traffic at intersections near the Off-Site Development location. The No Project alternative would not affect traffic on roadways near the project site. If Applied Materials were to grow beyond the capacity of the No Project, Reduced Development, or Stage I Development alternatives, however, it could consider placing operations elsewhere in Sunnyvale or the greater Santa Clara Valley area.

7. Providing a self-mitigating specific plan, whereby any significant environmental impacts are minimized to the extent feasible. The project would result in a self-mitigating specific plan to the extent possible. For example, the architectural and design guidelines would reduce the potential visual impacts and the location of the security booths would allow traffic queues to form onsite rather than off-site where they could interfere with traffic flow on Arques Avenue. Without additional mitigation, some impacts of the project could be significant, as identified in Section 3 of this EIR. The Reduced Development, Stage I Development, and Off-Site Development alternatives would be expected to be developed and designed in a manner consistent with the policies, guidelines, and standards established for the proposed project. As a result, these alternatives would be equally capable of self-mitigating potential impacts. By contrast, the No Project alternative represents the status quo and would not require a specific plan to guide future development or mitigation measures to avoid or reduce impacts.

8. Taking advantage of the size and configuration of the project site to provide on-site amenities (e.g., conference center, cafeteria, recreation center, central commons) not economically feasible for smaller, scattered facilities. The project would take advantage of the size and configuration of the project site to provide on-site amenities not economically feasible for smaller, scattered facilities. The Reduced Development and Stage I Development alternatives could accomplish the same objective. Although the amenities that could be constructed under these alternative could be smaller because of the reduced amount of development at the site, these facilities would be assumed to be similar to those envisioned for the proposed project (see Table 5-1) to fulfill the objectives of the site plan. Neither the No Project alternative nor the Off-Site Development alternative would take advantage of the size and configuration of the Arques Campus to provide on-site amenities beyond those that already exist; however, the Off-Site Development alternative would be expected to provide on-site amenities at the Aster Avenue site.

9. Providing adequate office, laboratory, and support space to house the anticipated 2,800 employees necessary (a) to support the growth in Applied Materials' business projected to occur within the next 5 to 10 years and (b) to make full use of the tool testing and demonstration capacity that the recently completed Technology Center is designed to accommodate. The project would provide adequate office, laboratory, and support space to house the anticipated 2,800 employees

necessary to support the growth in Applied Materials' business and to make full use of the recently completed Technology Center. The Reduced Development and Stage I Development alternatives would accommodate additional employees at the site, but would fall short of accommodating the 2,800 employees believed to be necessary to support Applied Materials' growth projected to occur within the next 5 to 10 years. The reduced levels of employment may not take "full" advantage of the Technology Center. The Off-Site Development alternative would house the anticipated employees necessary to support anticipated Applied Materials growth, but it would not accommodate any substantial increase at the Arques Campus. Without an increase at the Arques Campus, this alternative would not facilitate the "full" use of the Technology Center, although the off-site location at Aster Avenue is assumed to be close enough to the Arques Campus to benefit from the Technology Center. The No Project alternative would not achieve this objective.

10. Providing the office, laboratory, and support space necessary to research, design, and develop equipment prototypes for testing and demonstration in the Technology Center. The project would provide the office, laboratory, and support space necessary to research, design, and develop equipment prototypes for testing and demonstration at the Technology Center. Because of the reduced office/prototype lab space with the Reduced Development and Stage I Development alternatives, the alternatives would not satisfy this objective as well as the proposed project. As for the Off-Site Development alternative, equipment prototypes could be researched, designed, and developed at off-site locations for testing and demonstration at the Technology Center, but these activities would not be conveniently located at the project site and, therefore, would result in less efficient operations. The No Project alternative would not accomplish this objective.

11. Providing a campus anchor on Arques Avenue to provide a distinguishing presence on the east side of the City of Sunnyvale. The project would provide a campus anchor and a distinguishing presence on Arques Avenue. The Reduced Development and Stage I Development alternatives could satisfy this same objective. Neither the No Project alternative nor the Off-Site Development alternative would affect the existing character along Arques Avenue.

12. Implementing a design strategy that establishes a consistent architectural and landscape theme, tying the campus together in terms of both its internal relationships among facilities and its external compatibility with the surrounding community. The project would implement a design strategy that establishes a consistent architectural and landscape theme. The same objective could be accomplished with the Reduced Development or Stage I Development alternatives. Neither the No Project alternative nor the Off-Site Development alternative would affect the architectural or landscape theme at the Arques Campus, but a consistent architectural and landscape theme could be developed at the Off-Site Development site.

13. Maximizing open space by using structured parking and multistory buildings. The project would maximize open space by using structured parking and multistory buildings. The Reduced Development alternative could satisfy the same objective. The Stage I Development alternative could be accommodated by the existing number of surface parking spaces (although their configuration would need to be changed). Neither the No Project alternative nor the Off-Site Development alternative would affect open space at the project site. The Off-Site Development alternative would use structured parking and could be designed to provide open space at the Aster Avenue site similar to that envisioned by the Specific Plan.

Table 5-3
Alternatives Analysis – Satisfaction of Project Objectives

Objectives	Proposed Project	No Project	Reduced Development	Stage I Development	Off-Site Development
1. Transforming a loose configuration of poorly organized work spaces, originally designed for light industrial use, into an integrated, high-technology research and development campus that sets a standard for design quality and workplace environment.	●	—	●	●	○
2. Facilitating the phased expansion of existing research and development operations to an ultimate size of approximately 1.1 million gross square feet of floor space.	●	—	■	○	■
3. Providing a state-of-the-art facility to attract and retain highly qualified personnel in the semiconductor industry.	●	—	●	■	■
4. Providing for increased employment activity in the proximity of regional vehicular and rail transportation corridors, but separated from residential neighborhoods.	●	—	●	■	●
5. Consolidating within a single-use campus workplaces that would otherwise be scattered throughout the community.	●	—	■	○	■
6. Optimizing site accessibility and minimizing project-related traffic on surrounding roadways in accordance with Valley Transportation Authority standards.	■	—	●	●	■
7. Providing a self-mitigating specific plan, whereby any significant environmental impacts are minimized to the extent feasible.	●	—	●	●	●
8. Taking advantage of the size and configuration of the project site to provide on-site amenities (e.g., conference center, cafeteria, recreation center, central commons) not economically feasible for smaller, scattered facilities.	●	—	●	●	■
● full satisfaction of objective ■ moderate satisfaction of objective ○ minimal satisfaction of objective — no change from existing conditions					

Table 5-3 (Continued)
Alternatives Analysis – Satisfaction of Project Objectives

Objectives	Proposed Project	No Project	Reduced Development	Stage I Development	Off-Site Development
9. Providing adequate office, laboratory, and support space to house the anticipated 2,800 employees necessary (a) to support the growth in Applied Materials' business projected to occur within the next 5 to 10 years and (b) to make full use of the tool testing and demonstration capacity that the recently completed Technology Center is designed to accommodate.	●	—	■	○	■
10. Providing the office, laboratory, and support space necessary to research, design, and develop equipment prototypes for testing and demonstration in the Technology Center.	●	—	■	○	■
11. Providing a campus anchor on Arques Avenue to provide a distinguishing presence at the east entrance to the City of Sunnyvale.	●	—	●	●	—
12. Implementing a design strategy that establishes a consistent architectural and landscape theme, tying the campus together in terms of both its internal relationships among facilities and its external compatibility with the surrounding community.	●	—	●	●	○
13. Maximizing open space by using structured parking and multistory buildings.	●	—	●	○	○
14. Employing a phasing strategy whereby each increment of development maintains the coherence of the campus environment and functions on a stand-alone basis.	●	—	●	●	○

- full satisfaction of objective
- moderate satisfaction of objective
- minimal satisfaction of objective
- no change from existing conditions

Source: EIP Associates

14. Employing a phasing strategy with mitigation if necessary whereby each increment of development maintains the coherence of the campus environment and functions on a stand-alone basis. The project would employ a phasing strategy whereby each increment of development maintains the coherence of the campus environment and functions on a stand-alone basis. The Reduced Development alternative could also accomplish this objective. Stage I Development would be a single phase; therefore, a detailed phasing strategy would be unnecessary. The Off-Site Development and No Project alternatives would not involve staged development at the Arques Campus. The Off-Site Development alternative could, however, be developed in stages that allow the Aster Avenue site to function on a stand-alone basis at each phase of construction.

5.5 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA requires that an environmentally superior alternative be selected among the alternatives analyzed. In general, the environmentally superior alternative as defined by CEQA is supposed to minimize adverse impacts to the project site and its surrounding environment. The No Project alternative would best avoid the impacts identified for the proposed project; therefore, it is environmentally superior to the others. However, the State CEQA Guidelines indicate that when the No Project alternative is environmentally superior, another alternative is to be selected as the environmentally superior alternative. In accordance with CEQA, therefore, this analysis identifies the Stage I Development alternative as the environmentally superior alternative because it would result in the least adverse environmental impact of all the alternatives considered. It would not satisfy some of the project objectives (e.g., objectives 2, 4, 5, 9, 10, and 13) as well as the proposed project would. Furthermore, as would be the case under the No Project and Reduced Development alternatives, Applied Materials may seek to develop equivalent facilities elsewhere in the vicinity of the existing Technology Center.

Notes: Project Alternatives

- 1 Two other sites met most of the selection criteria, but were rejected as infeasible. One was the Sunnyvale Golf Course and the other was the National Semiconductor open space located across the Central Expressway from the Arques Campus.
- 2 California Department of Toxic Substances Control, State of California Hazardous Waste and Substances Sites List, April 1998.

Section 6

Agencies and Persons Contacted

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Section 7

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