ATTACHMENT E

Santa Clara County Clerk–Recorder's Office
State of California

County of Santa Clara
Office of the County Clerk-Recorder
Business Division

County Government Center
70 West Hedding Street, E. Wing, 1st Floor
San Jose, California 95110 (408) 299-5688

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REGINA ALCOMENDRAS, County Clerk–Recorder
by Laura Luna, Deputy Clerk–Recorder,

CEQA DOCUMENT DECLARATION

ENVIRONMENTAL FILING FEE RECEIPT

PLEASE COMPLETE THE FOLLOWING:

1. **LEAD AGENCY:** City of Sunnyvale
2. **PROJECT TITLE:** Mary Avenue Bicycle Lanes
3. **APPLICANT NAME:** Jack Witthaus **PHONE:** (408) 730-7330
4. **APPLICANT ADDRESS:** 456 W. Olive Avenue, Sunnyvale, CA 94088
5. **PROJECT APPLICANT IS A:** ☒ Local Public Agency ☐ School District ☐ Other Special District ☐ State Agency ☐ Private Entity
6. **NOTICE TO BE POSTED FOR** 20 **DAYS.**
7. **CLASSIFICATION OF ENVIRONMENTAL DOCUMENT**

a. **PROJECTS THAT ARE SUBJECT TO DFG FEES**

☐ 1. **ENVIRONMENTAL IMPACT REPORT** (PUBLIC RESOURCES CODE §21152)	$ 2,995.25	$ 0.00
☐ 2. **NEGATIVE DECLARATION** (PUBLIC RESOURCES CODE §21080(C)	$ 2,156.25	$ 0.00
☐ 3. **APPLICATION FEE WATER DIVERSION** (STATE WATER RESOURCES CONTROL BOARD ONLY)	$ 850.00	$ 0.00
☐ 4. **PROJECTS SUBJECT TO CERTIFIED REGULATORY PROGRAMS**	$ 1,018.50	$ 0.00
☐ 5. **COUNTY ADMINISTRATIVE FEE** (REQUIRED FOR **a-1** THROUGH **a-4** ABOVE) Fish & Game Code §711.4(e)	$ 50.00	$ 0.00

b. **PROJECTS THAT ARE EXEMPT FROM DFG FEES**

☐ 1. **NOTICE OF EXEMPTION** ($50.00 COUNTY ADMINISTRATIVE FEE REQUIRED)	$ 50.00	$ 0.00
☐ 2. **A COMPLETED "CEQA FILING FEE NO EFFECT DETERMINATION FORM" FROM THE DEPARTMENT OF FISH & GAME, DOCUMENTING THE DFG'S DETERMINATION THAT THE PROJECT WILL HAVE NO EFFECT ON FISH, WILDLIFE AND HABITAT, OR AN OFFICIAL, DATED RECEIPT / PROOF OF PAYMENT SHOWING PREVIOUS PAYMENT OF THE DFG FILING FEE FOR THE *SAME PROJECT IS ATTACHED** ($50.00 COUNTY ADMINISTRATIVE FEE REQUIRED)		
DOCUMENT TYPE: ☐ **ENVIRONMENTAL IMPACT REPORT** ☐ **NEGATIVE DECLARATION**	$ 50.00	$ 0.00

c. **NOTICES THAT ARE *NOT* SUBJECT TO DFG FEES *OR* COUNTY ADMINISTRATIVE FEES**

☐ **NOTICE OF PREPARATION** ☒ **NOTICE OF INTENT**	NO FEE	$ NO FEE

8. **OTHER:** _____ **FEE** (IF APPLICABLE): $ _____
9. **TOTAL RECEIVED** ..... $ 0.00

*NOTE: "***SAME PROJECT***" MEANS **NO** CHANGES. IF THE DOCUMENT SUBMITTED IS NOT THE SAME (OTHER THAN DATES), A "NO EFFECT DETERMINATION" LETTER FROM THE DEPARTMENT OF FISH AND GAME FOR THE **SUBSEQUENT** FILING OR THE APPROPRIATE FEES ARE REQUIRED.

THIS FORM MUST BE COMPLETED AND ATTACHED TO THE FRONT OF ALL CEQA DOCUMENTS LISTED ABOVE (*INCLUDING COPIES*) SUBMITTED FOR FILING. WE WILL NEED AN ORIGINAL (WET SIGNATURE) AND THREE COPIES. *(YOUR ORIGINAL WILL BE RETURNED TO YOU AT THE TIME OF FILING.)*

CHECKS FOR ALL FEES SHOULD BE MADE PAYABLE TO: SANTA CLARA COUNTY CLERK-RECORDER

PLEASE NOTE: FEES ARE ANNUALLY ADJUSTED (Fish & Game Code §711.4(b); PLEASE CHECK WITH THIS OFFICE AND THE DEPARTMENT OF FISH AND GAME FOR THE LATEST FEE INFORMATION.

". . . NO PROJECT SHALL BE OPERATIVE, VESTED, OR FINAL, NOR SHALL LOCAL GOVERNMENT PERMITS FOR THE PROJECT BE VALID, UNTIL THE FILING FEES REQUIRED PURSUANT TO THIS SECTION ARE PAID." Fish & Game Code §711.4(c)(3)

12-19-2012 **(FEES EFFECTIVE 01-01-2013)**

DEPARTMENT OF PUBLIC WORKS
CITY OF SUNNYVALE
P.O. BOX 3707
SUNNYVALE, CALIFORNIA 94088-3707

File#: 685 7/03/2013

NOTICE OF INTENT TO ADOPT MITIGATED NEGATIVE DECLARATION

This form is provided as a notification of an intent to adopt a Mitigated Negative Declaration which has been prepared in compliance with the provisions of the California Environmental Quality Act of 1970, as amended, and Resolution #193-86.

PROJECT TITLE:

Mary Avenue Bicycle Lanes

PROJECT DESCRIPTION AND LOCATION:

Removal of travel lanes, removal of on-street parking, modification of traffic signals, modification of median islands to provide bicycle lanes on Mary Avenue between Fremont Avenue and Maude Avenue.

WHERE TO VIEW THIS DOCUMENT:

The **Mitigated Negative Declaration**, its supporting documentation and details relating to the project are on file and available for review and comment in the Public Works Administration Office, City Hall, 456 West Olive Avenue, Sunnyvale.

This **Mitigated Negative Declaration** may be protested in writing by any person prior to 5:00 p.m. on **{INSERT HEARING DATE}**. Protest shall be filed in the Department of Public Works, 456 W. Olive Avenue, Sunnyvale and shall include a written statement specifying anticipated environmental effects which may be significant. A protest of a **Mitigated Negative Declaration** will be considered by the adopting authority, whose action on the protest may be appealed.

HEARING INFORMATION:

A public hearing on the project is scheduled for:

August 13, 2013 at 7:00 p.m. in the Council Chambers, City Hall, 456 West Olive Avenue, Sunnyvale.

TOXIC SITE INFORMATION:

No listed toxic sites are present at the project location.

Circulated On

Signed: _____
Jack Witthaus, Transportation and Traffic Manager

Mary Avenue Street Space Allocation Project

Initial Study

Project Description

1. Project Title:

Mary Avenue Street Space Allocation Project

2. Lead Agency Name and Address:

3. Contact Person and Phone Number: Jack Witthaus, 408-730-7330.

4. Project Location:

The project corridor is located along an approximately 2.9 mile portion of Mary Avenue between West Maude Avenue and West Fremont Avenue in the City of Sunnyvale. **Figure 1** shows the location of the project corridor.

5. ***Project Sponsor's Name and Address:*** City of Sunnyvale Public Works Division, 456 West Olive Avenue, Sunnyvale, CA

6. ***General Plan Designation:*** **Figure 2** shows General Plan designations in the vicinity of the project corridor. Roadways in Sunnyvale do not have a General Plan designation.

7. ***Zoning:*** Roadways in Sunnyvale do not have a Zoning designation.

8. Purpose:

This analysis discusses the direct and indirect environmental effects of project development, including site preparation and grading, construction of project features, and operational impacts. The analysis is intended to provide sufficient information to facilitate all anticipated development entitlements, including grading and City encroachment permits.

This Initial Study has been prepared in accordance with California Environmental Quality Act (CEQA) requirements and will assist City decision-makers in determining whether the environmental effects from the project would result in potentially significant environmental impacts. Where significant impacts are identified, mitigation measures are provided that would reduce these impacts to a less-than-significant level.

All mitigation measures are incorporated as changes to the project, and the City will include the mitigation measures as conditions of project approval. Because this document finds that the project, inclusive of defined mitigation measures, would have no significant impacts, further environmental review will not be required pursuant to CEQA.

9. Project Background and Description

Background:

For more than two years, the City has studied a number of options to better accommodate bicyclists and other roadway users along Mary Avenue. The City has developed and refined a number of alternatives through a community process to determine the most appropriate set of roadway treatments that balance public safety needs with improved accommodations for bicyclists within the existing street space.

The City has conducted several participatory community meetings during the development and refinement of conceptual alternatives. Through this participatory process, the City has arrived at a preferred alternative comprising "the project" under evaluation here.

Description of Project:

The City proposes improvements and re-allocation of street space to better accommodate bicyclists on about 2.9 miles of Mary Avenue (**Figure 1**). For purposes of this project, the City has considered these 2.9 miles of Mary Avenue to be comprised of the following segments, from south to north **(Figure 3)**:

Segment 1[1]

Segment 1A. Between West Fremont Avenue and El Camino Real; primarily residential

Segment 1B. Between El Camino Real and Evelyn Avenue; primarily residential

Segment 2. Between Evelyn Avenue and Central Expressway; a mix of uses

Segment 3. Between Central Expressway and Maude Avenue; primarily office

The City considered a variety of potential roadway treatments and modifications in composing a preferred alternative that would accommodate continuous bicycle lanes, including the following.

- "Road diet" (removal of one or more traffic lanes)
- Removal of on-street parking
- Lane narrowing
- Median narrowing

The preferred alternative (the project) is described below by street segment. The associated referenced figures show existing and proposed cross-sections for each segment.

Segment 1A: Fremont Avenue to El Camino Real (Figure 4)

- Eliminate one travel lane in the southbound direction, and reallocate street space to accommodate one travel lanes in each direction and a two-way center turn lane.
- Restripe to add one on-street bicycle lane in each direction.
- Provide a shorter merge lane to preserve on-street parking south of Blair Avenue.

Segment 1B: El Camino Real to Evelyn Avenue (Figure 5)

- Remove on-street parking from west (southbound) side.
- Maintain four travel lanes (2 lanes in each direction) and parking on the northbound side.
- Restripe to add one on-street bicycle lane in each direction.

This segment would preserve two travel lanes in each direction as well as existing turning lanes at all intersections.

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[1] After initiating this study, the City further divided Segment 1 into Segments 1A and 1B, as described above, based on traffic characteristics for each segment.

Segment 2: Evelyn Avenue to Central Expressway (Figure 6)

- Reduce width of median and travel lanes between California and Evelyn
- Restripe existing pavement to add one on-street bicycle lane in each direction
- Reduce widths of travel lanes (from 10.5 to 12 feet in width to 10 to 11 feet in width)

Segment 3: Central Expressway to Maude Avenue (Figure 7)

- Remove one travel lane each in each direction ("road diet")
- Reduce median width by about 1 ½ feet on northbound leg, in vicinity of Central Expressway
- Restripe existing pavement area north of Central Expressway to add one on-street bicycle lane in each direction
- Add enhanced auto and bicycle lane striping at the Escalon Avenue intersection

All of the proposed improvements would take place within the existing paved right-of-way (ROW). In Segments 2 and 3, the existing raised medians would be narrowed, requiring removal and replacement of existing median curbs. The project would not require any outside widening of the paved roadway, no expansion of the existing ROW or the acquisition of any public or private property. The project would not require the removal of any street trees.

10. Surrounding Land Uses and Setting:

Segment 1 (including both 1A and 1B) has four undivided vehicle lanes. This segment includes on-street parking on both sides of Mary Avenue, with the exception of the approaches to signalized intersections where no parking is permitted. Land uses along Segment 1A are primarily single-family residences, most of which have driveway access directly on Mary Avenue. Along Segment 1B, adjacent land uses include both single- and multi-family residences, with similar driveway access.

Segment 2 has three travel lanes in each direction and a median. On-street parking is not permitted. Adjacent land uses include commercial and residential uses.

Segment 3 also has three travel lanes in each direction and a median; on-street parking is also prohibited. Adjacent land uses are primarily commercial and office.

Environmental Factors Potentially Affected:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages. Mitigation measures have been provided for each potential significant impact, reducing all to a less-than-significant level.

- ☐ Aesthetics
- ☒ Air Quality
- ☒ Cultural Resources
- ☐ Greenhouse Gas Emissions
- ☐ Hydrology & Water Quality
- ☐ Mineral Resources
- ☐ Population & Housing
- ☐ Recreation
- ☐ Utilities & Service Systems
- ☐ Agricultural Resources
- ☐ Biological Resources
- ☐ Geology & Soils
- ☒ Hazards & Hazardous Materials
- ☐ Land Use & Planning
- ☒ Noise
- ☐ Public Services
- ☐ Transportation & Traffic
- ☐ Mandatory Findings of Significance

Determination

On the basis of this initial evaluation:

I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared. ☐

I find that although the proposed project could have a significant effect on the environment there will not be a significant effect in this case because the mitigation measures described in the attached sheet have been added to the project. ☒

I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required. ☐

I find that the proposed project MAY have a significant effect(s) on the environment, but at least one effect has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets, if the effect is a "potentially significant impact" or "potentially significant unless mitigated." An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed. ☐

I find that although the proposed project could have a significant effect on the environment, there WILL NOT be a significant effect in this case because all potentially significant effects (a) have been analyzed adequately in an earlier EIR pursuant to applicable standards and (b) have been avoided or mitigates pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project. ☐

Jack Witthaus
Transportation and Traffic Manager

6/26/13
Date:

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Environmental Impact Checklist

I. Aesthetics

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including but not limited to: trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☒
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

a) Have a substantial adverse effect on a scenic vista?

and

b) Substantially damage scenic resources, including but not limited to: trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. The project would reallocate street space on a 2.9 mile portion of Mary Avenue so as to provide improved facilities for bicycle and other roadway uses. The project would only modify roadway striping and medians. As a result, there is no possibility that the project could block or otherwise interfere with any scenic vista.

The closest state scenic highway to the project corridor is I-280, about 1.25 miles south of the southern end of the project corridor. In Santa Clara County, I-280 is an *eligible* state scenic highway, but has not been officially designated as part of the state scenic highway system.[2] The project corridor is not visible from the freeway. Based on the foregoing, the project would have *no impact* on any scenic vista or to any state scenic highway.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?

No Impact. The project would reallocate street space on a 2.9 mile portion of Mary Avenue so as to better accommodate bicyclists and other roadway users along Mary Avenue. All work is proposed and will be performed within the existing right of way, as described in the project description and would not require removal of curbs, acquisition of public or private property or modifications to the project vicinity. The project would not substantially degrade the existing visual character or quality of the site and its surroundings because the width of the paved roadway would remain essentially the same. The accommodation of bicycle lanes would represent a new transportation mode in an established transportation corridor. No impact would occur.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

No Impact. The project does not propose any additional or relocated overhead street lights. It also does not propose additional traffic volumes at major intersections for there to be additional light from vehicle headlights nor does it propose additional traffic signals. As a result, the project would not create new source of substantial light or glare from street lights or vehicular headlights. No impact would occur.

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[2] California Department of Transportation (Caltrans). California Scenic Highway Mapping System. {http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm Accessed July 28, 2011.

II. Agriculture and Forestry Resources

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or with a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 1220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which due to their location or nature, could individually or cumulatively result in loss of Farmland to non-agricultural use?	☐	☐	☐	☒

a) **Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) to non-agricultural use?**

b) **Conflict with existing zoning for agricultural use, or with a Williamson Act contract?**

c) **Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 1220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?**

d) **Result in the loss of forest land or conversion of forest land to non-forest use?**

and

e) **Involve other changes in the existing environment which due to their location or nature, could individually or cumulatively result in loss of Farmland to non-agricultural use?**

No Impact. According to the California Department of Conservation, the project corridor is designated as *Urban Built-Up Land* and does not contain Prime Farmland, Unique Farmland, or Farmlands of Statewide Importance.[3] The project corridor is not under a Williamson Act contract or zoned for any other agricultural use. As the project corridor is urbanized, there are no forest lands or timberlands present; the area is not zoned for forest or timberland use. As a result the project would not result in *any impact* to agricultural or forest land resources. No impact would occur.

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[3] Santa Clara County Important Farmland 2010. State of California Department of Conservation, Farmland Mapping and Monitoring Program.

III. Air Quality

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

The following analysis is based on the project air quality evaluation included in **Appendix A.**

a) Conflict with or obstruct implementation of the applicable air quality plan?

No Impact. The proposed project is located in the city of Sunnyvale, which is situated in the San Francisco Bay Area. The San Francisco Bay Area air basin (Air Basin) is considered to be in "non attainment" for both federal and state standards for ozone (O_3), and fine particulate matter (PM2.5), and for state but not federal standards for respirable particulate matter (PM10). The *Bay Area 2010 Clean Air Plan (CAP)* was adopted by the Bay Area Air Quality Management District (BAAQMD) in September 2010, and is the current regional Clean Air Plan (CAP) under the federal Clean Air Act (CAA).

To address the region's non-attainment status for ozone (O_3), the CAP explains how the Air Basin will achieve compliance with the California Ambient Air Quality Standards (CAAQS) for one-hour O_3 and eight-hour O_3, and also explains how the region will reduce transport of O_3 and ozone precursors to neighboring air basins. To achieve these state and federal standards, the CAP contains mobile and stationary source controls, transportation control measures, land use and local impact measures, and energy and climate measures to be implemented throughout the region.

The CAP is based on regional population, housing, and employment projections through 2020 compiled by the Association of Bay Area Governments (ABAG). As such, a project would conflict with or obstruct implementation of the regional air quality plan if it would be inconsistent with the regional growth assumptions, in terms of population, employment, or regional growth in Vehicle Miles Traveled (VMT).

The project would not result in any increase in population or employment in the region since the project would not include any housing or commercial development that would increase local area or regional growth. The project could somewhat reduce VMT, as Mary Avenue would be more conducive to and safer for bicycle riders. Since the project would not directly increase the population or create a substantial change in the VMT, the project would not conflict with or obstruct implementation of the applicable air quality plan (i.e., the BAAQMD 2010 Clean Air Plan).

Furthermore, the proposed project would not conflict with the latest Clean Air planning efforts since (1) the project would have emissions well below the BAAQMD thresholds, (2) development of the project would enhance transportation modes that are consistent with the Clean Air Plan Transportation Control Measures, and (3) development would be near existing transit with regional connections. The project is too small to incorporate project-specific transportation control measures listed in the latest Clean Air Plan (i.e., *Bay Area 2010 Clean Air Plan*). The project is comprised of amenities that encourage wider bicycle use and, as such, the project would promote transportation control measures included in the Clean Air Plan. Overall, the project would have no impact relative to air quality plan implementation.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Less Than Significant. Diesel exhaust is the predominant toxic air contaminant (TAC) in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average).

(TAC) are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer) and include, but are not limited to, the criteria air pollutants listed above. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). They are typically found in low concentrations, even near their source (e.g., diesel particulate matter near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and Federal level.

The California Air Resources Board (CARB) has adopted and implemented a number of regulations for stationary and mobile sources to reduce Diesel Particulate Matter (DPM). In 2008 CARB approved a new regulation to reduce emissions of DPM and nitrogen oxides from existing on-road heavy-duty diesel fueled vehicles.[4] The regulation requires affected vehicles to meet specific performance requirements between 2014 and 2023, with all affected diesel vehicles required to have 2010 model-year engines or equivalent by 2023.

Operationally, carbon monoxide emissions from traffic generated by the project would be the pollutant of greatest concern at the local level. Congested intersections with a large volume of traffic have the greatest potential to cause high-localized concentrations of carbon monoxide. Air pollutant monitoring data indicate that carbon monoxide levels have been at healthy levels (i.e., below State and Federal standards) in the Bay Area since the early 1990s. As a result, the region has been designated as attainment for the standard.

Adverse environmental impacts to air quality could potentially occur from temporary construction related activity and/or, operationally, from changes to traffic patterns. The project proposes improved access for bicyclists through street space allocation and improvements for bicyclists in the project corridor. The project would also not increase traffic capacity from the existing levels at major intersections. The project also does not include any relocation of existing curbs except for the median modifications in Segment 2 and Segment 3. As a result, the project would not move traffic closer to residences or sensitive receptors that could change air pollutant conditions.

Air quality impacts would temporarily occur from exhaust during construction. The largest construction activities would include some demolition of the existing medians, repaving, restriping, and construction of project amenities including signs and landscape. These emissions are anticipated to be minor, since on average, less than 3 pieces of construction equipment would be utilized. As a result, exhaust emissions would be well below thresholds that are used to judge construction projects. This impact would be less-than-significant. No mitigation measures are required.

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under federal or state ambient air quality

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[4] http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm

standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Less Than Significant Impact With Mitigation. The Bay Area is considered a non-attainment area for ground-level ozone and fine particulate matter ($PM_{2.5}$) under both federal and state regulations. The area is also considered non-attainment for respirable particulates or particulate matter with a diameter of less than 10 micrometers (PM_{10}) under the California Clean Air Act, but not the federal act. The area has attained both state and federal ambient air quality standards for carbon monoxide. As part of an effort to attain and maintain ambient air quality standards for ozone and PM_{10}, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for ozone precursor pollutants (ROG and NOx), PM_{10} and $PM_{2.5}$ and apply to both construction period and operational period impacts.

Operationally, the project would not increase generation of air pollutant emissions as the project entails reallocation of street space for bicycle access on about 2.9 miles of Mary Avenue and preserves existing traffic capacity at major intersections. The largest construction activities would include some demolition of the existing roadways or medians, paving, and construction of project amenities including signs and landscape. These emissions are anticipated to be minor, since on average, less than 3 pieces of construction equipment would be utilized. As a result, exhaust emissions would be well below thresholds than used to judge construction projects. However, best management practices are necessary during demolition, trenching and grading activities to avoid generation of dust. Best Management Practices for controlling construction period air pollutant emissions are included below as **Mitigation Measure AQ-1**.

Mitigation Measure AQ-1

The project contractor shall implement the following Best Management Practices during project construction:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 mph.
5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Significance After Mitigation: Implementation of **Mitigation Measure AQ-1** would reduce the air quality impacts associated with grading and new construction to a less than significant level.

d) Expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact With Mitigation. Project related construction activities may include some roadway demolition, paving, and installation of hardscape and landscape improvements. Primary activity associated with each phase of construction activities would last less than 6 months. These would not be intensive operations. As indicated in previous discussion, emissions would be below the BAAQMD thresholds and are not expected to cause adverse impacts to nearby sensitive receptors. Furthermore, Best Management Practices controlling construction period air pollutant emissions represented in mitigation measure **Mitigation Measure AQ-1** above would also reduce impacts to nearby sensitive receptors to a less than significant level.

Diesel particulate matter (DPM), a toxic air contaminant, would be emitted during construction in relatively small quantities. DPM can cause adverse health effects, i.e., excess cancer risk, if sensitive receptors are exposed to relatively high amounts. This type of exposure can occur when sensitive receptors are exposed to intensive construction activities, which last 6 months or longer in one location, or if exposed to long periods of lower emissions from continuous sources (e.g., highways). Given the relatively short construction period near any one area, construction impacts associated with DPM are not anticipated. The project would not increase emissions of DPM along the roadway, so long-term impacts from DPM are not anticipated. Short term impacts from DPM exposure are also not anticipated. Adverse impacts to sensitive receptors as a result of the project would be less than significant with **Mitigation Measure AQ-1.**

e) Create objectionable odors affecting a substantial number of people?

Less than Significant Impact. The project would reallocate street space on a 2.9 mile portion of Mary Avenue so as to better accommodate bicyclists and other roadway users along Mary Avenue. No objectionable odor generation is associated with the project activities. Temporary, localized odors may be experienced occur as part of various phases of project construction (such as paving and restriping). However, such effects would be highly limited in time and exposure and would therefore not rise to a significant level. No mitigation would be required.

IV. Biological Resources

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as candidate, sensitive, or special status species in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse impact on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to: marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with an established resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, Regional, or state Habitat Conservation Plan?	☐	☐	☐	☒

a) **Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as candidate, sensitive, or special status species in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

Less-than-Significant Impact. The project corridor is a paved road within an urbanized setting. The project would not remove any trees and thus is not likely to disturb any potential nesting habitat for migratory birds. Due to the developed condition of the project corridor and its fully urbanized surroundings, no special-status plant species or special-status wildlife species are expected to occur. As a result, this impact would be less than significant. No mitigation measures are required.

b) **Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?**

and

c) **Have a substantial adverse impact on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to: marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

No Impact. The project corridor is a paved road within an urbanized setting. There are no riparian habitats or other sensitive natural communities located on the project corridor. It also does not contain federally protected wetlands defined by Section 404 of the Clean Water Act. Therefore, the project would have no impact on riparian habitats or other sensitive natural communities. It would also not result in any impacts to federally protected wetlands. No impact would occur.

d) **Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with an established resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

No Impact. The project corridor is a paved road within an urbanized setting and as such is not part of an established wildlife movement corridor. The project corridor lacks vegetative

cover and other characteristics of wildlife movement corridors such as woodlands or streambeds. As a result, project implementation would not impede movement of wildlife species in a wildlife movement corridor. No impact would occur.

e) **Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

Less Than Significant Impact. The project does not propose removal of any existing trees, nor are there any biological resources present in the project corridor. Furthermore, while there are trees in the project vicinity trees that could provide nesting habitat for birds, the project does not propose any curb removal and would not include any construction activities that would disturb the trees. As a result, this impact would be less than significant. No mitigation measures are required.

f) **Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, Regional, or state habitat Conservation plan**

No Impact. There is no Habitat Conservation Plan or Natural Community Conservation Plan that has been adopted encompassing the project corridor. Therefore, the project would not result in any related impacts.

V. Cultural Resources

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource, pursuant to Section 15064.5?	☐	☒	☐	☐
c) Directly or indirectly destroy a unique paleontological resource, site, or unique geologic feature?	☐	☐	☐	☒
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

No Impact. Mary Avenue and its right of way itself is not a significant historical resource as defined in Section 15064.5. The project does not propose construction in the project vicinity. It also does not propose acquisition of any public or private property for project implementation, and the project corridor does not contain any historical resources. As a result the project would not cause substantial adverse change in the significance of a historical resource. No impact would occur.

b) Cause a substantial adverse change in the significance of an archaeological resource, pursuant to Section 15064.5?

Less Than Significant Impact With Mitigation. The project would entail subsurface earthwork and grading for the median narrowing in parts of Mary Avenue. While the likelihood of encountering intact archaeological resources beneath the median of Mary Avenue is low, there remains some possibility that work could potentially uncover and harm previously unknown or unrecorded archeological resources. This is a significant impact for which the following mitigation measures are required.

Mitigation Measure CUL-1: In the event that unrecorded archaeological resources are encountered during any phase of project construction, the project contractor shall temporarily halt construction and/or grading activities within 25 feet of any find until a qualified archaeologist meeting federal criteria under 36 CFR 61 can assess the significance of the find and provide proper management and recommendations. A qualified archaeological monitor shall inspect the findings within 24 hours of discovery. Prehistoric cultural materials include but are not limited to midden deposits, hearth remains, stone and/or shell artifacts, and/or burials. Historic material, including but not limited to whole or fragmentary ceramic, glass or metal objects, wood, nails, brick, or other materials may occur within the project corridor in deposits such as old privies, dumps, or as part of earlier fill.

While prehistoric or historic cultural resources would ideally be avoided, if any such resources could not feasibly be avoided, they shall be evaluated for their potential historic significance in consultation with the City of Sunnyvale. If the resources are found to be ineligible for any historic register, impacts to such resources would not be considered significant and avoidance would thus not be necessary. If the resources are found to be eligible to the CRHR, they shall be avoided if feasible.

If avoidance is not feasible, project impacts will be mitigated in accordance with the recommendations of the evaluating archaeologist and CEQA Guidelines §15126.4 (b)(3)(C), which require development and implementation of a data recovery plan that would include recommendations for the treatment of the discovered archaeological materials. The data recovery plan will be submitted to the City of Sunnyvale for review and approval. Upon approval and completion of the data recovery program, project construction activity within the area of the find may resume, and the archaeologist will prepare a report documenting the methods and findings. The report will be submitted to the City of Sunnyvale. Once the report is reviewed and approved by the City of Sunnyvale, a copy of the report will be submitted to the Northwest Information Center (NWIC). After any appropriate resource recovery and/or mitigation measures are completed, project construction activity within the area of the find may resume.

Mitigation Measure CUL-2: Prior to the start of grading, the City of Sunnyvale shall require that the project contractor provide documentation that all construction crews that will work on the project have undergone a training session to inform them of the potential for previously undiscovered archaeological resources within the project corridor, of the laws protecting these resources and associated penalties, and of the procedures to follow should they discover cultural resources during project-related work.

Significance after Mitigation: Mitigation Measure CUL-1 and Mitigation Measure CUL-2 would reduce potential impacts to previously unrecorded human remains to a less-than-significant level.

c) **Directly or indirectly destroy a unique paleontological resource, site, or unique geologic feature?**

No Impact. Although the project does not propose removal of any curbs and the project corridor does not itself contain unique geologic feature, project construction would entail subsurface earthwork and grading for median narrowing as described in the project description. Impacts to paleontological resources could potentially occur if the project entailed more substantial excavation to lower lying geologic layers where fossils might exist. As a result, the project would not potentially destroy a unique paleontological resource, site or unique geologic feature. No impact would occur.

d) **Disturb any human remains, including those interred outside of formal cemeteries?**

Less Than Significant Impact With Mitigation. The project would entail subsurface earthwork during construction for median narrowing, and could potentially disturb human remains, including those interred outside of formal cemeteries. If such remains are discovered during construction activities, it would be necessary to comply with regulations set forth in California law.

Mitigation Measure CUL-3: Section 7050.5(b) of the California Health and Safety code shall be implemented in the event that human remains, or possible human remains, are located during project-related construction excavation. If human remains are discovered within the project corridor during construction, all work shall be stopped within 25 feet of the discovery and the contractor shall immediately notify the Santa Clara County Coroner. At the same time, a qualified archaeologist meeting federal criteria under 36 CFR 61 shall be contacted to assess the situation and consult with the appropriate agencies. If the human remains are of Native American origin, the Coroner shall notify the Native American Heritage Commission within twenty-four hours of this identification. The Native American Heritage Commission will identify a Most Likely Descendant (MLD) to inspect the site and provide recommendations for the proper treatment of the remains and any associated grave goods. Upon completion of the assessment, the qualified archaeologist shall prepare a report documenting the background to the finds, and provide recommendations for the treatment of the human remains and any associated cultural materials, as appropriate and in coordination with the recommendations of the MLD. The report shall be submitted to the City of Sunnyvale, the County of Santa Clara, and the Northwest Information Center. Once the report is reviewed and approved by the agencies identified above, and any appropriate treatment completed, project construction activity within the area of the find may resume.

Significance after Mitigation: Mitigation Measure CUL-3 would reduce potential impacts to previously unrecorded human remains to a less-than-significant level.

VI. Geology and Soils

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Expose people or structures to potential substantial adverse effects including the risk of loss, injury or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslide?	☐	☐	☐	☒
b) Would the project result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐

d) Be located on expansive soil, as defined in table 18-1b of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

a) Expose people or structures to potential substantial adverse effects including the risk of loss, injury or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

and

ii) Strong seismic ground shaking?

Less Than Significant Impact. The closest known active fault to the project corridor is the San Andreas Fault, located approximately 8 miles to the southwest. No known active or potentially active faults cross the project corridor. The project would not entail construction of any permanent structures. The project would not alter the existing uses of the land or increase traffic/traffic capacity at major intersections. It would therefore not increase the exposure of people or structures to substantial adverse effects as a result of a known earthquake fault rupture. This impact would be less than significant. No mitigation measures are required.

iii) Seismic-related ground failure, including liquefaction?

Less than Significant Impact. In the event of a major earthquake along the San Andreas Fault, the project corridor would have a zero to five percent risk for liquefaction.[5] However, the project entails reallocation of street space on Mary Avenue for bicycle access through improvements to Mary Avenue within the existing right of way between West Fremont and West Maude Avenues. The project is in an already developed area and would not alter the existing uses of the land or increase traffic/traffic capacity in the project corridor. It does not propose the development of any permanent structures. Therefore, this impact as a result of the project would be less than significant. No mitigation measures are required.

Landslide?

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[5] USGS. *Liquefaction probability for M7.8 San Andreas Fault earthquake scenario, Santa Clara County, CA.* Accessed on May 13, 2013, available at http://pubs.usgs.gov/of/2008/1270/of2008-1270_San_Andreas_scenario.pdf.

No Impact. According to the United States Geological Survey (USGS)[6], the project corridor is located in the flat lands and does not have a significant potential for landslides. No impact would occur.

b) Would the project result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact. The project would reallocate street space on a 2.9 mile portion of Mary Avenue so as to better accommodate bicyclists and other roadway users along Mary Avenue. Although the project does not propose any expansion of the right of way or removal of curbs, project construction would entail grading or subsurface earthwork for median narrowing in certain locations. Substantial soil erosion could potentially occur if ground disturbance activities are not carefully managed. Assuming that the City's contractors follow typical best management practices, no significant impact would result. No mitigation measures are required.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

and

d) Be located on expansive soil, as defined in table 18-1b of the Uniform Building Code (1994), creating substantial risks to life or property?

Less Than Significant Impact. As previously discussed in this section, project implementation would not increase susceptibility from seismically induced liquefaction or pose potential risks from landslides. Therefore, impacts related to soil stability as a result of the project would be less than significant. No mitigation measures are required.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

No Impact. The project does not propose the installation or use of septic tanks or alternative wastewater disposal systems. No impact would occur.

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[6] USGS. *Summary Distribution of Landslides and Earthflows in Santa Clara County, CA.* Accessed on May 14, 2013, available at http://pubs.usgs.gov/of/1997/of97-745/scl-sef.pdf

VII. Greenhouse Gas Emissions

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less Than Significant Impact. As discussed in the greenhouse gas (GHG) evaluation included in **Appendix A**, the BAAQMD recommended GHG emissions-based thresholds in 2010that are used by the City7 to judge the significance of emissions from land use projects. These criteria include a "bright-line" emissions threshold at 1,100 metric tons per year for land-use type projects and 10,000 metric tons per year for stationary sources. Projects with emissions above the thresholds would be considered to have an impact, which, cumulatively, could be significant. These thresholds apply to the operation of projects. No thresholds were identified for construction activities.

Temporary GHG emissions would occur during construction. These would vary from day-to-day. Best management practices assumed to be incorporated into construction of the proposed project include, but are not limited to: using local building materials of at least 10 percent and recycling or reusing at least 50 percent of construction waste or demolition materials. Modeling of construction GHG emissions was conducted using the Sacramento Metropolitan Air Quality management District's Road Construction Emissions Model,

[7] In June 2010, the BAAQMD Board of Directors adopted new CEQA thresholds of significance as part of a larger BAAQMD CEQA Guidelines document. In subsequent litigation, the BAAQMD CEQA Guidelines were determined to be a project under CEQA; BAAQMD was duly ordered to rescind these Guidelines pending completion of environmental review per CEQA. However, the City of Sunnyvale uses BAAQMD's 2010 thresholds of significance as thresholds of significance for air quality and greenhouse gas emissions impacts, also used in this IS/MND.

Version 6.3.2. A screening model run was developed that included widening of 3 miles of roadway over a 12-month period. Based on this modeling, annual emissions from construction activity are estimated to be 502 tons (455 metric tons).

As previously indicated, no changes to operational emissions resulting from changes in traffic patterns are predicted. Therefore, the proposed project would not adversely affect long-term GHG emissions such that there would be a significant impact on the environment. This impact would be less than significant.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

No Impact. The City of Sunnyvale has two concurrent projects underway: the Land Use and Transportation Element (LUTE), part of the City's General Plan, and the Climate Action Plan (CAP). Horizon 2035 is an important combination of the two projects to address Sunnyvale's energy and water efficiency, land use, transportation, and air quality. Working together, these documents will contain policies and programs that are designed to help the City sustain its natural resources, grow efficiently, and meet state legal requirements for greenhouse gas (GHG) emissions reduction.

The project would be consistent with the goals and policies of these efforts as it calls for facilitating alternative modes of transportation through improvements on Mary Avenue for bicycle travel. The project would not otherwise interfere with any plan or regulation intended to reduce GHG emissions. No impact would occur.

VIII. Hazards and Hazardous Materials

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site which is included on a list of hazardous materials sites complied pursuant to Government Code Section 65962.5 and as a result, would it create a significant hazard to the public or the environment?	☐	☒	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project corridor?	☐	☐	☐	☒

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project corridor?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
h) Expose people or structures to the risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

a) **Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**

b) **Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?**

and

c) **Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?**

Less Than Significant Impact. The project entails improvements through street space reallocation to better accommodate bicyclists and other roadway users along a 2.9 mile stretch of Mary Avenue in an already developed area. It does not require the transport, use, storage or disposal of hazardous materials that could potentially be released in the environment. The project would not involve the routine use, transport, or disposal of hazardous materials as part of its operations. Construction of the project would require the temporary use of potentially hazardous materials, such as fuels and solvents needed for earth-moving equipment. The transport and use of such materials is highly controlled by numerous existing federal and state regulations. This impact would, thus, be less than significant. No mitigation would be required.

d) **Be located on a site which is included on a list of hazardous materials sites complied pursuant to Government Code Section 65962.5 and as a result, would it create a significant hazard to the public or the environment?**

Less Than Significant Impact With Mitigation. The project corridor is not included on the "Cortese" list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.8

However, the California Water Resources Control Board identifies several underground storage tanks near the intersection of El Camino Real and Mary Avenue[9], including an open case for a leaking underground tank cleanup site at Exxon located beside the Mary Avenue corridor.

Although the project does not propose any work outside the right of way of Mary Avenue, given the above evidence of hazardous materials issues in the project vicinity, there is a slight chance that contaminated soils or groundwater may be encountered during the excavation required for median narrowing. **Mitigation Measure HAZ-1** would reduce this potential impact to a less than significant level.

Mitigation Measure HAZ-1:

In the event that contaminated soils or groundwater are encountered during subsurface earthwork, work within 100 feet of the discovery shall be halted and the City shall direct the preparation of a Phase II Environmental Site Assessment (ESA) by a licensed professional to determine the potential presence petroleum in soil and groundwater underlying the project corridor. If contaminants are identified in subsurface soils and/or groundwater, the Phase II ESA shall screen the identified contaminant concentrations relative to applicable environmental screening levels developed by the Regional Water Quality Control Board and the Department of Toxic Substances Control for construction worker health and safety. If contaminant concentrations are above the applicable screening levels, the Phase II report shall make recommendations for remedial actions for the protection of public health and the environment. If the Phase II ESA recommends remedial action (which may include but not be limited to soil and/or groundwater removal or treatment, site-specific soil and groundwater management plan, site-specific health and safety plan, and a risk management plan), the project sponsor shall consult with the appropriate local, state, or federal environmental regulatory agencies to ensure sufficient minimization of risk to human health and the environmental, both during and after construction, posed by soil contamination and/or groundwater contamination. The project sponsor shall obtain and submit written approval documentation for any remedial action, if required by a local, state, or federal environmental regulatory agency prior to project occupancy.

Significance after Mitigation: Adherence to **Mitigation Measure HAZ-1** would reduce the potential impact to a less-than-significant level as the Phase II ESA, if needed, would set forth appropriate protocols to ensure safe handling and disposal of any contaminated materials encountered.

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[8] http://www.envirostor.dtsc.ca.gov/public/search.asp, Accessed May 28, 2013

[9] http://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=mary+avenue%2C+sunnyvale%2C+ca, Accessed May 30, 2013

e) **For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project corridor?**

and

f) **For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project corridor?**

No Impact. The project corridor is not located within an airport land use plan. The nearest airport, Norman Y. Mineta airport in San Jose, is six miles to the east of Sunnyvale where the project corridor is located. The Moffett Federal Airstrip is located approximately 3 miles to the northeast of the project corridor. There are no private airstrips in the vicinity of the project corridor. The project corridor is currently used by autos and bicycles; the project would merely reallocate street space to enhance usage by bicyclists. As a result of distance from airstrips and the current use of the roadway, the project would not result in a safety hazard to people travelling through the project corridor. No impact would occur.

g) **Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?**

Less Than Significant Impact. The relevant adopted emergency response plan is the Local Hazard Mitigation Plan. Santa Clara County has adopted this plan; each city in the county, including Sunnyvale, has adopted an "annex" or city-specific chapter outlining detailed hazard and emergency response issues exclusive to each individual city. The annex states that Sunnyvale has a relatively low risk factor for fire loss; past fire experience has demonstrated Sunnyvale to be a relatively fire-safe community. The annex does not identify Mary Avenue as a critical emergency response route.[10]

The project would alter pavement striping along portions of Mary Avenue. In some locations, the project would reduce the number of automobile travel lanes from 2 to 1 but the project would also remove on-street parking in some locations. The project preserves the existing number of turning lanes at all intersections and either preserves or slightly expands the curb-to-curb pavement width along affected sections of Mary Avenue. As noted in the project traffic study included herein (see, **Appendix B**), the project would not significantly increase traffic levels on Mary Avenue or on any adjacent streets.

At present, emergency vehicles using Mary Avenue and other City streets must navigate around existing traffic, delivery vehicles, sanitation collection trucks, and the like. It is also acknowledged that one of the City's fire stations is located on Ticonderoga Drive, immediately adjacent to a portion of the project corridor. The existing operating conditions are not likely to be impaired and will be slightly improved by widening of the curb (exterior) to curb (median) pavement width and elimination of on-street parking in some areas. Other areas will maintain the existing curb to curb width and corresponding emergency vehicle access.

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[10] Sunnyvale Annex to Santa Clara County Local Hazard Mitigation Plan. Accessed on June 28, 2013 at http://www.sccgov.org/sites/oes/PlansPublications/Documents/Section22_Sunnyvale_ReviewDraft.pdf

Taking all of the above into account, the project would not result in any substantial limitation of Mary Avenue by emergency service providers. The project would not physically preclude emergency vehicles (or yielding automobile traffic) from temporary, emergency-period use of any proposed bicycle lane. The impact would be less than significant. No mitigation measures are required.

h) Expose people or structures to the risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

No Impact. The project corridor is located in a developed, urban area, and is not adjacent to any wildland areas. Moreover, the project does not involve the construction or relocation of structures to a wildland area. Therefore, no impact would occur as a result of the project.

IX. Hydrology and Water Quality

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted?	☐	☐	☒	☐
c) Substantially alter the existing drainage patterns of the site or area including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off-site?	☐	☐	☐	☒
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on-or off-site?	☐	☐	☒	☐

e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted run-off?	☐	☐	☐	☒
f) Otherwise substantially degrade water quality?	☐	☐	☐	☒
g) Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☒	☐

a) Violate any water quality standards or waste discharge requirements?

Less Than Significant Impact. The project would reallocate street space on a 2.9 mile portion of Mary Avenue so as to better accommodate bicyclists and other roadway users along Mary Avenue. The project does not propose any expansion of the right of way, or removal of curbs, except for median narrowing in certain locations. The project corridor is not located in close vicinity of any streams or other water bodies. Construction activities associated with median narrowing could potentially result in storm water mixing with excavated soils. However, assuming that the construction contractor employs standard best management practices as established by the Regional Water Quality Control Board, impacts would be less-than-significant. No further mitigation is required.

b) **Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted?**

Less than Significant Impact. None of the improvements proposed as part of the project demand or require groundwater. In addition, the proposed improvements would be limited to the existing paved surface and thus would not have the potential to substantially impact ground water recharge. Impacts would be less than significant.

c) **Substantially alter the existing drainage patterns of the site or area including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off-site?**

No Impact. The project would reallocate street space on a 2.9 mile portion of Mary Avenue so as to better accommodate bicyclists and other roadway users along Mary Avenue. The project does not propose any expansion of the right of way, acquisition of public or private property for the proposed improvements and does not propose construction in or alter the course of a stream or a river. Therefore, no impact would occur.

d) **Substantially alter the existing drainage pattern of the site area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site?**

Less Than Significant Impact. The project does not propose construction in or alteration to the course of a stream or river. The project does not entail any significant grading as it entails improvements within the existing street space, and minimal earthwork for the narrowing of existing raised medians, in certain locations, through removal and replacement of existing median curbs. This work will include minor excavation, removal of existing concrete and asphalt and repaving and would not substantially alter the existing drainage patterns. The project does entail addition of a small amount of impervious surface through narrowing of the medians, as described in the project description, for direct transportation use. However net increases in surface runoff are anticipated to be minimal and would not result in flooding on or off site. Impacts would be less than significant. No mitigation would be required.

e) **Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted run-off?**

Less Than Significant Impact. The project would reallocate street space on a 2.9 mile portion of Mary Avenue so as to better accommodate bicyclists and other roadway users along Mary Avenue. The project does not propose any expansion of the right of way. In the worst case scenario, 18,750 square feet (less than one acre) impervious surfaces would be added as a result of the median narrowing, and roadwork that could potentially create or contribute run off water that may exceed the existing run off water levels or provide additional sources of polluted runoff. Improvement projects disturbing 1 acre or less of land during construction are not required by the RWQCB to file a NOI to be covered under the State NPDES General Construction Permit for discharges of stormwater associated with

construction activity. However, assuming Stormwater Treatment Best Management Practices will be included, where practicable, polluted surface water runoff would be prevented. Therefore, this impact would be less than significant. No mitigation measures are required.

f) Otherwise substantially degrade water quality?

No Impact. The project does not possess any characteristics that would otherwise substantially degrade water quality. No impact would occur.

g) Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

and

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

No Impact. The project is not located within any 100 year flood zone.[11] The project does not propose construction of any new housing or structures. As a result, these impacts would not occur.

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

Less Than Significant Impact. The project corridor is approximately 4 miles south of the Sunnyvale Baylands and about 5 miles northeast of the Stevens Creek Reservoir. However, in the remote and unlikely event of a levee or dam failure the project would not increase the susceptibility of people or structures to significant adverse impacts as it does not propose construction of any structures nor does it allow for additional traffic in the project corridor. Therefore, this impact of the project would be less than significant. No mitigation measures are required.

j) Inundation by seiche, tsunami, or mudflow?

Less Than Significant Impact. The project corridor is located approximately 20 miles inland from the Pacific Ocean on the Santa Clara Valley floor protected from the ocean by Santa Cruz Mountains to the south and west. As previously indicated, the project corridor is not susceptible to a significant risk from landslides and consequent mudflows. The project corridor is located 4 miles from the Sunnyvale Baylands, and too far inland from the Pacific Ocean. However, in the remote and unlikely event of a seiche or tsunami the project would not increase the susceptibility of people or structures to significant adverse impacts as it does not propose construction of any structures nor does it allow for additional traffic in the project corridor. As a result, this impact of the project would be less than significant. No mitigation measures are required.

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[11] http://sunnyvale.ca.gov/Departments/PublicWorks/FloodZones.aspx, Accessed May 30, 2013.

X. Land Use and Planning

Would the project:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

a) Physically divide an established community?

No Impact. The project is located along an existing street in the City of Sunnyvale. The project proposes reallocation of street space on a 2.9 mile portion of Mary Avenue so as to better accommodate bicyclists and other roadway users along Mary Avenue. The project does not alter existing uses of land or create a new barrier with adjacent development. By enhancing bicycle access, the project would conceivably help reduce existing barriers to bicycle transportation. No impact would occur.

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact. The project corridor is entirely located within the existing right of way of Mary Avenue between West Fremont and West Maude Avenues. The project will not alter land uses outside the right-of-way and will preserve the right-of-way's current use as a transportation corridor. The project also does not propose new development. Furthermore, the Land Use and Transportation Element of the City of Sunnyvale General Plan spells out

several policies (Policies LT-1.9, and 5.5.) in support of a variety and alternative modes of transportation, and for the provision of a safe and comfortable system for bicycle and pedestrian pathways (Policy LT – 5.8).As such, the project would potentially advance and thus not conflict with the applicable land use plan, policy, or regulation of the City of Sunnyvale. No impact would occur.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

No Impact. There is no adopted Habitat Conservation Plan or Natural Community Conservation Plan encompassing the project corridor. Therefore, the project would not result in any related impacts. No impact would occur.

XI. Mineral Resources

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

and

b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

No Impact. The project involves improvements through street space reallocation to better accommodate bicyclists and other roadway users along Mary Avenue, between West Fremont and West Maude Avenues, in an already developed area. The Mary Avenue right-of-way is not a known mineral resource site. Therefore, no impact would occur.

XII. Noise

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of the other agencies?	☐	☐	☒	☐
b) Result in exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?	☐	☐	☒	☐
c) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project corridor to excessive noise levels?	☐	☐	☐	☒

f) For a project located within the vicinity of a private airstrip, would the project expose people residing or working in the project corridor to excessive noise levels?	☐	☐	☐	☒

Noise Background

The State of California and the City of Sunnyvale have established regulations, policies, and guidelines intended to limit noise exposure at noise sensitive land uses. The Noise Element of the Sunnyvale General Plan sets forth noise and land use compatibility standards for various land uses, and establishes goals, policies, and standards for evaluating the compatibility of proposed projects with respect to noise exposure or noise generation. Additionally, Title 16, Chapter 16.08 of the Sunnyvale Municipal Code establishes construction noise regulations.

a) Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of the other agencies?

Less Than Significant Impact. The operation of the proposed project (i.e., the use of bike lanes) would not generate noise levels above existing noise levels resulting from vehicular traffic along Mary Avenue.

However, some construction work will be needed to adjust roadway widths, including modifications to existing medians. This work, which will include minor excavation, removal of existing concrete and asphalt and repaving, has the potential to result in short-term noise.

Noise levels created during construction could potentially create a disturbance for residents and users of nearby properties. However, hours of construction would be limited by provisions of the City of Sunnyvale Municipal Code. The code limits construction to 7 a.m. until 6 p.m. Monday through Friday, 8 a.m. and 5 p.m. on Saturday, and no activity on Sundays, holidays, or when City offices are closed. Construction noise would not be considered prolonged, unusual or unnatural because of it non-intensive nature in combination with the limitations placed by the Noise Ordinance on when construction activities could occur. Therefore, this impact would be less-than-significant. No mitigation measures are required.

b) Result in exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?

Less-than-Significant Impact. Construction activities for the implementation of the project may generate localized vibrations. Vibration is not expected to be substantially perceptible outside the right-of-way because the majority of the physical work would be conducted near the roadway median, more than 50 feet from the nearest receptors. There would be no ground-borne vibration resulting from operation of the project. Therefore, this impact would be less than significant. No mitigation measures are required.

c) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Less-than-Significant Impact. Permanent noise level increases resulting from the project could result from changes in traffic patterns utilizing the roadways in the project vicinity and/or changes in the roadway lane configurations. To determine whether such changes would occur, the City's acoustical consultant (Illingworth & Rodkin) compared existing and existing plus project traffic volumes. This comparison showed that traffic volumes with the project would be identical to existing conditions, because the project preserves the traffic capacity at major intersections. Therefore, the project would not substantially divert traffic or change traffic patterns. Accordingly, traffic noise levels along Mary Avenue and other area roadways would not increase above existing conditions.

Project noise level changes were calculated by Illingworth and Rodkin (*Mary Avenue Street Space Allocation Study, Sunnyvale, CA – Air Quality, Greenhouse Gas, and Noise CEQA Evaluations*, May 14, 2013, included as **Appendix A**). The change in traffic noise levels was calculated based on relative changes to the equivalent lane distance from Mary Avenue traffic to nearby sensitive receptors. The calculations assumed that a receptor would be 25 feet from the northbound or southbound right of way. **Table 1** summarizes relative changes to traffic noise levels.

Table 1 Traffic Noise Level Changes Due to Project

Mary Avenue Roadway Segment	Change in Traffic Noise Levels at Receptors adjacent to Southbound Mary Avenue (west)	Change in Traffic Noise Levels at Receptors adjacent to Northbound Mary Avenue (east)
Segment 1A	-0.2 dBA	-0.2 dBA
Segment 1B	+0.5 dBA	-0.1 dBA
Segment 2	-0.4 dBA	-0.2 dBA
Segment 3	0.0 dBA	0.0 dBA

As indicated in **Table 1**, the project would slightly reduce traffic noise levels at some receptors along the study area corridor. A slight noise increase is predicted to occur at receptors adjacent to southbound Mary Avenue in Segment 1B. However, increases to traffic noise levels would be less than 1 dBA, which would not be perceptible and scarcely measurable. As a result, traffic noise level increases caused by the proposed project, in terms of changed traffic patterns and/or changed roadway lane configurations would be less-than-significant. No mitigation measures are required.

d) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Less Than Significant With Mitigation. Project construction would generate noise, and would temporarily increase noise levels in the area. Noise impacts resulting from

construction depend on the noise generated by various pieces of construction equipment, the timing and duration of noise generating activities, and the distance between construction noise sources and noise sensitive receptors. Where noise from construction activities exceeds 60 dBA L_{eq} and exceeds the ambient noise environment by at least 5 dBA L_{eq}, for a period exceeding one year, the impact would be considered significant.

Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (early morning, evening, or nighttime hours), the construction occurs in areas immediately adjoining noise sensitive land uses, or when construction durations last over extended periods of time. Limiting the hours when construction can occur to daytime hours (see item a above) is often a simple method to reduce the potential for noise impacts. In areas immediately adjacent to construction, controls such as constructing temporary noise barriers and utilizing "quiet" construction equipment can also reduce the potential for noise impacts.

Heavy construction equipment and trucks would be required at times during median demolition and earthmoving activities associated with the project. This construction would result in the highest noise levels at off-site receivers (79 to 88 dBA L_{eq} at 50 feet from a busy construction site).

The remaining construction activities would be less intensive and would require less heavy equipment. Given the proximity of nearby residences that share the project perimeter, construction noise levels would generally exceed 60 dBA L_{eq} and the ambient noise environment by at least 5 dBA L_{eq} throughout the construction phases requiring heavy construction equipment and trucks.

Primary activity associated with each phase of construction activities would last less than 6 months. Typically, small construction projects do not generate significant noise impacts when standard construction noise control measures are enforced at the project corridor and when the duration of the noise generating construction period is limited to one construction season (typically one year or less). Reasonable regulation of the hours of construction, as well as regulation of the arrival and operation of heavy equipment and the delivery of construction materials, are necessary to protect the health and safety of persons, promote the general welfare of the community, and maintain the quality of life. In the absence of mitigation, this impact would potentially be significant. **Mitigation Measure NOISE-1** below would reduce this impact to a less than significant level.

Mitigation Measure NOISE-1

1. Utilize 'quiet' models of air compressors and other stationary noise sources where technology exists;
2. Equip all internal combustion engine-driven equipment with mufflers, which are in good condition and appropriate for the equipment;
3. Locate all stationary noise-generating equipment, such as air compressors, portable power generators, and crushing/recycling operations as far away as possible from adjacent land uses;
4. Locate staging areas and construction material areas as far away as possible from adjacent land uses;

5. Prohibit all unnecessary idling of internal combustion engines;
6. Designate a "disturbance coordinator" who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator will determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and will require that reasonable measures warranted to correct the problem be implemented.

Significance After Mitigation: Implementation of **Mitigation Measure NOISE-1** would reduce the air quality impacts associated with grading and new construction to a less than significant level.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project corridor to excessive noise levels?

and

f) For a project located within the vicinity of a private airstrip, would the project expose people residing or working in the project corridor to excessive noise levels?

No Impact. The project entails reallocation of street space on Mary Avenue to better accommodate bicyclists and other roadway users through improvements within the street right of way, between West Fremont and West Maude Avenue. The project corridor is not located within an airport land use plan. The nearest airport, Norman Y. Mineta airport in San Jose, is six miles to the east of the project corridor. The Moffett Federal Airstrip is located approximately three miles to the north of the project corridor. There are no private airstrips in the vicinity of the project corridor. Besides being outside of any airport land use plan or any airstrip, the project does not alter the number of people living or working in the vicinity. Therefore, no impact would result.

XIII. Population and Housing

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Induce substantial population growth in an area, either directly, (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

a) Induce substantial population growth in an area, either directly, (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Less Than Significant Impact. The project would neither directly nor indirectly facilitate substantial population growth as no housing units are part of the project and there is no evidence before the City that on-street bicycle lanes contribute indirectly to substantial population growth. The project would not require any property acquisition, so no displacement is possible. Allowing for expanded bicycle use of 2.9 miles of Mary Avenue is intended to help make bicycling more feasible by people who live and work in Sunnyvale. It is possible that the expansion of bicycle lanes could result in more bicycle use of Mary Avenue, but would not substantially alter development patterns in the area such that substantial population growth would result. This impact would be less than significant. No mitigation measures are required.

b) Displace substantial number of existing housing, necessitating the construction of replacement housing elsewhere.

and

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

No Impact. The project does not require displacement of any buildings whatsoever and would thus not displace people or housing.

XIV. Public Services

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i) Fire protection?	☐	☐	☐	☒
ii) Police protection?	☐	☐	☐	☒
iii) Schools?	☐	☐	☐	☒
iv) Parks?	☐	☐	☒	☐
v) Other public facilities?	☐	☐	☐	☒

a) **Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:**

i) **Fire Protection?**

and

ii) **Police Protection?**

No Impact. As previously described, the project would neither directly nor indirectly induce growth as it does not propose the construction of new dwelling units or businesses or alter the existing uses of land. As such, the project would not have the potential to increase demand for fire protection services or diminish fire protection service levels and thus would not require any new physical facilities. No impact would occur as a result of the project.

iii) **Schools?**

No Impact. The project would not directly or indirectly induce growth as a result of the proposed improvements described in the project description because it does not propose the construction of new dwelling units or businesses. Thus, the project could not directly introduce new students to the school district, increase demand for school services, or otherwise trigger the need for expanded school facilities. No impact would occur as a result of the project.

iv) **Parks?**

Less than Significant Impact. As previously described, the project would not directly or indirectly induce growth as it does not propose the construction of new dwelling units or businesses or alter the existing uses of land. Mango Park is located in the vicinity of the project corridor at the intersection of West Remington Drive and Mary Avenue, which would be more accessible by bicycles as a result of the project. However, the project would not have the potential to directly increase the resident population or increase demand on parks such that new or alteration to existing facilities would be required. Therefore, this impact would be less than significant. No mitigation measures are required.

v) **Other public facilities?**

No Impact. As previously described, none of the proposed improvements have the potential to directly or indirectly induce growth as the project does not alter existing use of land or propose new dwelling units or business that could result in new resident population growth. As such the project would not have the potential to create or increase demand for other public facilities such that new or expanded public facilities are required. Therefore, no impact would occur as a result of the proposed project.

XV. Recreation

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☒	☐

a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

No Impact. All project activities would take place within the existing right of way, and would enhance access on Mary Avenue for bicyclists. The project does not propose new housing or new businesses that might bring new people to the area and thus increase the use of existing neighborhood and regional parks or other recreational uses. Therefore, no impact would occur as a result of the project.

b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Less-than-Significant Impact. The project itself entails the installation of continuous bicycle lanes along 2.9 miles of Mary Avenue. The City's primary objective in the project is to better accommodate bicyclists as well as other roadway users while preserving public safety along Mary Avenue. Some bicycle use can be considered a recreational use. This initial study examines in detail the environmental effects associated with the proposed bicycle facility installation. As stated throughout the document, the project would not have any significant environmental effects assuming adherence to proposed mitigation measures provided herein. The project does not otherwise include installation of any recreational facility outside the Mary Avenue right-of-way.

XVI. Transportation and Traffic

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm	☐	☐	☒	☐

equipment)?

e) Result in inadequate emergency access?	☐	☐	☒	☐
f) Conflict with adopted policies, plans or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒

Transportation Background

The existing traffic conditions along the 2.9 mile street of Mary Avenue that comprise the project corridor are outlined below by segment.

Segment 1A: Lower traffic volumes, 11,000 Vehicles Per Day (VPD); excess capacity with an 'A' or 'C' Level of Service (LOS) at intersections; the traffic is primarily neighborhood-serving.

Segment 1B: Higher traffic volumes, 15,000 VPD; moderate capacity with 'B', 'C' and 'D' LOS at intersections; more intracity-intercity traffic.

Segment 2: Highest traffic volumes, 22,000 VPD; Busy intersection with 'D' and 'E' LOS, Intercity, intracity collector that serves Central Expressway and crosses Caltrain tracks.

Segment 3: Low to moderate traffic volumes, 10,000 VPD; excess capacity with 'B' and 'C' LOS at intersections; industrial collector that primarily serves office uses and Encinal Park Neighborhood.

LOS 'D' is considered acceptable for local roads in the City of Sunnyvale, while LOS 'E' is considered acceptable for certain intersections[12] within City of Sunnyvale boundaries.

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

No Impact. A comparison of existing and existing plus project traffic volumes shows that that the traffic volumes with the project are essentially identical to existing conditions, because the project preserves the traffic capacity at major intersections. Therefore, no diverted traffic is expected and traffic patterns would not change with the project.

[12] "Certain intersections" refers to those monitored by the Valley Transportation Authority under the applicable Congestion Management Plan (CMP).

Furthermore, the project is anticipated to improve circulation for an alternative mode of transportation and as a consequence may potentially shift some existing roadway users from autos to bicycles, in turn reducing auto traffic. Therefore, no impact would occur as a result of the project.

b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

No Impact. As previously indicated, a comparison of existing and existing plus project traffic volumes shows that that the traffic volumes with the project are identical to existing conditions, because the project preserves the traffic capacity at major intersections. Therefore, no diverted traffic is expected and traffic patterns would not change with the project. No impact would occur as a result of the project.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

No Impact. The project corridor is not located within an airport land use plan. The nearest airport, Norman Y. Mineta airport in San Jose, is six miles to the east. The Moffett Federal Airstrip is located approximately 3 miles to the northeast of the project corridor. There are no private airstrips in the vicinity of the project corridor. The project corridor is currently used by autos and bicycles, and the project would merely reallocate street space to enhance safety for and usage by bicyclists. As a result of distance from airstrips and the current use of the roadway, the project would not result in a safety hazard to people travelling through the project corridor. No impact would occur as a result.

d) Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less Than Significant Impact. The project would reallocate street space on a 2.9-mile portion of Mary Avenue so as to better accommodate bicyclists and other roadway users along Mary Avenue. The project does not propose any curb removal except median narrowing at certain locations. The improvements proposed to the street space generally include travel lane and parking lane removal, new striping, and median narrowing in two locations, and are described in detail in the project description. None of these improvements would increase hazards to a design feature because the project does not propose any new work outside of the existing street space or reduce travel lane widths below the City's accepted minimum of 10 feet.[13] Moreover, the project does not generate additional traffic volumes but improves traffic circulation through lane restriping and other road design features like a center turn lane exclusively for left-turning vehicles, and continuous striped separated lanes for bicycles. As a result, this impact from changes within the street space would be less than significant. No mitigation measures are required.

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[13] The US Department of Transportation, Federal Highway Administration, suggests lane widths ranging from 10 to 12 feet for width for urban arterials and collectors.
http://safety.fhwa.dot.gov/geometric/pubs/mitigationstrategies/chapter3/3_lanewidth.htm

e) Result in inadequate emergency access?

Less Than Significant Impact. As previously discussed under 'VIII g)', the relevant adopted emergency response plan is the Local Hazard Mitigation Plan. Santa Clara County has adopted this plan; each city in the county, including Sunnyvale, has adopted an "annex" or city-specific chapter outlining detailed hazard and emergency response issues exclusive to each individual city. The annex states that Sunnyvale has a relatively low risk factor for fire loss; past fire experience has demonstrated Sunnyvale to be a relatively fire-safe community. The annex does not identify Mary Avenue as a critical emergency response route.

The project would alter pavement striping along portions of Mary Avenue. In some locations, the project would reduce the number of automobile travel lanes from 2 to 1 but the project would also remove on-street parking in some locations. The project preserves the existing number of turning lanes at all intersections and either preserves or slightly expands the curb-to-curb pavement width along affected sections of Mary Avenue. As noted in the project traffic study included herein (see, **Appendix B**), the project would not significantly increase traffic levels on Mary Avenue or on any adjacent streets.

At present, emergency vehicles using Mary Avenue and other City streets must navigate around existing traffic, delivery vehicles, sanitation collection trucks, and the like. It is also acknowledged that one of the City's fire stations is located on Ticonderoga Drive, immediately adjacent to a portion of the project corridor. The existing operating conditions are not likely to be impaired and will be slightly improved by widening of the curb (exterior) to curb (median) pavement width and elimination of on-street parking in some areas. Other areas will maintain the existing curb to curb width and corresponding emergency vehicle access

Taking all of the above into account, the project would not result in any substantial limitation of Mary Avenue by emergency service providers. The project would not physically preclude emergency vehicles (or yielding automobile traffic) from temporary, emergency-period use of any proposed bicycle lane. The impact would be less than significant. No mitigation measures are required.

f) Conflict with adopted policies, plans or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

No Impact. The Land Use and Transportation Element of the City of Sunnyvale General Plan spells out several policies (Policies LT-1.9, and 5.5.) in support of a variety of alternative modes of transportation and for the provision of a safe and comfortable system for bicycle and pedestrian pathways (Policy LT – 5.8). The project would reallocate street space on a 2.9-mile portion of Mary Avenue so as to provide improved facilities for bicycle use. Also, the project is consistent with the City's 2006 Bicycle Plan, which calls for continuous on-street striped bicycle lanes on this portion of Mary Avenue. Therefore, the project is consistent with the City's adopted policies, plans or programs supporting alternative transportation. No impact would occur as a result of the project.

XVII. Utilities and Service Systems

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

a) **Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?**

b) **Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?**

and

e) **Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?**

No Impact. The project would reallocate street space on a 2.9 mile portion of Mary Avenue so as to better accommodate bicyclists along with other roadway users. The project does not alter the existing uses of land or propose construction of new housing units or businesses that could generate additional demand for utilities and services systems. The improvements proposed to the street space would not generate wastewater that would require wastewater treatment.

The project would not require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities. For that reason, the project would not result in inadequate capacity for wastewater treatment or a determination by the wastewater treatment provider to that effect. No impacts would result from the project.

c) **Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?**

Less Than Significant Impact. As previously indicated, the project does not alter the existing uses of land and would essentially retain Mary Avenue right of way as a transportation corridor. Some land currently in the median will be converted to impervious surface for direct transportation use. However, the increase in impervious surface and consequently the increase in surface run off would be insignificant. Therefore, the project would not require or result in the construction of new storm water drainage facilities or expansion of existing facilities. This impact would be less than significant. No mitigation measures are required.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

No Impact. The project entails reallocation of street space on Mary Avenue through improvements to the street within the existing right of way between West Fremont and West Maude Avenues to better accommodate bicyclists and other roadway users along Mary Avenue. The project would not create any foreseeable additional water demand. Therefore, no impact would occur as a result of the project.

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

and

g) Comply with federal, state, local statutes and regulations related to solid waste?

No Impact. No aspect of the project, as described in the project description, would require or result in additional solid waste generation requiring disposal at a landfill or would have the potential to conflict with federal, state, local statutes and regulations related to solid waste. Therefore, no impact would occur as a result of the project.

XVIII. Mandatory Findings of Significance

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Have the potential to degrade quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☒	☐
b) Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐
c) Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

a) **Have the potential to degrade quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?**

Less Than Significant Impact. Based on the analysis presented in the preceding sections and given the implementation of the identified standard and mitigation measures, the proposed project would not degrade the quality of the environment and does not have the potential for significant environmental impacts.

As enumerated in this document, the project would not substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory.

b) **Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?**

Less Than Significant Impact. The proposed bicycle lanes and street configurations are consistent with the City's General Plan, including the Land Use and Transportation Element, as well as the City Bicycle Plan. The Sunnyvale Bicycle Plan serves as the primary planning and policy document relative to bicycling in Sunnyvale. In its environmental review of the General Plan and the Bicycle Plan, the City contemplated impacts of a number of bicycle-related changes, including changes essentially consistent with the current project on Mary Avenue. Because the project is consistent with the City General Plan and Bicycle Plan, the project would not result in any cumulatively considerable impact that was not previously disclosed in the earlier environmental reviews.

c) **Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?**

Less Than Significant Impact. The intent of the project is to provide for enhanced bicycle facilities along a 2.9-mile section of Mary Avenue. Implementation of the mitigation measures identified in this Initial Study would reduce potential impacts to a less-than-significant level and the project would not result in impacts that would cause substantial adverse effects on human beings, either directly or indirectly.

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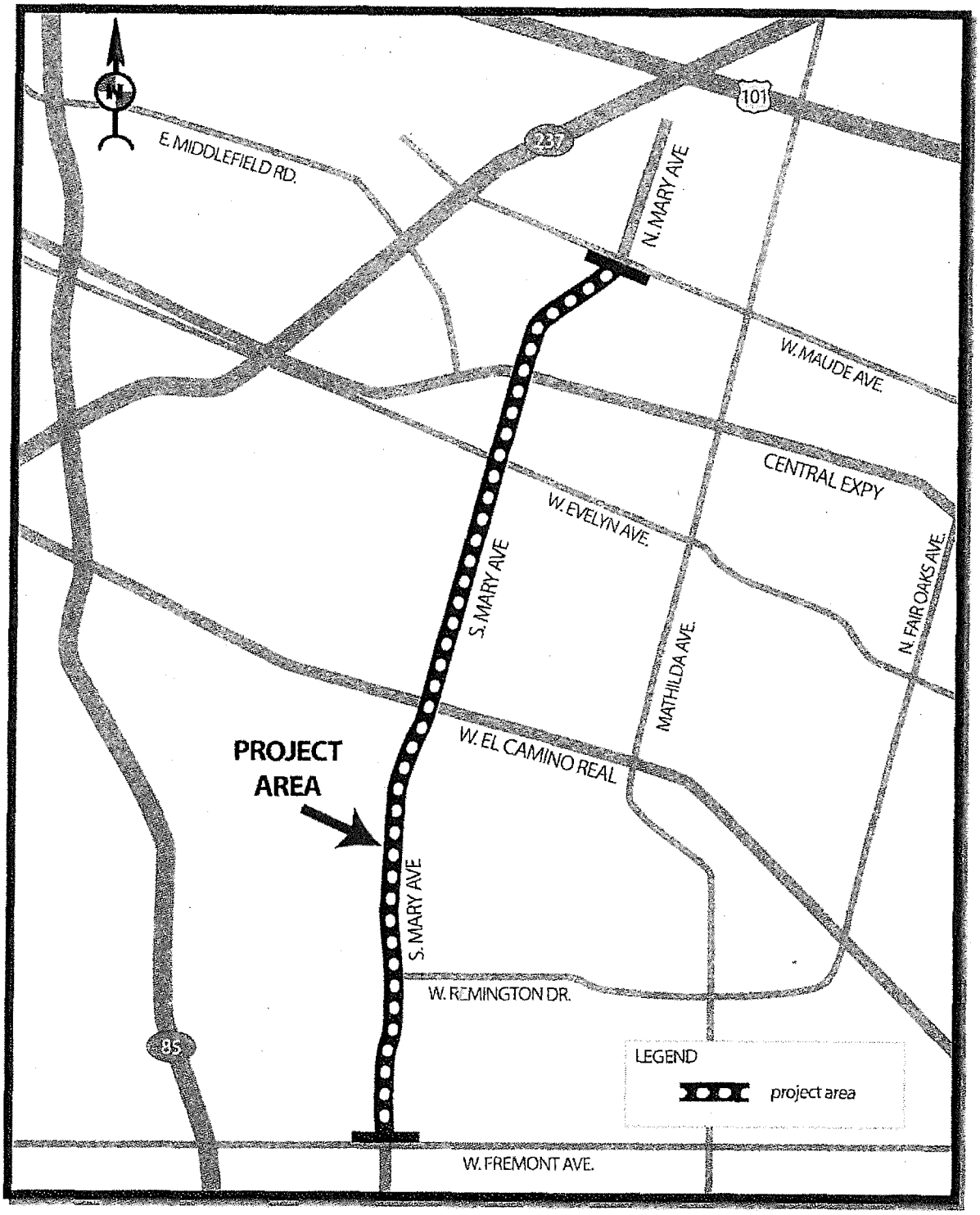
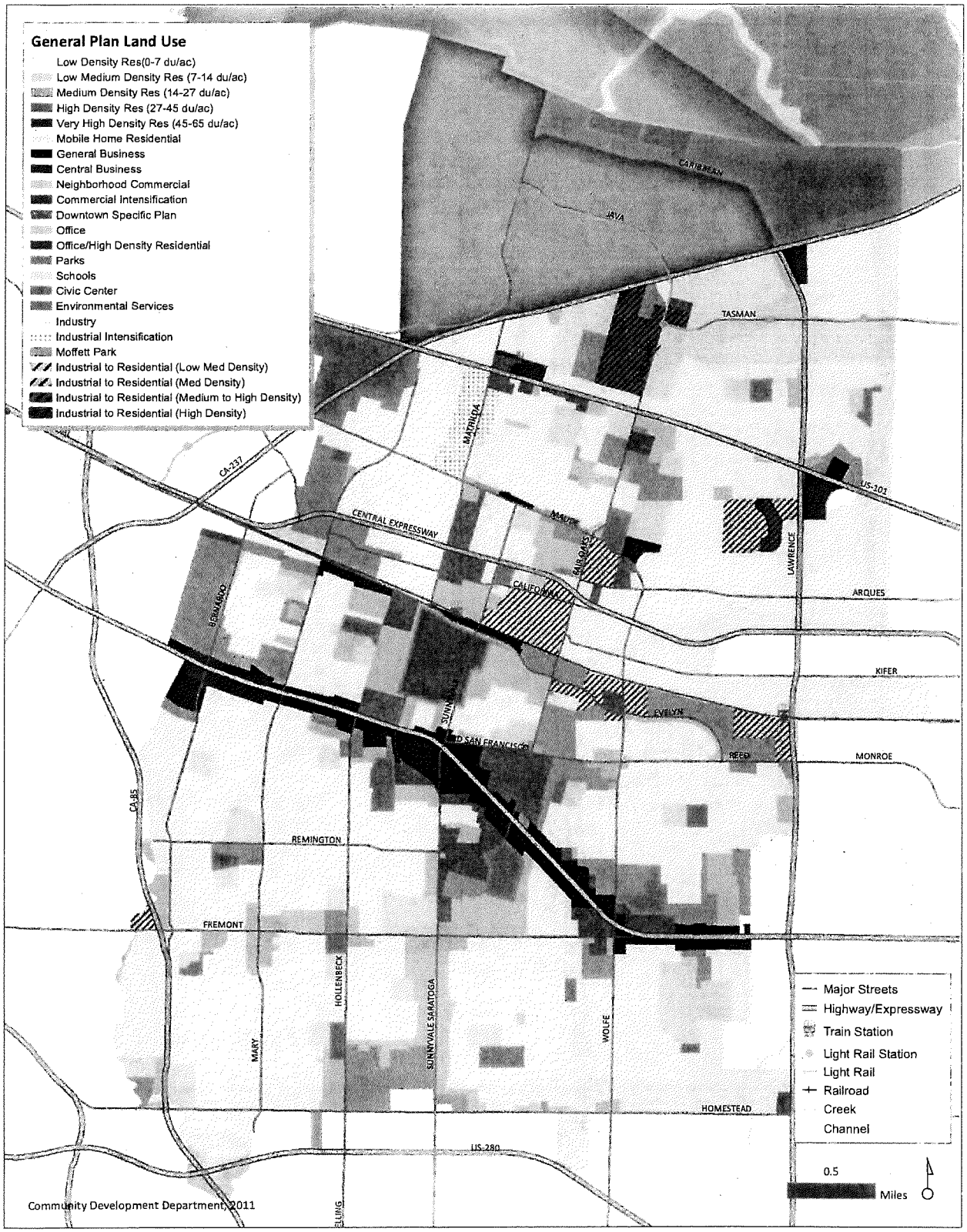


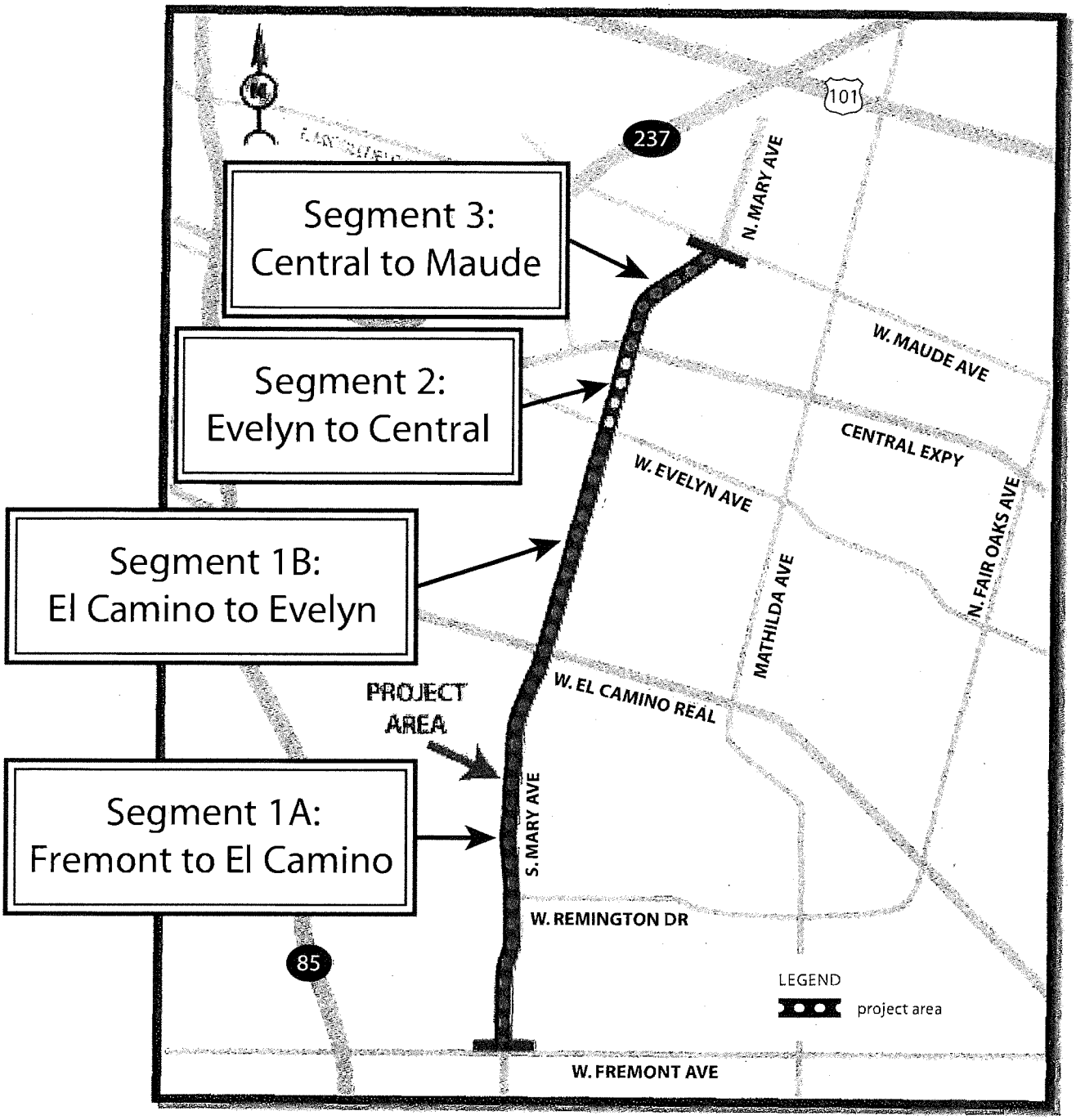
Project Area Figure 1

Source: TJKM, 2013.



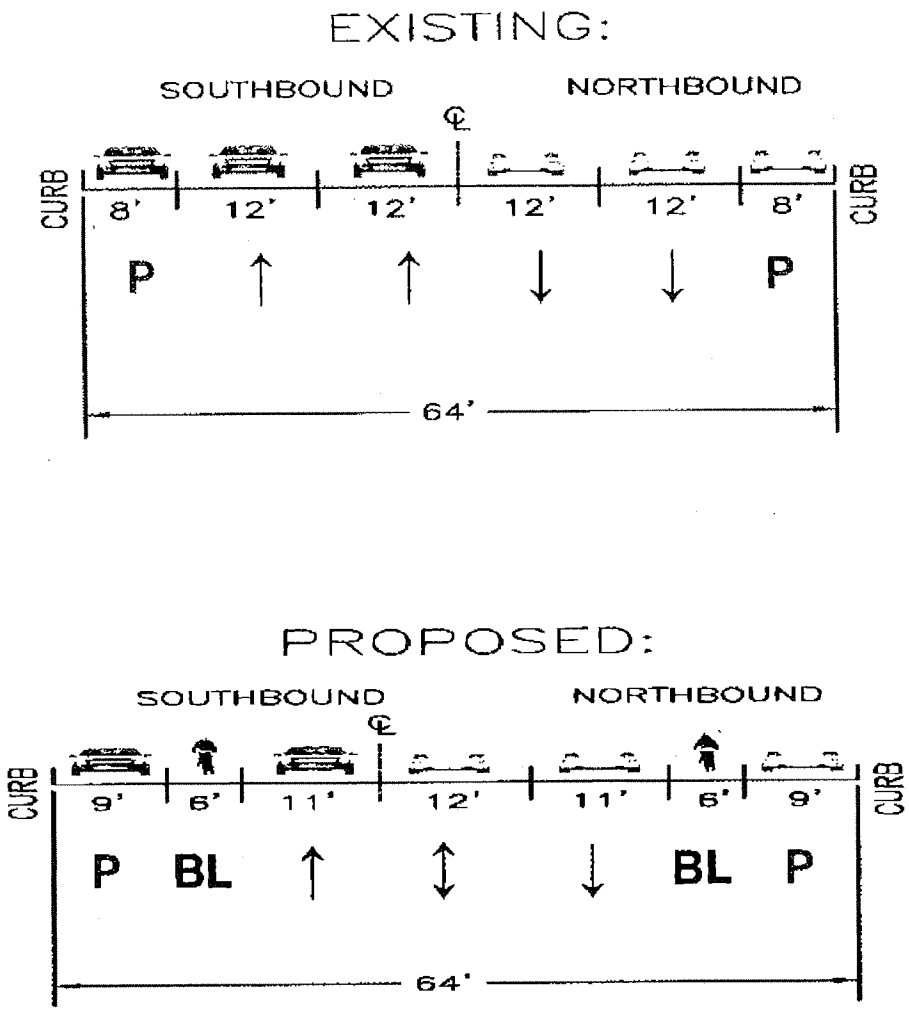
General Plan Land Use **Figure 2**

Source: City of Sunnyvale, May 2013.



Project Area Roadway Segments Figure 3

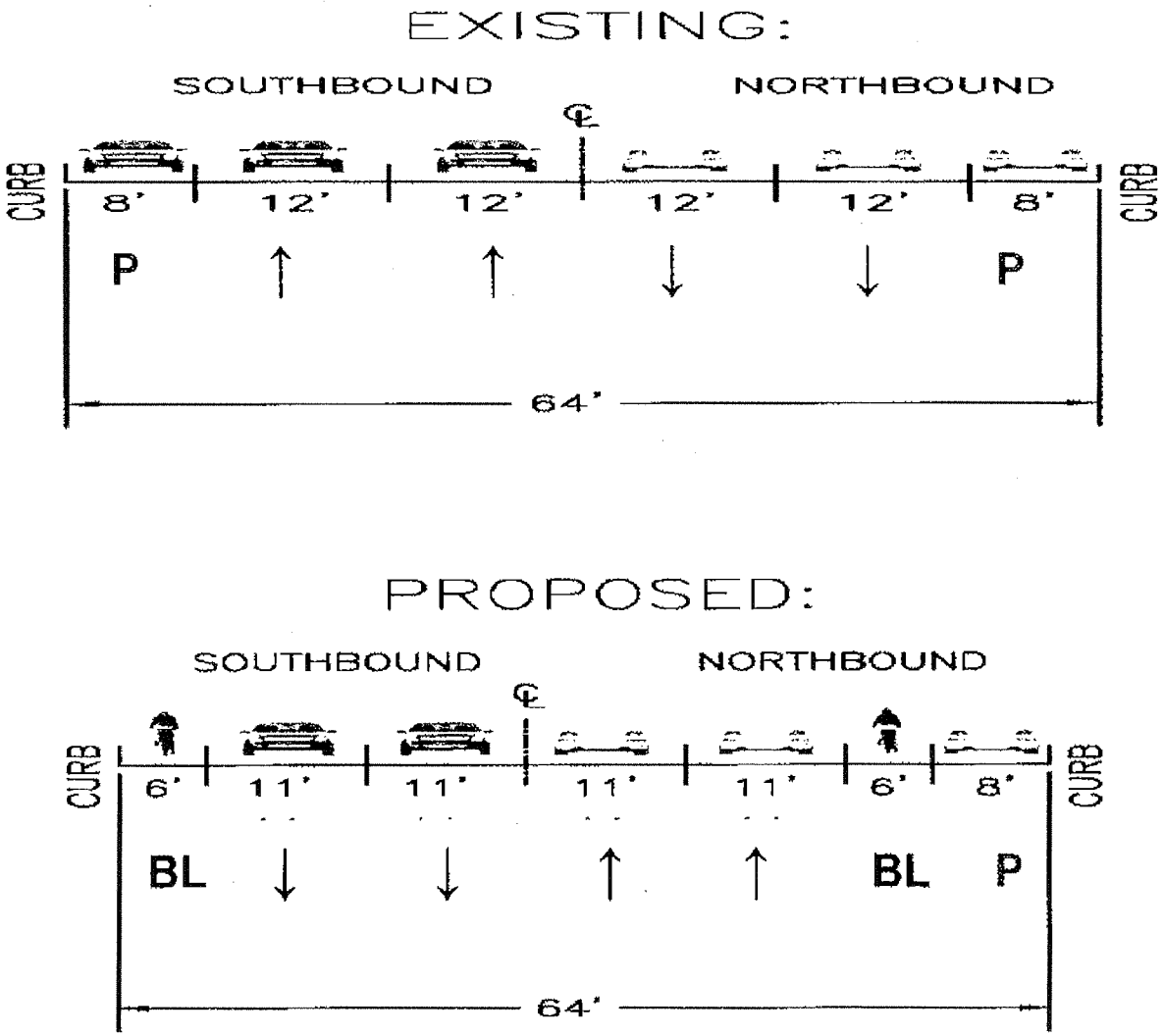
Source: TJKM, 2013.



Segment 1A, Fremont Avenue to El Camino Real, Existing and Proposed

Figure 4

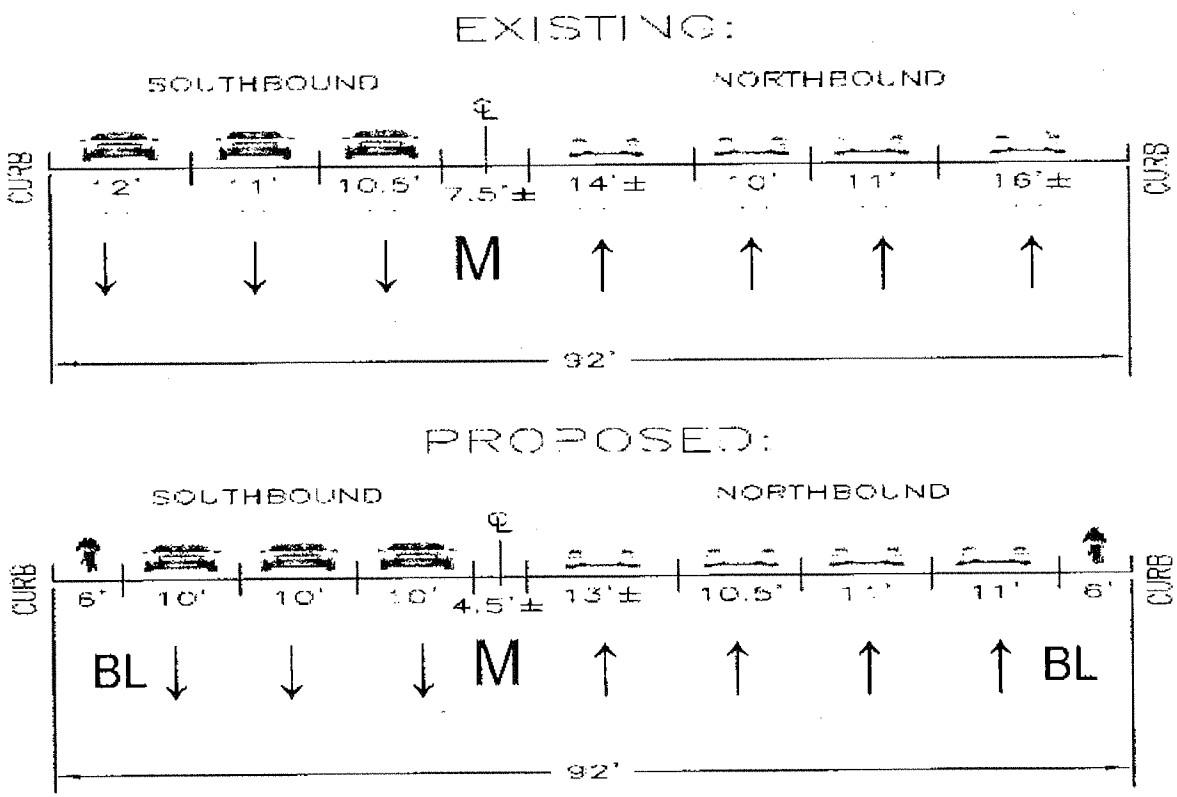
Source: TJKM, 2013.



Segment 1B, El Camino Real to Evelyn Avenue, Existing and Proposed

Figure 5

Source: TJKM, 2013.



Segment 2, Evelyn Avenue to Central Expressway, Existing and Proposed

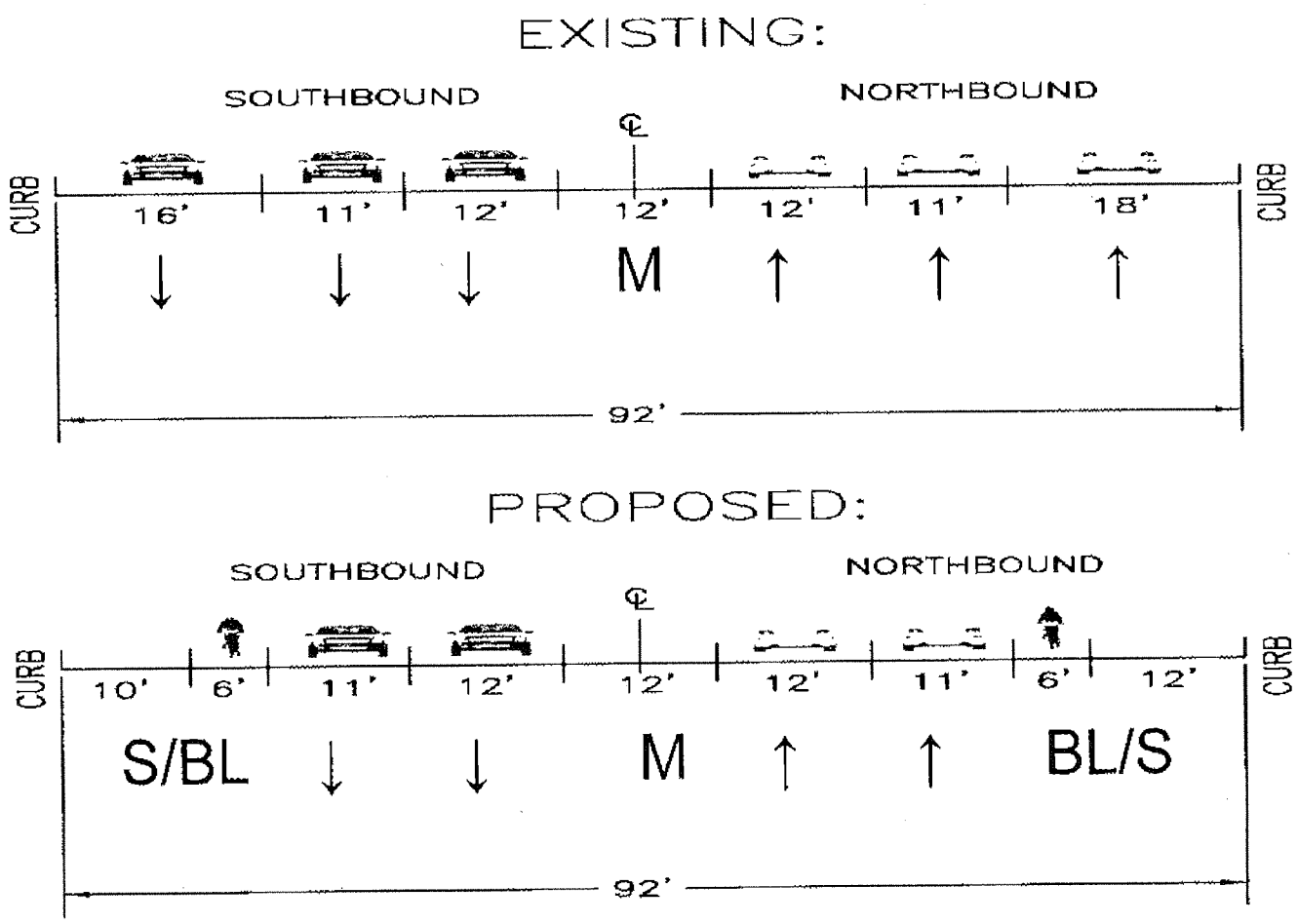
Figure 6

Source: TJKM, 2013.

APPENDIX A

MARY AVENUE STREET SPACE ALLOCATION STUDY,

AIR QUALITY, GREENHOUSE GAS, and NOISE CEQA EVALUATIONS



Segment 3, Central Expressway to Maude Avenue, Existing and Proposed

Figure 7

Source: TJKM, 2013.

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality
505 Petaluma Boulevard South
Petaluma, California 94952
Tel: 707-766-7700 *Fax: 707-766-7790*
www.illingworthrodkin.com *illro@illingworthrodkin.com*

May 14, 2013

John Cook, AICP
Senior Project Manager
Circlepoint
1814 Franklin Street, Suite 1000
Oakland, CA 94612

VIA E-MAIL: **j.cook@circlepoint.com**

SUBJECT: Mary Avenue Street Space Allocation Study, Sunnyvale, CA – Air Quality, Greenhouse Gas, and Noise CEQA Evaluations

Dear John:

The purpose of this letter is to address air quality, greenhouse gas emissions, and noise impacts associated with the proposed Mary Avenue Street Space Allocation Study project in Sunnyvale, California. The project involves improvements and re-allocation of street space within the street right of way to better accommodate bicycles on Mary Avenue between West Fremont and West Maude Avenues in the City of Sunnyvale. For purposes of this project, this portion of Mary Avenue is subdivided into the following segments:

Segment 1. The Residential Segment between West Fremont and Evelyn Avenue.
Segment 2. The Transition Segment between Evelyn Avenue and Central Expressway.
Segment 3. The Office Segment, between Central Expressway and Maude Avenue.

The primary environmental impact to air quality and noise would be associated with construction activities and changes to traffic. The air quality/GHG and noise impacts associated with the preferred alternative were evaluated as follows:

Preferred Alternative. The project would eliminate a travel lane in the southbound direction for the inclusion of one bicycle lane in either direction in Residential Segment 1A. In Residential Segment 1B, the project would include removal of parking on the west side of the street for the addition of one bicycle lane in either direction. The project for the Transition Segment (Segment 2), from Evelyn Avenue to Central Expressway would include median narrowing/modification, and travel lane narrowing for the inclusion of one bicycle lane in each direction. For the Office Segment (Segment 3) from Central Expressway to Maude Avenue, the project involves removal on one travel lane each, in either direction for a total of four car lanes remaining with the inclusion of one bicycle lane in either direction where road diet (lane removal) would yield extra wide bike space, preferred by bicyclists.

The project would not require any expansion of the existing ROW or the acquisition of any public or private property. The project also does not require any relocation of existing curbs except for the median modification in Segment 2 as outlined above. No trees are proposed for removal as a result of the project.

AIR QUALITY AND GREENHOUSE GASES

Air quality impacts would occur due to temporary construction emissions and from direct and indirect emissions from changes to traffic pattern. This analysis was conducted following guidance provided by the Bay Area Air Quality Management District (BAAQMD)[1].

Setting

The project is located in the San Francisco Bay Area Air Basin. Ambient air quality standards have been established at both the State and Federal level. The Bay Area meets all ambient air quality standards with the exception of ground-level ozone, respirable particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$).

High ozone levels are caused by the cumulative emissions of reactive organic gases (ROG) and nitrogen oxides (NOx). These precursor pollutants react under certain meteorological conditions to form high ozone levels. Controlling the emissions of these precursor pollutants is the focus of the Bay Area's attempts to reduce ozone levels. Highest ozone levels in the Bay Area occur in the eastern and southern inland valleys that are downwind of air pollutant sources. High ozone levels aggravate respiratory and cardiovascular diseases, reduced lung function, and increase coughing and chest discomfort.

Particulate matter is another problematic air pollutant in the Bay Area. Particulate matter is assessed and measured in terms of respirable particulate matter or particles that have a diameter of 10 micrometers or less (PM_{10}) and fine particulate matter where particles have a diameter of 2.5 micrometers or less ($PM_{2.5}$). Elevated concentrations of PM_{10} and $PM_{2.5}$ are the result of both region-wide (or cumulative) emissions and localized emissions. Transport of air pollutants from the Central and San Joaquin Valleys contribute to wintertime particulate levels. High particulate matter levels aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children.

Toxic air contaminants (TAC) are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer) and include, but are not limited to, the criteria air pollutants listed above. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and Federal level.

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average). According to CARB, diesel exhaust is a complex mixture of gases, vapors and fine particles. This complexity makes

[1] BAAQMD 2010. BAAQMD CEQA Air Quality Guidelines. June.

the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the state's Proposition 65 or under the Federal Hazardous Air Pollutants programs.

CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of DPM. Several of these regulatory programs affect medium and heavy duty diesel trucks that represent the bulk of DPM emissions from California highways. These regulations include the solid waste collection vehicle (SWCV) rule, in-use public and utility fleets, and the heavy-duty diesel truck and bus regulations. In 2008 CARB approved a new regulation to reduce emissions of DPM and nitrogen oxides from existing on-road heavy-duty diesel fueled vehicles[2]. The regulation requires affected vehicles to meet specific performance requirements between 2014 and 2023, with all affected diesel vehicles required to have 2010 model-year engines or equivalent by 2023. These requirements are phased in over the compliance period and depend on the model year of the vehicle.

The Bay Area Air Quality Management District (BAAQMD) is the regional agency tasked with managing air quality in the region. At the State level, the California Air Resources Board or CARB (a part of the California Environmental Protection Agency) oversees regional air district activities and regulates air quality at the State level. The BAAQMD has recently published CEQA Air Quality Guidelines that are used in this assessment to evaluate air quality impacts of projects[3].

Impacts and Mitigation Measures

> **Impact 1:** Conflict with or obstruct implementation of the applicable air quality plan? ***No Impact***

The most recent clean air plan is the *Bay Area 2010 Clean Air Plan* that was adopted by BAAQMD in September 2010. The proposed project would not conflict with the latest Clean Air planning efforts since (1) the project would have emissions well below the BAAQMD thresholds (see Impact 2), (2) development of the project would enhance transportation modes that are consistent with the Clean Air Plan Transportation Control Measures, and (3) development would be near existing transit with regional connections. The project is too small to incorporate project-specific transportation control measures listed in the latest Clean Air Plan (i.e., *Bay Area 2010 Clean Air Plan*). The project would include numerous amenities that encourage pedestrian, bicycle and transit use that promote transportation control measures included in the Clean Air Plan.

> **Impact 2:** Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? ***Less-than-significant***

[2] http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm
[3] Bay Area Air Quality Management District. 2010. BAAQMD CEQA Air Quality Guidelines. June.

The Bay Area is considered a non-attainment area for ground-level ozone and fine particulate matter ($PM_{2.5}$) under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered non-attainment for respirable particulates or particulate matter with a diameter of less than 10 micrometers (PM_{10}) under the California Clean Air Act, but not the Federal act. The area has attained both State and Federal ambient air quality standards for carbon monoxide. As part of an effort to attain and maintain ambient air quality standards for ozone and PM10, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for ozone precursor pollutants (ROG and NOx), PM_{10} and $PM_{2.5}$ and apply to both construction period and operational period impacts.

The largest construction activities would include some demolition of the existing roadways or medians, paving, and construction of project amenities including signs and landscape. These emissions are anticipated to be minor, since on average, less than 3 pieces of construction equipment would be utilized. As a result, exhaust emissions would be well below thresholds that used to judge construction projects. However, best management practices are necessary during demolition, trenching and grading activities to avoid generation of dust that may affect nearby sensitive receptors. Best Management Practices for controlling construction period air pollutant emissions are identified as Mitigation Measure AQ-1. Operation of the proposed project would not generate air pollutant emissions that would expose sensitive receptors to unhealthy air pollutant levels.

Mitigation Measure AQ-1: Include measures to control dust and exhaust during construction.

Implementation of the measures recommended by BAAQMD and listed below would reduce the air quality impacts associated with grading and new construction to a less than significant. The contractor shall implement the following Best Management Practices that are required of all projects:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

4. All vehicle speeds on unpaved roads shall be limited to 15 mph.

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne

toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Impact 3: Violate any air quality standard or contribute substantially to an existing or projected air quality violation? ***Less-than-significant***

As discussed under Impact 2, the project would not cause measureable emissions, and therefore, not have emissions above significance thresholds adopted by BAAQMD for evaluating impacts to ozone and particulate matter. Therefore, the project would not contribute substantially to existing or projected violations of those standards. The project would not require any expansion of the existing right-of-way or the acquisition of public or private property. The project also does not include any relocation of existing curbs except for the median modification in Segment 2. As a result, the project would not move traffic closer to residences or sensitive receptors that could change air pollutant conditions. Carbon monoxide emissions from traffic generated by the project would be the pollutant of greatest concern at the local level. Congested intersections with a large volume of traffic have the greatest potential to cause high-localized concentrations of carbon monoxide. Air pollutant monitoring data indicate that carbon monoxide levels have been at healthy levels (i.e., below State and Federal standards) in the Bay Area since the early 1990s. As a result, the region has been designated as attainment for the standard. There is an ambient air quality monitoring station in Cupertino that measures carbon monoxide concentrations. The highest measured level over any 8-hour averaging period during the last 3 years is less than 2 parts per million (ppm), compared to the ambient air quality standard of 9.0 ppm. The roadways affected by the proposed project have relatively low traffic volumes compared to the busier intersections in the Bay Area. BAAQMD screening guidance indicates that projects would have a less than significant impact to carbon monoxide levels if project traffic projections indicate traffic levels would not increase at any affected intersection to more than 44,000 vehicles per hour. The intersections affected by the proposed project have much lower traffic volumes. So the change in traffic caused by the proposed project would be minimal and the project would not cause or contribute to a violation of an ambient air quality standard.

Impact 4: Expose sensitive receptors to substantial pollutant concentrations? ***Less-than-significant with construction period mitigation measures***

As discussed under Impact 2, construction activities may include some roadway demolition, paving, possible utility upgrades, and installation of hardscape and landscape improvements. Primary activity associated with each phase of construction activities would last less than 6 months. These would not be intensive operations. As indicated in Impact 2, emissions would be below the BAAQMD thresholds and are not expected to cause adverse impacts to nearby

sensitive receptors. Mitigation Measure AQ-1, identified in Impact 2, would represent Best Management Practices controlling construction period air pollutant emissions and reducing impacts to nearby sensitive receptors. Diesel particulate matter (DPM), a toxic air contaminant, would be emitted during construction in relatively small quantities. DPM can cause adverse health effects, i.e., excess cancer risk, if sensitive receptors are exposed to relatively high amounts. This type of exposure can occur when sensitive receptors are exposed to intensive construction activities, which last 6 months or longer in one location, or if exposed to long periods of lower emissions from continuous sources (e.g., highways). Given the relatively short construction period near any one area, construction impacts associated with DPM are not anticipated. The project would not increase emissions of DPM along the roadway, so long-term impacts from DPM are not anticipated.

> **Impact 5:** Create objectionable odors affecting a substantial number of people? ***No Impact***

The proposed project would not generate odors that would result in confirmed odor complaints.

> **Impact 6:** Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? ***Less-than-significant***

The BAAQMD recommended GHG emissions-based thresholds in 2010 that are used by the City to judge the significance of emissions from land use projects. These criteria include a "bright-line" emissions threshold at 1,100 metric tons per year for land-use type projects and 10,000 metric tons per year for stationary sources. Projects with emissions above the thresholds would be considered to have an impact, which, cumulatively, could be significant. These thresholds apply to the operation of projects. No thresholds were identified for construction activities.

Temporary GHG emissions would occur during construction. These would vary from day-to-day. Best management practices assumed to be incorporated into construction of the proposed project include, but are not limited to: using local building materials of at least 10 percent and recycling or reusing at least 50 percent of construction waste or demolition materials. Modeling of construction GHG emissions was conducted using the Sacramento Metropolitan Air Quality management District's Road Construction Emissions Model, Version 6.3.2. A screening model run was developed that included widening of 3 miles of roadway over a 12-month period. Based on this modeling, annual emissions from construction activity are estimated to be 502 tons (455 metric tons). As described under Impact 2, no changes to operational emissions resulting from changes in traffic patterns were predicted. Therefore, the proposed project would not adversely affect long-term GHG emissions.

> **Impact 7:** Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases? ***No Impact***

The project would be subject to new requirements under rule making developed at the State and local level regarding greenhouse gas emissions and be subject to local policies that may affect emissions of greenhouse gases. The project would not interfere with any plan or regulation intended to reduce GHG emissions.

NOISE

Regulatory Background

The State of California and the City of Sunnyvale establish guidelines, regulations, and policies designed to limit noise exposure at noise sensitive land uses. These plans and policies include: (1) the State CEQA Guidelines, Appendix G; (2) the City of Sunnyvale Noise Sub-element of the General Plan; and (3) the City of Sunnyvale Municipal Code. The following criteria provide a measure of acceptability for community noise in Sunnyvale.

Noise Sub-Element of the General Plan. The Noise Sub-Element of the Sunnyvale General Plan identifies noise and land use compatibility standards for various land uses, and establishes goals, policies, and standards for evaluating the compatibility of proposed projects with respect to noise exposure or noise generation. Goals and policies of the Sub-element are presented below:

GOAL 3.6A - MAINTAIN OR ACHIEVE A COMPATIBLE NOISE ENVIRONMENT FOR ALL LAND USES IN THE COMMUNITY.

Policy 3.6A.1: Prevent significant noise impacts from new development by applying state noise guidelines and Sunnyvale Municipal Code noise regulations in the evaluation of land use issues and proposals.

Policy 3.6A.2: Enforce and supplement state laws regarding interior noise levels of residential units.

Policy 3.6A.3: Consider techniques that block the path of noise and insulate people from noise.

GOAL 3.6B - PRESERVE AND ENHANCE THE QUALITY OF NEIGHBORHOODS BY MAINTAINING OR REDUCING THE LEVELS OF NOISE GENERATED BY TRANSPORTATION FACILITIES.

Policy 3.6B.1: Refrain from increasing or reduce the noise impacts of major roadways.

Policy 3.6B.2: Support efforts to reduce or mitigate airport noise.

Policy 3.6B.3: Support activities that will minimize the noise impacts of Moffett Federal Airfield.

Policy 3.6B.4: Support activities that will minimize and/or reduce the noise impacts of San Jose International Airport.

Policy 3.6B.5: Encourage activities that limit the noise impacts of helicopters.

Policy 3.6B.6: Mitigate and avoid the noise impacts from trains.

Policy 3.6B.7: Monitor and mitigate the noise impacts of light rail facilities.

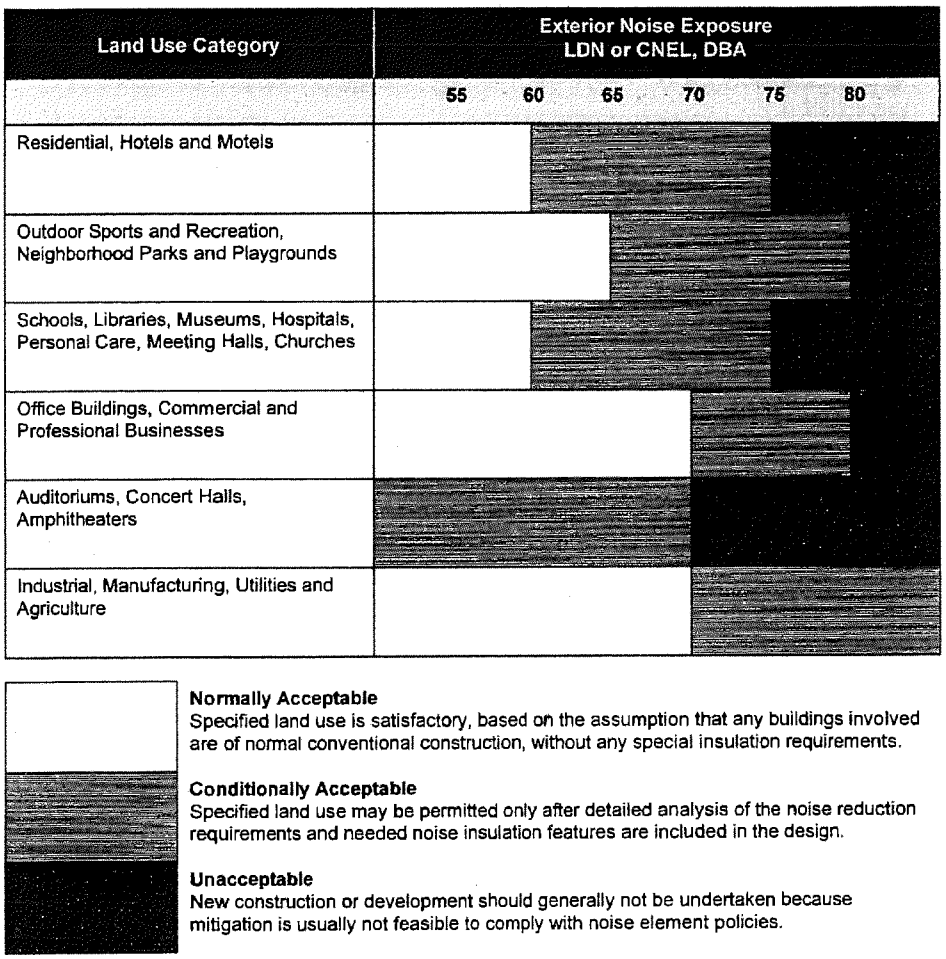
GOAL 3.6C – MAINTAIN OR ACHIEVE ACCEPTABLE LIMITS FOR THE LEVELS OF NOISE GENERATED BY LAND USE OPERATIONS AND SINGLE-EVENTS (COMMUNITY NOISE).

Policy 3.6C.1: Regulate land use operation noise.

Policy 3.6C.2: Regulate select single-event noises and periodically monitor the effectiveness of the regulations.

Table N-1 shows the compatibility of various land use categories with varying noise levels.

Table N-1 Land Use Compatibility Guidelines for Community Noise in Sunnyvale



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Municipal Code. Title 16, Chapter 16.08 presents construction noise regulations.

Construction activity shall be permitted between the hours of 7 a.m. and 6 p.m. daily Mondays through Fridays. Saturday hours of operation shall be between 8 a.m. and 5 p.m. There shall be no construction activity on Sundays or national holidays when city offices are closed.

No loud environmentally disruptive noises, such as air compressors without mufflers, continuously running motors or generators, loud playing musical instruments, radios, etc. will be allowed where such noises may be a nuisance to adjacent residential neighborhoods. Exceptions: (a) Construction activity is permitted for detached single-family residential properties when the work is being performed by the owner of the property, provided no construction activity is conducted prior to 7 a.m. or after 7 p.m. Mondays through Fridays, prior to 8 a.m. or after 7 p.m. on Saturdays and prior to 9 a.m. or after 6 p.m. on Sundays and national holidays when city offices are closed. It is permissible for up to two persons to assist the owner of the property so long as they are not hired by the owner to perform the work. For purposes of this section, "detached single-family residential property" refers only to housing that stands completely alone with no adjoining roof, foundation or sides. (b) Where emergency conditions exist, construction activity may be permitted at any hour or day of the week. Such emergencies shall be completed as rapidly as possible to prevent any disruption to the residential neighborhoods. (Ord. 2774-05 § 1; Ord. 2756-04 § 1: Ord. 2704-02 § 2).

Impacts and Mitigation Measures

> **Impact 1:** Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? ***Less-than-significant***

The construction of the project would occur during allowable time periods as established in the City of Sunnyvale Municipal Code. Construction would occur between the hours of 7 a.m. and 6 p.m. Monday through Friday. Saturday hours of operation would be between 8 a.m. and 5 p.m. There would be no construction activity on Sundays or national holidays when city offices are closed.

The operation of the proposed project (i.e., the use of bike lanes) would not generate noise levels above existing noise levels resulting from vehicular traffic along Mary Avenue.

> **Impact 2:** Result in exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels? ***Less-than-significant***

Construction activities may generate localized vibrations. These activities are not expected to be perceptible outside the right-of-way because the majority of the physical work would be conducted near the roadway median, more than 50 feet from the nearest receptors. There would be no ground-borne vibration resulting from operation of the project.

> **Impact 3:** Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? ***Less-than-significant***

Permanent noise level increases resulting from the project could result from changes in traffic patterns utilizing the roadways in the project vicinity and/or changes in the roadway lane configurations. A comparison of existing and existing plus project traffic volumes shows that that the traffic volumes with the project are identical to existing conditions, because with the project, the capacity at major intersections will be preserved. Therefore, no diverted traffic is expected and traffic patterns would not change with the project. Correspondingly, traffic noise levels along Mary Avenue or other areas roadways will not increase above existing conditions.

The project would modify existing lane alignments as follows:

- Segment 1A - Eliminate a travel lane in the southbound direction for the inclusion of one bicycle lane in either direction.
- Segment 1B - Remove parking on the west side of the street for the addition of one bicycle lane in either direction.
- Segment 2 - Median narrowing/modification, and travel lane narrowing for the inclusion of one bicycle lane in each direction.
- Segment 3 - Remove one travel lane each, in either direction for a total of four car lanes remaining with the inclusion of one bicycle lane in either direction where road diet (lane removal) would yield extra wide bike space, preferred by bicyclists.

Traffic noise level changes were calculated assuming the lane modifications described above. The change in traffic noise levels was calculated based on relative changes to the equivalent lane distance from Mary Avenue traffic to nearby sensitive receptors. The calculations assumed that a receptor would be 25 feet from the northbound our southbound right of way, and the relative changes to traffic noise levels are summarized in Table N-2, below.

Table N-2 Traffic Noise Level Changes Due to Project

Mary Avenue Roadway Segment	Change in Traffic Noise Levels at Receptors adjacent to Southbound Mary Avenue (west)	Change in Traffic Noise Levels at Receptors adjacent to Northbound Mary Avenue (east)
Segment 1A	-0.2 dBA	-0.2 dBA
Segment 1B	+0.5 dBA	-0.1 dBA
Segment 2	-0.4 dBA	-0.2 dBA
Segment 3	0.0 dBA	0.0 dBA

As indicated in Table N-2, the project would slightly reduce traffic noise levels some receptors along the study area corridor. A slight noise increase is predicted to occur at receptors adjacent to southbound Mary Avenue in Segment 1B. However, increases to traffic noise levels would be less than 1 dBA, which would not be measureable or perceptible. As a result, traffic noise level increases caused by the proposed project, in terms of changed traffic patterns and/or changed roadway lane configurations would be less-than-significant.

> **Impact 4:** Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? ***Less-than-significant***

The construction of the project would generate noise, and would temporarily increase noise levels in the area. Noise impacts resulting from construction depend on the noise generated by

various pieces of construction equipment, the timing and duration of noise generating activities, and the distance between construction noise sources and noise sensitive receptors. Where noise from construction activities exceeds 60 dBA L_{eq} and exceeds the ambient noise environment by at least 5 dBA L_{eq}, for a period exceeding one year, the impact would be considered significant.

Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (early morning, evening, or nighttime hours), the construction occurs in areas immediately adjoining noise sensitive land uses, or when construction durations last over extended periods of time. Limiting the hours when construction can occur to daytime hours is often a simple method to reduce the potential for noise impacts. In areas immediately adjacent to construction, controls such as constructing temporary noise barriers and utilizing "quiet" construction equipment can also reduce the potential for noise impacts.

The project would not require any expansion of the existing right-of-way or the acquisition of any public or private property. The project also does not require any relocation of existing curbs except for the median modification in Segment 2. No trees are proposed for removal as a result of the project. Heavy construction equipment and trucks would be required at times during demolition activities and earthmoving activities associated with the project. This construction period would result in the highest noise levels at off-site receivers (79 to 88 dBA L_{eq} at 50 feet from a busy construction site). The remaining construction activities would be less intensive and would require less heavy equipment. Given the proximity of nearby residences that share the project perimeter, construction noise levels would generally exceed 60 dBA L_{eq} and the ambient noise environment by at least 5 dBA L_{eq} throughout the construction phases requiring heavy construction equipment and trucks.

Primary activity associated with each phase of construction activities would last less than 6 months. Typically, small construction projects do not generate significant noise impacts when standard construction noise control measures are enforced at the project site and when the duration of the noise generating construction period is limited to one construction season (typically one year or less). Reasonable regulation of the hours of construction, as well as regulation of the arrival and operation of heavy equipment and the delivery of construction materials, are necessary to protect the health and safety of persons, promote the general welfare of the community, and maintain the quality of life.

Although the impact would be less-than-significant, the following standard measures are assumed to be included in the project:

1. Utilize 'quiet' models of air compressors and other stationary noise sources where technology exists;

2. Equip all internal combustion engine-driven equipment with mufflers, which are in good condition and appropriate for the equipment;

3. Locate all stationary noise-generating equipment, such as air compressors, portable power generators, and crushing/recycling operations as far away as possible from adjacent land uses;

4. Locate staging areas and construction material areas as far away as possible from adjacent land uses;

5. Prohibit all unnecessary idling of internal combustion engines;

6. Designate a "disturbance coordinator" who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator will determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and will require that reasonable measures warranted to correct the problem be implemented.

♦ ♦ ♦

This completes our analyses. Please feel free to contact us should you have any questions or need further assistance.

Sincerely,

James A Reyff
Senior Consultant, Principal

Michael S. Thill
Senior Consultant, Principal

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APPENDIX B

MARY AVENUE STREET SPACE ALLOCATION STUDY,

ALTERNATIVES TRAFFIC OPERATIONS ANALYSIS

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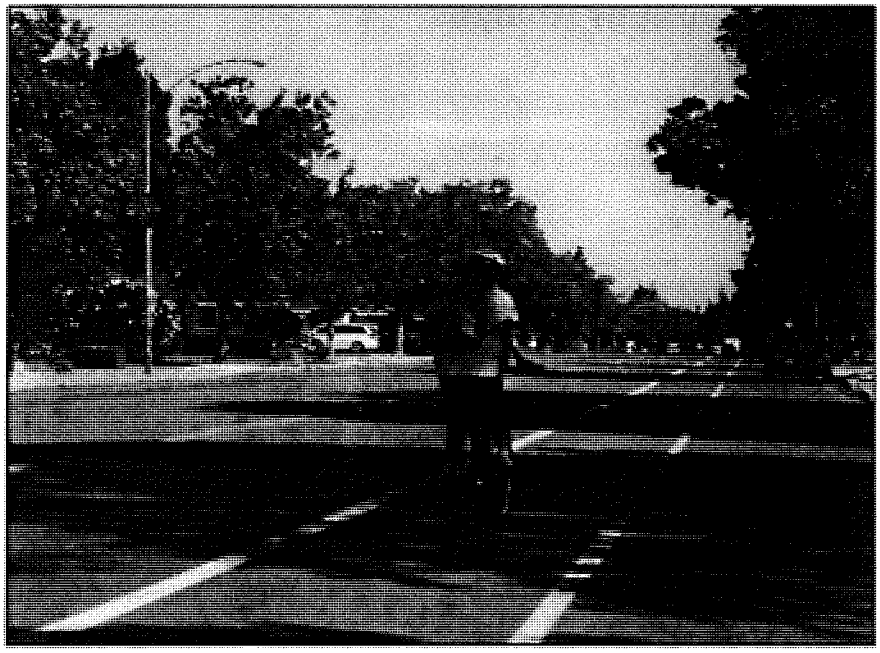

Draft Report

Mary Avenue Street Space Allocation Study

Alternatives Traffic Operations Analysis

In the City of Sunnyvale

February 1, 2013

Pleasanton
Fresno
Sacramento
Santa Rosa

TJKM
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Transportation
Consultants

Vision That Moves Your Community

Draft Report

Mary Avenue Street Space Allocation Study: Alternatives Traffic Operations Analysis

In the City of Sunnyvale

February 1, 2013

www.tjkm.com

Prepared by:
TJKM Transportation Consultants
4305 Hacienda Drive
Pleasanton, CA 94588-2798
Tel: 925.463.0611
Fax: 925.463.3690

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Table of Contents

Introduction and Summary **1**
Introduction 1
Summary 1
Existing Conditions 1
Year 2020 Conditions 2

Level of Service Analysis Methodology **4**
Intersections 4
Significance Criteria 4
Study Traffic Analysis Scenarios 4
Study Intersections 5

Existing Conditions **6**
Existing Traffic Volumes and Geometry 6
Existing Conditions Peak Hour Intersection LOS Analysis 6
Bicycle Collision History 7
Existing Corridor Vehicle Speeds 8

Street Space Allocation Alternatives **12**
Alternative 1 12
Alternative 2 13
Alternative 3 13
Alternative 4 14

Existing Conditions with Project Alternatives **15**
Existing Conditions with Alternative 1 15
Existing Conditions with Alternative 2 17
Existing Conditions with Alternative 3 19
Existing Conditions with Alternative 4 21

2020 Baseline Conditions **23**
Anticipated Future Roadway Projects 23
2020 Traffic Volumes 23
2020 Baseline Conditions Peak Hour Intersection LOS Analysis 23

2020 Plus Project Alternatives Conditions **26**
2020 Conditions with Alternative 1 26
2020 Conditions with Alternative 2 29
2020 Conditions with Alternative 3 31
2020 Conditions with Alternative 4 33

Conclusions **35**

Study References **36**
TJKM Staff 36
CirclePoint Staff 36
Bicycle Solutions 36
Traffic Data Collection 36
City of Sunnyvale 36
References 36

List of Appendices

Appendix A – Level of Service Methodology
Appendix B – Existing Daily Roadway Segment Vehicle Counts
Appendix C – Existing Daily Roadway Segment Vehicle Classification
Appendix D – Existing Corridor Midblock Daily Pedestrian and Bicycle Counts
Appendix E – Existing Intersection Traffic Counts (Vehicles and Bicycles)
Appendix F – Intersection Level of Service Worksheets: Existing Conditions
Appendix G – Corridor Bicycle and Pedestrian Collision History
Appendix H – Existing Corridor Vehicle Speeds
Appendix I – Street Space Allocation Design Alternative 1
Appendix J – Street Space Allocation Design Alternative 2
Appendix K – Street Space Allocation Design Alternative 3
Appendix L – Street Space Allocation Design Alternative 4
Appendix M – Intersection Level of Service Worksheets: Existing with Alternative 1 Conditions
Appendix N – Intersection Level of Service Worksheets: Existing with Alternative 2 Conditions
Appendix O – Intersection Level of Service Worksheets: Existing with Alternative 3 Conditions
Appendix P – Intersection Level of Service Worksheets: Existing with Alternative 4 Conditions
Appendix Q – Intersection Level of Service Worksheets: 2020 Baseline Conditions
Appendix R – Intersection Level of Service Worksheets: Year 2020 with Alternative 1 Conditions
Appendix S – Intersection Level of Service Worksheets: Year 2020 with Alternative 2 Conditions
Appendix T – Intersection Level of Service Worksheets: Year 2020 with Alternative 3 Conditions
Appendix U – Intersection Level of Service Worksheets: Year 2020 with Alternative 4 Conditions

List of Figures

Figure 1: Project Study Corridor 3
Figure 2: Existing Average Daily Vehicle Traffic 9
Figure 3: Existing Intersection Vehicle Volumes, Lane Geometry, & Traffic Controls (Baseline) 10
Figure 4: Existing Corridor Segment Speeds 11
Figure 5: Existing Intersection Vehicle Volumes, Lane Geometry, and Traffic Controls (Alt. 1) 16
Figure 6: Existing Intersection Vehicle Volumes, Lane Geometry, and Traffic Controls (Alt. 2) 18
Figure 7: Existing Intersection Vehicle Volumes, Lane Geometry, and Traffic Controls (Alt. 3) 20
Figure 8: Existing Intersection Vehicle Volumes, Lane Geometry, and Traffic Controls (Alt. 4) 22
Figure 9: 2020 Intersection Vehicle Volumes, Lane Geometry, and Traffic Controls (Baseline) 25
Figure 10: 2020 Intersection Vehicle Volumes, Lane Geometry, and Traffic Controls (Alt. 1) 28
Figure 11: 2020 Intersection Vehicle Volumes, Lane Geometry, and Traffic Controls (Alt. 2) 30
Figure 12: 2020 Intersection Vehicle Volumes, Lane Geometry, and Traffic Controls (Alt. 3) 32
Figure 13: 2020 Intersection Vehicle Volumes, Lane Geometry, and Traffic Controls (Alt. 4) 34

List of Tables

Table I: Peak Hour Intersection LOS – Existing Conditions 7
Table II: Peak Hour Intersection LOS – Existing Conditions with Alternative 1 15
Table III: Peak Hour Intersection LOS – Existing Conditions with Alternative 2 17
Table IV: Peak Hour Intersection LOS – Existing Conditions with Alternative 3 19
Table V: Peak Hour Intersection LOS – Existing Conditions with Alternative 4 21
Table VI: Peak Hour Intersection LOS – 2020 Baseline Conditions 24
Table VII: Peak Hour Intersection LOS Analysis – 2020 Conditions with Alternative 1 26
Table VIII: Peak Hour Intersection LOS Analysis – 2020 Conditions with Alternative 2 29
Table IX: Peak Hour Intersection LOS Analysis – 2020 Conditions with Alternative 3 31
Table X: Peak Hour Intersection LOS Analysis – 2020 Conditions with Alternative 4 33

Introduction and Summary

Introduction

Through a grant from the Santa Clara Valley Transportation Authority (VTA) Bicycle Expenditure Program and additional City funding support, the City of Sunnyvale directed TJKM to develop design alternatives for re-allocating existing street space on Mary Avenue between Fremont Avenue and Maude Avenue. Ideally, the space allocation will safely accommodate all modes of travel and include continuous Class II bicycle lanes. The Mary Avenue study corridor is classified as a Minor Arterial in the City of Sunnyvale General Plan and is approximately three miles in length. The corridor is currently designated as a signed bicycle route. It serves a variety of office and retail commercial uses between Maude Avenue and Central Expressway and primarily residential uses south of Central Expressway. Figure 1 illustrates the location of the study corridor, including all intersections evaluated for this traffic operations study.

In April 2009 the Sunnyvale City Council adopted the Policy for the Allocation of Street Space, which was adopted by General Plan Amendment as part of the City's Land Use and Transportation Element in April 2009. This policy promotes the continued planning, design, and construction of a comprehensive citywide bikeway network in Sunnyvale. Policy goals include modal balance for motor vehicles, public transportation, bicycles, and pedestrians to promote increased bicycle use; incentives to offset potential impacts to on-street parking and other non-transport uses; and maintenance of minimum design and safety standards for all roadway users.

The Policy for the Allocation of Street Space also establishes the need for planning and engineering screening criteria with respect to bicycle lane implementation, including roadway geometry, collision history, travel speed, motor vehicle traffic volumes, and parking supply/demand (both on- and off-street). In accordance with this policy and under separate cover, TJKM developed evaluation criteria that were subsequently used to evaluate and rank four design alternatives to reallocate street space on Mary Avenue.

This report focuses on expected traffic operations with respect to the four street space allocation design alternatives. It contains a discussion of existing corridor conditions, including traffic counts for all modes, vehicle speeds, vehicle classification, and collision history; detailed descriptions of all design alternatives; and a traffic operations evaluation of each alternative under both Existing Conditions and Year 2020 Conditions.

Summary

Existing Conditions

- Currently, all 16 study intersections are operating at acceptable LOS based on City of Sunnyvale standards (LOS D/E) as defined in the City of Sunnyvale General Plan Land Use and Transportation Element (LUTE), with the exception of the Mary Avenue / Central Expressway intersection that is currently operating at LOS F during both peak hours.
- With implementation of any of the design alternatives under Existing Conditions (Alternatives 1, 2, 3, and 4), all intersections are expected to remain operating acceptably based on City LOS standards, with the exception of the Mary Avenue / Central Expressway intersection, which is expected to continue operating at LOS F during both peak hours but with no increase in average delay.
- Under Alternatives 1, 3, and 4, in which the road diet is proposed along the Residential segment, LOS and delay is expected to increase at some Residential segment intersections due

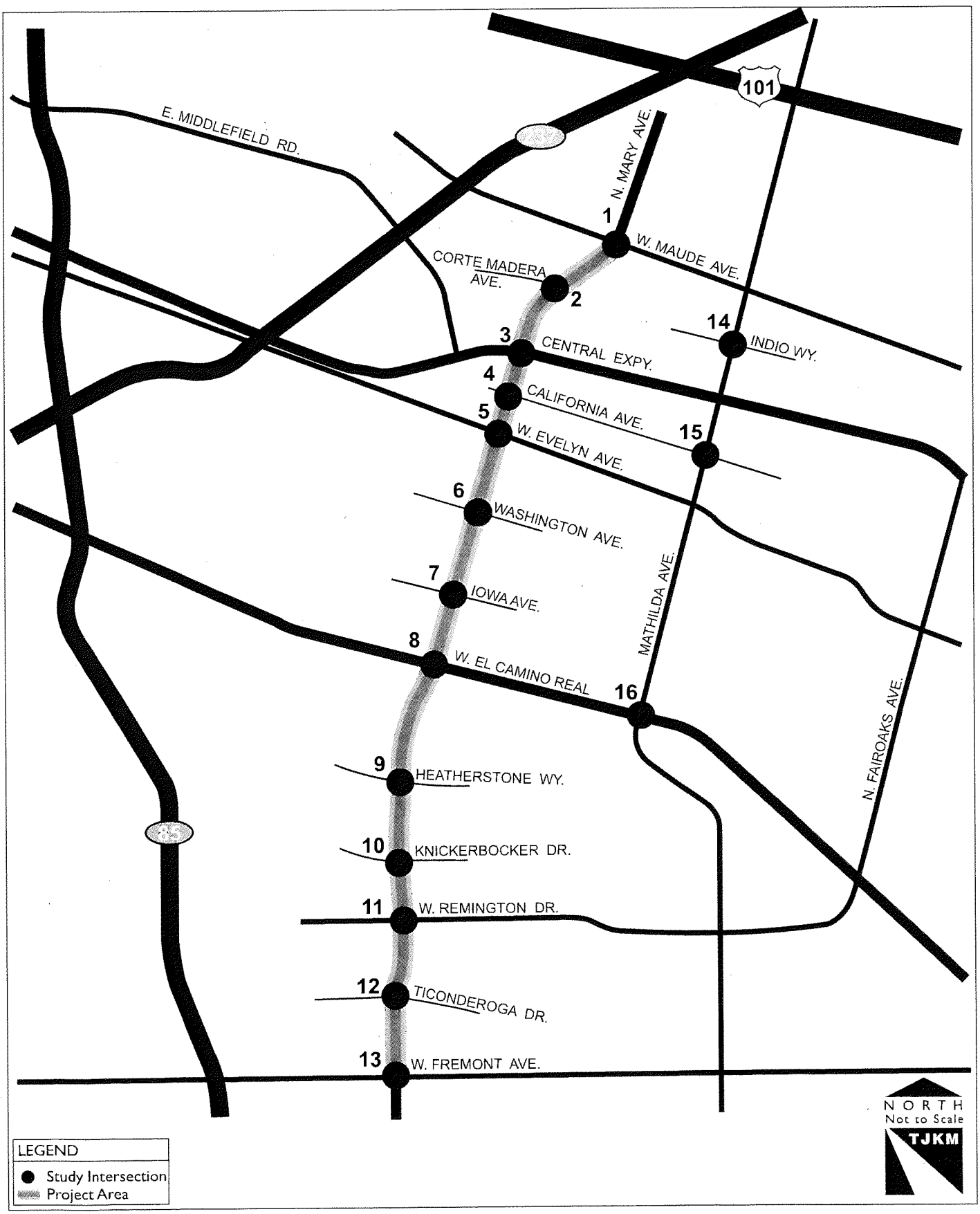
to the expected diversion of some vehicles, although overall LOS would still remain acceptable. Therefore, no significant traffic operational impacts are expected to result from constructing any of the four street space allocation alternatives under Existing Conditions.

Year 2020 Conditions

- Under 2020 Baseline Conditions (without implementation of any design alternative), all study intersections are expected to continue operating within acceptable City LOS standards, with the exception of the Mary Avenue / Central Expressway intersection. This intersection is expected to operate at LOS F during both peak hours before implementation of any of the four street space allocation alternatives.
- With implementation of any of the four design alternatives, all intersections are expected to remain operating acceptably based on City LOS standards, with the exception of the Mary Avenue / Central Expressway intersection, which is expected to continue operating at LOS F during both peak hours as under 2020 Baseline Conditions. However, no increase in average delay is expected at that intersection under any alternative.
- Under Alternatives 1, 3, and 4, in which the road diet is proposed along the Residential segment, LOS and delay is expected to increase at some Residential segment intersections due to the expected diversion of some vehicles, although overall LOS would still remain acceptable. Therefore, no significant traffic operational impacts are expected to result from constructing any of the four street space allocation alternatives in Year 2020.

City of Sunnyvale – Mary Avenue Street Space Allocation Study – Alternatives Traffic Operations Analysis Figure 1

Project Study Corridor



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Level of Service Analysis Methodology

Level of service is a qualitative measure that describes operational conditions as they relate to the traffic stream and perceptions by motorists and passengers. The level of service generally describes these conditions in terms of such factors as speed and travel time, delays, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. The operational levels of service (LOS) are given letter designations from "A" to "F," with "A" representing the best operating conditions (free-flow) and "F" the worst (severely congested flow with high delays). Intersections generally are the capacity-controlling locations with respect to traffic operations on arterial and collector streets.

Intersections

The study intersections were analyzed using the Highway Capacity Manual 2000 (HCM 2000) Operations Method contained in the standard traffic software Synchro. For signalized intersections, this methodology determines LOS based on average control delay per vehicle for the overall intersection during peak hour operating conditions. LOS "A" indicates free flow conditions with little or no delay, while LOS "F" indicates jammed conditions with excessive delay and long back-ups. The methodology is described in detail in Appendix A.

Significance Criteria

The Mary Avenue study corridor is under City of Sunnyvale jurisdiction, although the corridor intersects facilities that are maintained by the California Department of Transportation (Caltrans) and Santa Clara County. El Camino Real (State Route (SR) 82 - Caltrans) and Central Expressway (County) intersect the study corridor. Additionally, the Caltrain commuter rail line crosses Mary Avenue adjacent to the intersection with Evelyn Avenue. Mathilda Avenue, which is expected to experience a small amount of added traffic under some street space allocation alternatives and therefore is also studied, is also under City jurisdiction.

All study intersections are signalized. The City of Sunnyvale level of service (LOS) traffic operational standard for signalized intersections is LOS D, except for City intersections that are designated as regionally significant and accordingly have a LOS E standard. For purposes of this study, regionally significant facilities include intersections along Mathilda Avenue and also Mary Avenue intersections at El Camino Real and Central Expressway.

This study analyzes the potential impacts, if any, to intersection operations on the study corridor based on four potential street space allocation alternatives.

Study Traffic Analysis Scenarios

This study analyzes the potential impacts, if any, to intersection operations on the Mary Avenue study corridor and Mathilda Avenue corridor based on four potential street space allocation alternatives. The study evaluated traffic operational conditions under the following ten (10) analysis scenarios:

1. *Existing Conditions* – this scenario is based on existing traffic counts, lane geometry, traffic controls, and field conditions on Mary Avenue and Mathilda Avenue. This baseline scenario assumes no change to the current roadway lane configurations.
2. *Existing plus Alternative 1 Conditions* – this scenario assumes diversion of a small amount of Existing Conditions volumes on Mary Avenue due to a proposed road diet design and consists of new lane geometries associated with Alternative 1.
3. *Existing plus Alternative 2 Conditions* – this scenario assumes the same traffic volumes as Existing Conditions (no road diet traffic diversion), but with new lane geometries associated with Alternative 2.

4. *Existing plus Alternative 3 Conditions* – this scenario assumes diversion of a small amount of Existing Conditions volumes on Mary Avenue due to a proposed road diet design and consists of new lane geometries associated with Alternative 3.
5. *Existing plus Alternative 4 Conditions* – this scenario assumes diversion of a small amount of Existing Conditions volumes on Mary Avenue due to a proposed road diet design and consists of new lane geometries associated with Alternative 4.
6. *2020 Baseline Conditions* – this scenario is based on Year 2020 lane geometry and traffic control assumptions based on the Sunnyvale Resource Allocation Plan and Transportation Strategic Program. Traffic volumes were derived by factoring Existing Conditions volumes to Year 2020 using an annual growth factor.
7. *2020 plus Alternative 1 Conditions* – this scenario assumes diversion of a small amount of Year 2020 Conditions volumes on Mary Avenue due to a proposed road diet design and consists of new lane geometries associated with Alternative 1.
8. *2020 plus Alternative 2 Conditions* – this scenario assumes the same traffic volumes as 2020 Baseline Conditions (no road diet traffic diversion), but with new lane geometries associated with street space allocation Alternative 2.
9. *2020 plus Alternative 3 Conditions* – this scenario assumes diversion of a small amount of Year 2020 Conditions volumes on Mary Avenue due to a proposed road diet design and consists of new lane geometries associated with Alternative 3.
10. *2020 plus Alternative 4 Conditions* – this scenario assumes diversion of a small amount of Year 2020 Conditions volumes on Mary Avenue due to a proposed road diet design and consists of new lane geometries associated with Alternative 4.

Study Intersections

The traffic analysis study focused on evaluating traffic conditions at 13 study intersections on Mary Avenue and three study intersections on nearby Mathilda Avenue that may potentially be affected by the street space allocation alternatives. The following study intersections, all of which are signalized, were analyzed:

1. Mary Avenue / Maude Avenue
2. Mary Avenue / Corte Madera Avenue
3. Mary Avenue / Central Expressway
4. Mary Avenue / California Avenue
5. Mary Avenue / Evelyn Avenue
6. Mary Avenue / Washington Avenue
7. Mary Avenue / Iowa Avenue
8. Mary Avenue / El Camino Real (SR 82)
9. Mary Avenue / Heatherstone Way
10. Mary Avenue / Knickerbocker Drive
11. Mary Avenue / Remington Drive
12. Mary Avenue / Ticonderoga Drive
13. Mary Avenue / Fremont Avenue
14. Mathilda Avenue / Indio Way
15. Mathilda Avenue / California Avenue
16. Mathilda Avenue / El Camino Real

Existing Conditions

This section details current traffic operational conditions along the Mary Avenue study corridor, including daily and peak hour vehicle, bicycle, and pedestrian volumes; intersection level of service (LOS); recent bicycle and pedestrian collision history; and prevailing vehicle speeds along the corridor. Mary Avenue is classified as a Class II Arterial in the City of Sunnyvale General Plan Land Use and Transportation Element (LUTE). Intersection LOS is also presented for Mathilda Avenue, which is classified as a Class I Arterial in the LUTE.

Existing Traffic Volumes and Geometry

Quality Counts collected daily roadway segment counts of vehicles, bicycles, and pedestrians in May and June 2010. Data sheets for daily vehicle counts and classifications by roadway segment are provided in Appendices B and C, respectively. The roadway segment counts were collected for 48 consecutive hours during typical midweek days. The average daily directional vehicle volumes for each study roadway segment are shown in Figure 2. Average daily traffic (ADT) on the study corridor currently ranges between 9,932 on the Maude Avenue to Corte Madera Avenue segment and 22,715 on the Central Expressway to California Avenue segment. In addition, Appendix D includes daily pedestrian and bicycle counts (7:00 a.m. to 7:00 p.m.) collected at three midblock roadway segments along the corridor.

Quality Counts also collected peak hour counts of vehicles, bicycles, and pedestrians at the study intersections in May 2012, while local schools were in session. The intersection counts were taken during typical midweek days during the peak periods of 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m. Figure 3 shows Existing Conditions peak hour intersection counts for vehicles, bicycles, and pedestrians at the study intersections, as well as lane geometry and traffic controls. Appendix E contains the peak hour count data sheets for vehicles, pedestrians, and bicycles at each study intersection.

Existing Conditions Peak Hour Intersection LOS Analysis

Table I shows the results of the intersection peak hour LOS analysis conducted for the 13 study intersections along the Mary Avenue corridor and three intersections along Mathilda Avenue. Appendix F includes the LOS analysis sheets for Existing Conditions. Currently, all study intersections are operating at acceptable LOS based on City of Sunnyvale standards (LOS D/E) as defined in the City of Sunnyvale LUTE, with the exception of the Mary Avenue / Central Expressway intersection that is currently operating at LOS F during both peak hours.

Table I: Peak Hour Intersection LOS – Existing Conditions

ID	Intersection	Control	Existing Conditions			
			A.M. Peak Hour		P.M. Peak Hour	
			Delay	LOS	Delay	LOS
1	Mary Avenue / Maude Avenue	Signal	25.0	C	24.5	C
2	Mary Avenue / Corte Madera Avenue	Signal	13.8	B	22.9	C
3	Mary Avenue / Central Expressway	Signal	105.2	**F**	327.0	**F**
4	Mary Avenue / California Avenue	Signal	15.4	B	15.4	B
5	Mary Avenue / Evelyn Avenue	Signal	32.7	C	36.5	D
6	Mary Avenue / Washington Avenue	Signal	20.2	C	18.0	B
7	Mary Avenue / Iowa Avenue	Signal	12.2	B	11.0	B
8	Mary Avenue / El Camino Real (SR 82)	Signal	45.0	D	53.1	D
9	Mary Avenue / Heatherstone Way	Signal	7.2	A	4.1	A
10	Mary Avenue / Knickerbocker Drive	Signal	5.2	A	4.8	A
11	Mary Avenue / Remington Drive	Signal	26.5	C	30.7	C
12	Mary Avenue / Ticonderoga Drive	Signal	8.6	A	5.1	A
13	Mary Avenue / Fremont Avenue	Signal	49.8	D	46.9	D
14	Mathilda Avenue / Indio Way	Signal	17.2	B	18.1	B
15	Mathilda Avenue / California Avenue	Signal	23.8	C	31.6	C
16	Mathilda Avenue / El Camino Real	Signal	49.0	D	52.9	D

Notes: 1) LOS / delay = level of service and average control delay for overall intersection
2) **Bold** values exceed applicable jurisdictional standards

Bicycle Collision History

TJKM and Bicycle Solutions analyzed the recent collision history on the Mary Avenue corridor relative to bicycles to determine any potential patterns that potentially could be addressed or resolved as part of implementing this corridor project. The most recent five-year (2005 through 2009) collision history was obtained from City of Sunnyvale staff and was supplemented through use of the California Statewide Integrated Traffic Records System (SWITRS) database. Appendix G details the collision analysis approach and includes detailed bicycle-related collision records.

Based on review of the collision records, a total of 23 bicycle-involved and two pedestrian-involved collisions were reported in the study corridor during the five-year analysis period. The two pedestrian-involved collisions consisted of pedestrian right-of-way violations by motorists. The two most common collision patterns recently for bicyclists have been right-hook collisions and bicyclists traveling on the wrong side of the road (four collisions each for both categories). Right-hook collisions occur when motorists overtake and make a right turn in front of a bicyclist traveling in the same direction. The motorist is considered at fault. A Class II bicycle lane (on-street and striped) has the potential to reduce the incidence of such collisions by providing greater definition of the street space as both motorists and bicyclists approach intersections.

In motorist collisions with wrong-way bicyclists, the bicyclist is considered at fault. These incidents occur either within the existing roadway or within parallel sidewalks. Class II bicycle lanes have the potential to correct such collisions by providing a dedicated street space attractive to bicyclists that promotes safe, "right-way" bicycle travel.

Existing Corridor Vehicle Speeds

Quality Counts additionally collected vehicle speed data along all 12 segments of the Mary Avenue study corridor during the same days of vehicle count data collection. Past experience with bicycle lane and road diet projects in many cases has resulted in reduced vehicle speeds as a result of project implementation. The speed surveys were conducted in a manner consistent with the recommended procedures and intent of Section 2B.13 of the latest California Manual on Uniform Traffic Control Devices (MUTCD). The speed surveys were collected during free-flow, midday off-peak hours on a day with fair weather, dry pavement, and clear visibility. An effort was made to ensure that the presence of radar survey equipment did not affect the speed of the traffic being surveyed. Appendix H includes corridor segment speed observation sheets and calculations.

TJKM determined prevailing vehicle speeds on the Mary Avenue corridor through examination of the 85th-percentile speed results from the field observations. The 85th-percentile speed is defined as the speed at or below which 85 percent of the sampled vehicles are observed to be traveling. Traffic engineers consider the 85th-percentile speed resulting from a spot speed survey to be a primary indicator of the appropriate speed limit for a section of roadway.

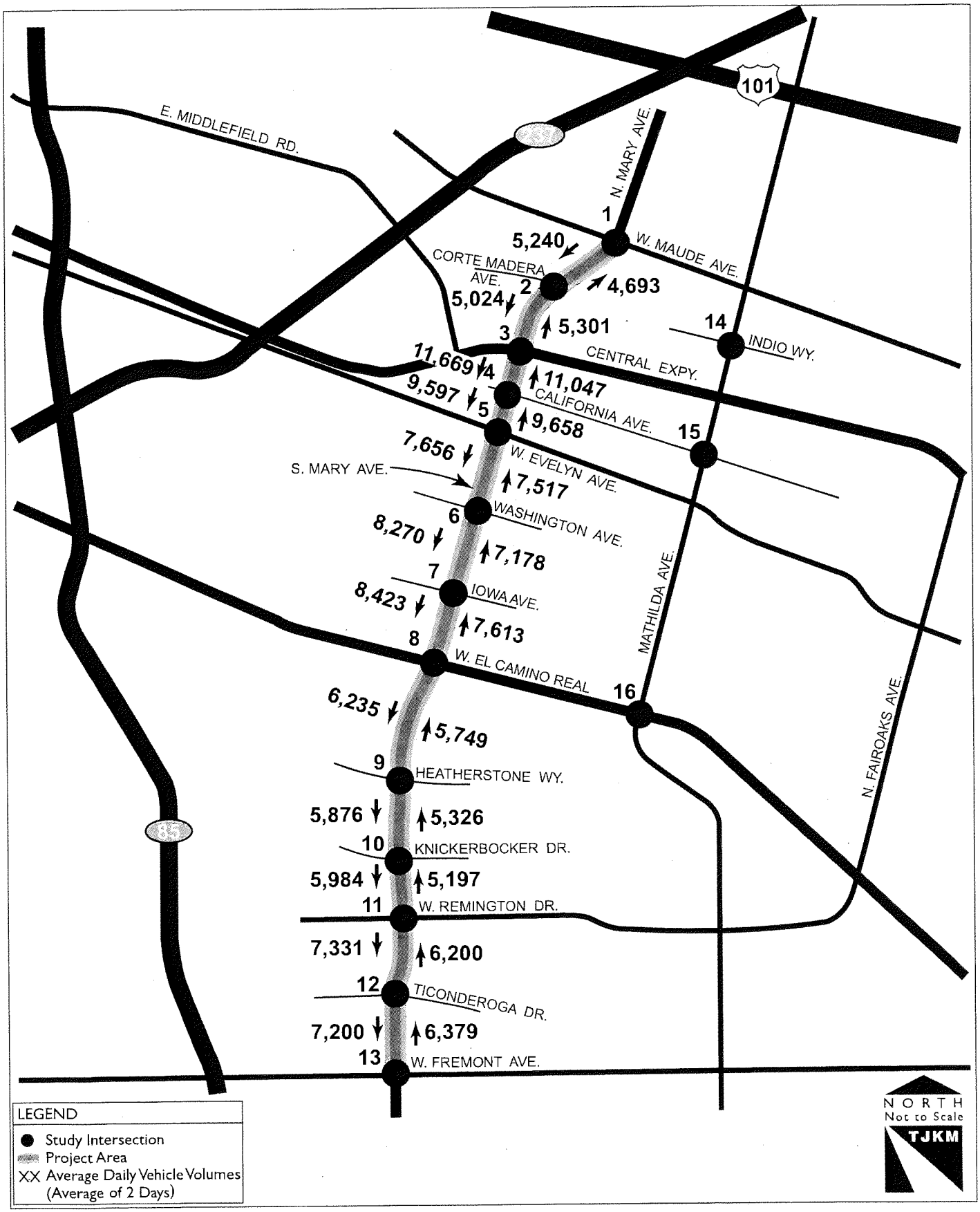
Figure 4 illustrates the observed prevailing (85th-percentile) vehicle speeds along the study roadway segments. Appendix H contains the data sheets detailing collected vehicle speed data for each study corridor roadway segment. According to the collected data, current observed speeds on the Mary Avenue study corridor range from 33 to 42 miles per hour (mph) north of Evelyn Avenue, where the current posted speed limit is 40 mph. South of Evelyn Avenue, where the corridor primarily fronts residential properties, observed speeds range from 37 to 41 mph. Currently, this segment of the Mary Avenue corridor has a posted speed limit of 35 mph. Most of the proposed street space allocation alternatives through this residential segment include a road diet with bicycle lanes, in which two travel lanes per direction would be reduced to one lane per direction.

Based on TJKM review of road diet case studies detailed in the *Road Diet Handbook*, implementing a road diet south of Evelyn Avenue has the potential to lower the observed 85th-percentile speeds that currently exceed the posted speed limit. In one case study, a 32 percent decrease in vehicles traveling over the speed limit was reported. In other case studies, one jurisdiction reported overall prevailing corridor speeds decreasing by 18 percent, while other jurisdictions reported reductions in aggressive speeding by 52 to 76 percent.[1]

[1] *Road Diet Handbook*, page 93.

City of Sunnyvale – Mary Avenue Street Space Allocation Study – Alternatives Traffic Operations Analysis Figure 2

Existing Average Daily Vehicle Traffic



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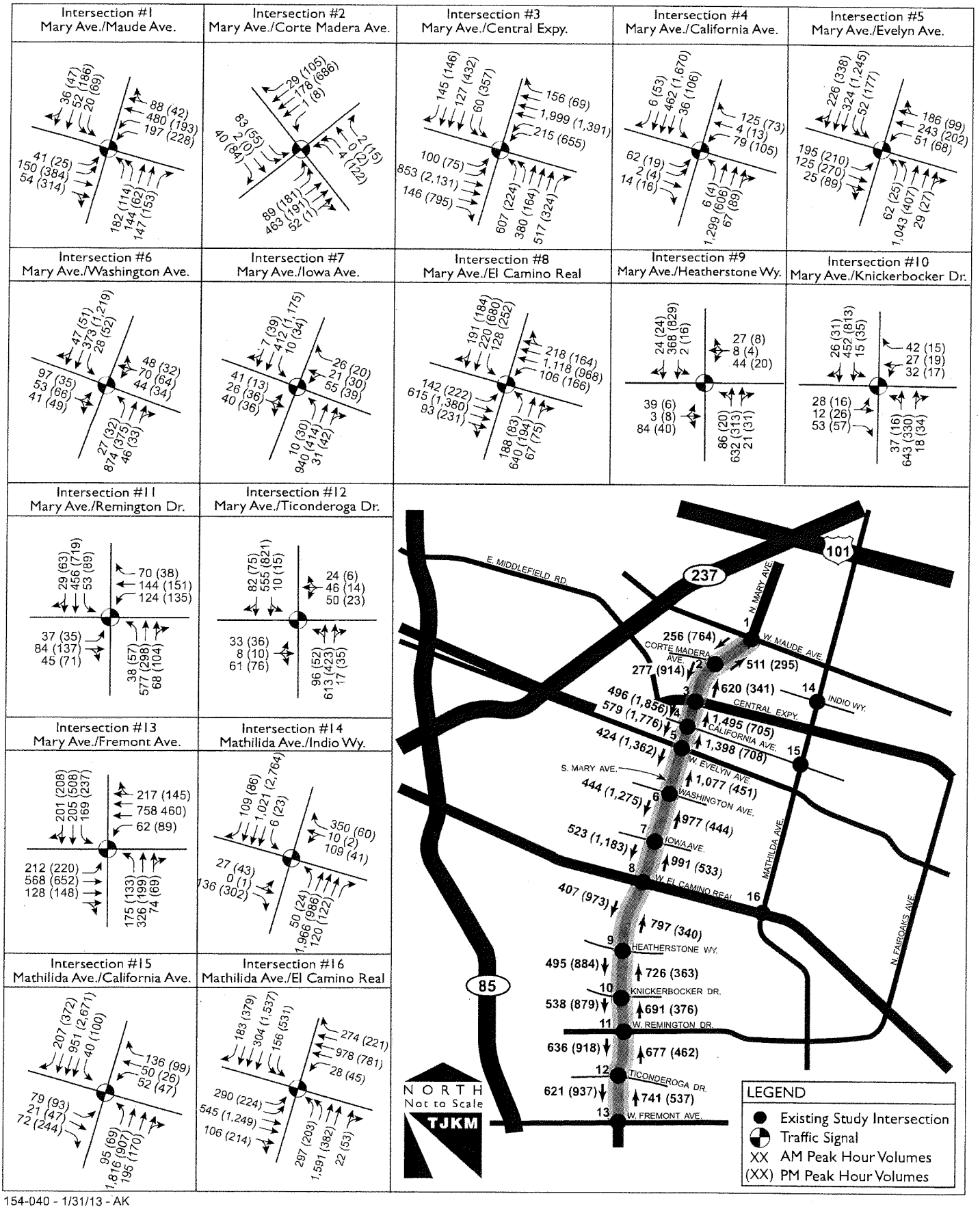
City of Sunnyvale – Mary Avenue Street Space Allocation Study – Alternatives Traffic Operations Analysis Figure

Existing Intersection Vehicle Volumes, Lane Geometry, and Traffic Controls 3



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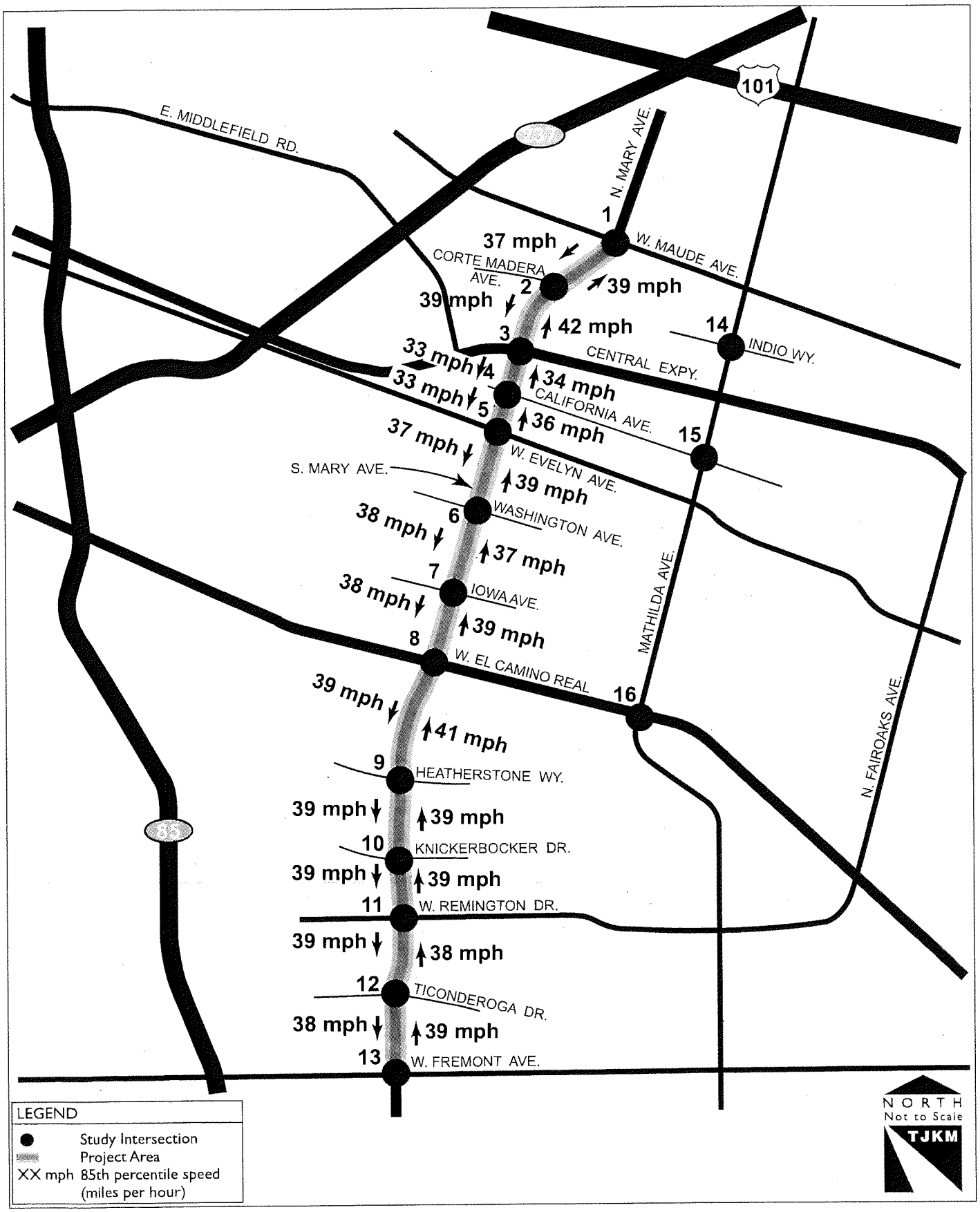
City of Sunnyvale – Mary Avenue Street Space Allocation Study – Alternatives Traffic Operations Analysis Figure 4

Existing Corridor Segment Speeds



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Street Space Allocation Alternatives

This section details the development of four street space allocation design alternatives that were developed based on the City Policy for the Allocation of Street Space and informed by City staff, City Bicycle and Pedestrian Advisory Committee (BPAC), and community stakeholder input. The alternatives are also informed by the land use environment through which the corridor passes. Accordingly, TJKM has divided the Mary Avenue study corridor into three distinct segments as follows:

- Residential (Fremont Avenue to Evelyn Avenue) – this approximately 2.2-mile segment is fronted primarily by residential land uses, with many residential driveways providing direct access. The typical segment consists of four travel lanes (two per direction) and two curb parking lanes within a typical 64-foot curb-to-curb width. At major arterial street intersections, an exclusive left turn lane is provided. At collector/local street intersections along the corridor, exclusive left turn lane pockets are provided at select locations. Continuous sidewalk is provided in each direction along this segment.
- Transition (Evelyn Avenue to Central Expressway) – this segment is approximately three-tenths (3/10) of a mile in length and serves as a key distributor of local residential and regional traffic to and from Central Expressway. It is the highest-volume segment in terms of ADT (22,715). The current midblock cross-sections consist of three through lanes per direction, with greater restrictions on local access than the residential segment (only right-in/right-out driveways and signalized access at California Avenue). Directional traffic is separated by a median, and no curb parking is permitted in either direction. Continuous sidewalk is provided in each direction along this segment.
- Office (Central Expressway to Maude Avenue) – this eight-tenths (8/10) of a mile segment also consists of a six-lane midblock cross section (three lanes per direction) with limited access via driveways serving office/commercial land uses. ADT on the Maude Avenue to Corte Madera Avenue section within this segment is the lowest along the corridor (9,932). Directional traffic is separated by a median, and no curb parking is permitted in either direction. Continuous sidewalk is provided in each direction along this segment.

Alternative 1

Design Alternative 1 includes continuous bicycle lanes for nearly all of the corridor length. Appendix 1 illustrates the Alternative 1 design for the entire corridor. Within the Residential segment, the design includes a road diet consisting of three travel lanes (including two-way left turn lane), two new Class II bicycle lanes, and the two existing curb parking lanes. This is accomplished within the same curb-to-curb roadway width as Existing Conditions. The two-way center turn lane provides channelization for all left turns, thereby eliminating the current issue of through vehicles on the inside travel lane getting trapped behind left-turning vehicles waiting for gaps in opposing through traffic. Existing turn lane geometry is retained at Fremont Avenue, El Camino Real, and the south leg approaching Evelyn Avenue within this segment, since these intersections are currently approaching capacity.

In the Transition section, the existing six-lane cross section is maintained, with travel lanes being narrowed to 10-11 feet to accommodate minimum five-foot bicycle lanes (minimum acceptable based on California Department of Transportation standards and the Santa Clara Valley Transportation Authority (VTA) Bicycle Technical Guidelines). These bicycle lanes can be accommodated in both directions within the existing curb width, with the exception of a short segment in the southbound direction between California Avenue and Evelyn Avenue, which includes a sharrow along the right side curb lane. Sharrows within a travel lane indicate that motorists and bicyclists must share the lane.

Also, the southbound curb lane approaching Evelyn Avenue is converted from a shared through-right turn lane to an exclusive right-turn lane. This lane allocation allows for two receiving travel lanes and creates space for a Class II bicycle lane in the southbound direction downstream (south) of Evelyn Avenue.

In the Office section, all midblock locations within the segment reallocate the existing curb-to-curb street space from six travel lanes (three per direction) to four travel lanes (two per direction) and two six-foot wide Class II bicycle lanes. The six-foot width is an optimal width per the VTA guidelines. However, the Class II bicycle lanes are not continuous throughout the segment. The north leg of the Central Expressway intersection includes sharrows along both the northbound and southbound Mary Avenue curb lanes. Existing capacity is retained at the Maude Avenue and Central Expressway intersections, with the latter currently approaching capacity.

Alternative 2

Design Alternative 2 provides continuous Class II bicycle lanes for virtually the entire corridor length. Appendix J illustrates the Alternative 2 design for the entire corridor. The Residential section differs from Alternative 1 in that the existing four-lane cross section is maintained, and six-foot bicycle lanes are provided by removing one curb parking lane in the southbound direction. Existing approach lane geometries are preserved at all intersections along this segment.

In the Transition section, six-foot, continuous bicycle lanes are provided, due in part to narrowing the Mary Avenue median between Evelyn Avenue and California Avenue, and the existing six-lane cross section is preserved. The southbound curb lane approaching Evelyn Avenue is converted from a shared through-right turn lane to an exclusive right-turn lane. This lane allocation allows for two receiving travel lanes and creates space for a Class II bicycle lane on southbound Mary Avenue south of Evelyn Avenue. In addition, "stop" legends and signs are proposed to control the eastbound and westbound Central Expressway free right turn lanes entering Mary Avenue, in order to enhance bicyclist and pedestrian safety.

In the Office section, minimum six-foot continuous bicycle lanes are once again accommodated along with the existing six-lane cross section due to narrowing the median at locations just north of Central Expressway and just south of Maude Avenue.

Design feedback on Alternatives 1 and 2 was provided by City staff, as well by the City BPAC and by community members. Informed by this collective input, TJKM developed two additional alternatives to address design issues raised.

Alternative 3

Design Alternative 3 provides continuous Class II bicycle lanes along the entire corridor. Appendix K illustrates the Alternative 3 design for the entire corridor. This alternative is very similar to Alternative 1 in the Residential segment and Alternative 2 in the Transition and Office segments, with some design adjustments. In the Residential segment, the Alternative 3 design provides a longer lane drop transition length to facilitate vehicle merging and enhance bicycle lane continuity in the southbound direction of Mary Avenue between Evelyn Avenue and Carson Drive. The Residential segment also includes a shorter vehicle merge length south of El Camino Real in order to preserve existing southbound curb parking south of Blair Avenue.

In the Transition segment, the Alternative 3 design is identical to the Alternative 2 design (six-lane cross section with narrowed median and continuous bicycle lanes), but with enhanced bicycle lane transition striping in both directions of Mary Avenue between California Avenue and Central Expressway.

Alternative 3 within the Office segment is also identical to Alternative 2 (six-lane cross section with narrowed median and continuous bicycle lanes), but replaces the southbound curb lane sharrow just south of Maude Avenue with continuous bicycle lane striping.

Alternative 4

Design Alternative 4 provides continuous Class II bicycle lanes along the entire corridor. Appendix L illustrates the Alternative 4 design for the entire corridor. Alternative 4 is very similar to Alternative 1, but includes design enhancements within the Residential, Transition, and Office segments. In the residential segment, the same lane merge enhancements south of El Camino Real and Evelyn Avenue proposed under Alternative 3 are provided.

In the Transition segment, Alternative 4 accommodates minimum five-foot bicycle lanes in both directions through minor curb widening of 1-2 feet on either side of the roadway. The design also maintains the existing three travel lanes in each direction. Enhanced bicycle lane transition striping between California Avenue and Central Expressway is also proposed.

Finally, in the Office segment, the alternative shows minor median narrowing just north of Central Expressway to allow for continuous bicycle lanes in both directions. This segment also includes enhanced bicycle and vehicle lane striping at the right-in/right-out intersection at Escalon Avenue. Just as with Alternative 3, the Alternative 4 design replaces the southbound curb lane sharrow just south of Maude Avenue with continuous bicycle lane striping.

Existing Conditions with Project Alternatives

TJKM conducted an intersection LOS analysis of all four street space allocation design alternatives, the results of which are detailed in the following sections.

Existing Conditions with Alternative 1

Figure 5 shows study intersection vehicle volumes, lane geometries, and traffic controls proposed under Existing Conditions with implementation of Alternative 1. Table II compares the intersection LOS results of Existing Conditions under current lane geometry with Alternative 1 lane geometry. Appendix M includes the LOS analysis sheets for Existing Conditions with Alternative 1.

Under Alternative 1, all intersections except one (Mary Avenue / Central Expressway) are expected to remain operating acceptably based on applicable City LOS standards, even with some increases in overall average delay and LOS along the Mary Avenue Residential segment. Although the Residential segment intersections are expected to experience a slight decrease in peak hour volumes due to diversion, this reduction is offset by the reduced capacity to one travel lane per direction along this segment. The Mary Avenue / Central Expressway intersection is expected to continue operating at LOS F as under Existing Conditions, but with slightly reduced overall average delay due to the diversion of some vehicles from the proposed road diet along the Residential segment.

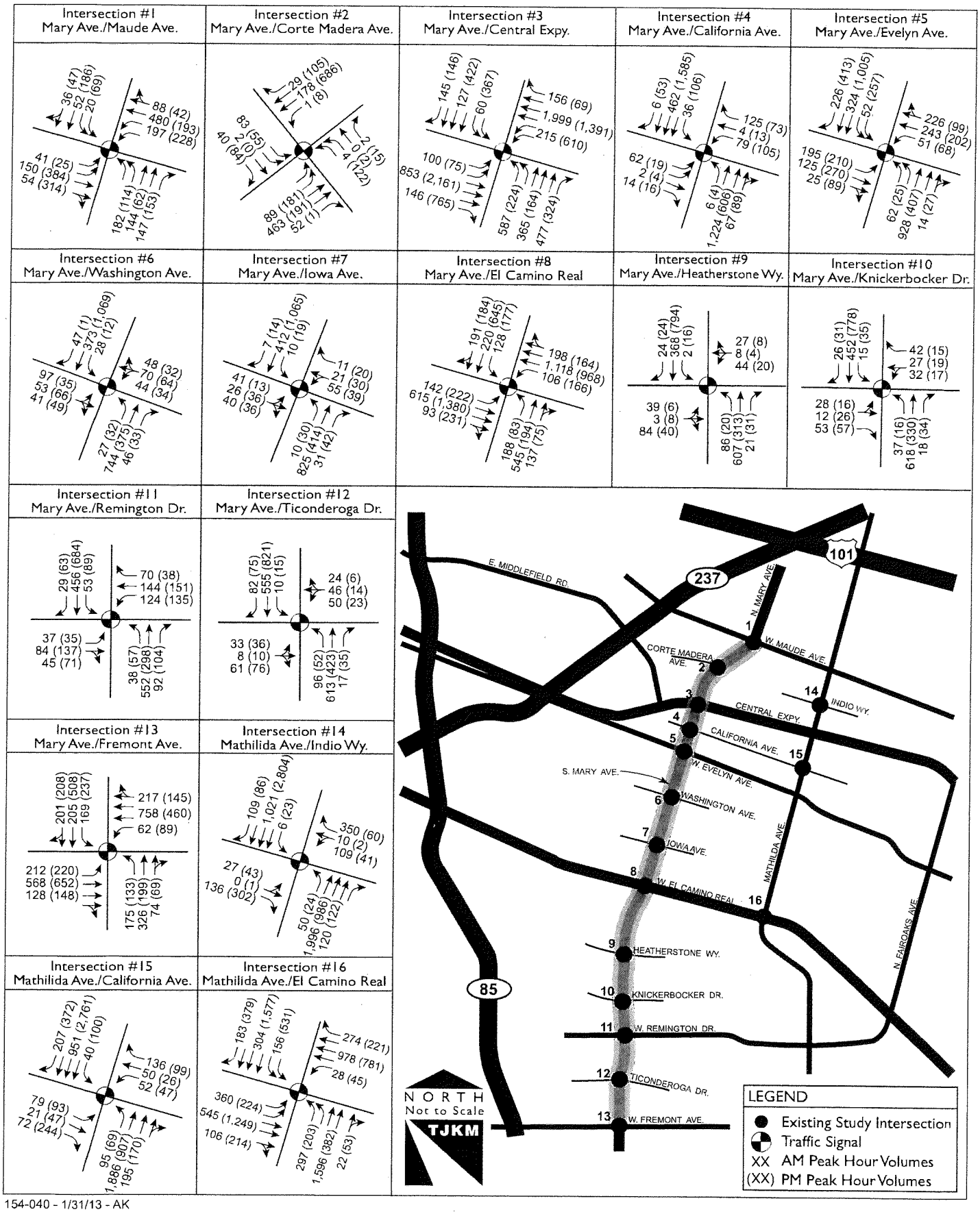
Table II: Peak Hour Intersection LOS – Existing Conditions with Alternative 1

ID	Intersection	Control	Existing Conditions				Existing Conditions with Alternative 1			
			A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Mary Avenue / Maude Avenue	Signal	25.0	C	24.5	C	25.0	C	24.5	C
2	Mary Avenue / Corte Madera Avenue	Signal	13.8	B	22.9	C	14.0	B	23.6	C
3	Mary Avenue / Central Expressway	Signal	105.2	**F**	327.0	**F**	103.2	**F**	324.2	**F**
4	Mary Avenue / California Avenue	Signal	15.4	B	15.4	B	15.3	B	15.3	B
5	Mary Avenue / Evelyn Avenue	Signal	32.7	C	36.5	D	33.4	C	37.5	D
6	Mary Avenue / Washington Avenue	Signal	20.2	C	18.0	B	24.3	C	30.7	C
7	Mary Avenue / Iowa Avenue	Signal	12.2	B	11.0	B	15.1	B	21.6	C
8	Mary Avenue / El Camino Real (SR 82)	Signal	45.0	D	53.1	D	43.9	D	49.5	D
9	Mary Avenue / Heatherstone Way	Signal	7.2	A	4.1	A	8.4	A	6.1	A
10	Mary Avenue / Knickerbocker Drive	Signal	5.2	A	4.8	A	6.7	A	6.8	A
11	Mary Avenue / Remington Drive	Signal	26.5	C	30.7	C	37.1	D	42.2	D
12	Mary Avenue / Ticonderoga Drive	Signal	8.6	A	5.1	A	10.5	B	6.8	A
13	Mary Avenue / Fremont Avenue	Signal	49.8	D	46.9	D	49.8	D	46.9	D
14	Mathilda Avenue / Indio Way	Signal	17.2	B	18.1	B	17.4	B	18.5	B
15	Mathilda Avenue / California Avenue	Signal	23.8	C	31.6	C	24.7	C	36.1	D
16	Mathilda Avenue / El Camino Real	Signal	49.0	D	52.9	D	52.5	D	53.9	D

Notes: 1) LOS / delay = level of service and average control delay for overall intersection
2) **Bold** values exceed applicable jurisdictional standards

City of Sunnyvale – Mary Avenue Street Space Allocation Study – Alternatives Traffic Operations Analysis Figure

Existing Intersection Vehicle Volumes, Lane Geometry, and Traffic Controls (Alternative 1) 5



154-040 - 1/31/13 - AK

Existing Conditions with Alternative 2

Figure 6 shows study intersection vehicle volumes, lane geometries, and traffic controls proposed under Existing Conditions with implementation of Alternative 2. Table III compares the intersection LOS results of Existing Conditions under current lane geometry with Alternative 2. Under Alternative 2, lane geometry and traffic volumes would be the same as under Existing Conditions. Appendix N includes the LOS analysis sheets for Existing Conditions with Alternative 2. Under Alternative 2, all intersections are expected to remain operating acceptably based on applicable City LOS standards, with some minor changes in overall average delay.

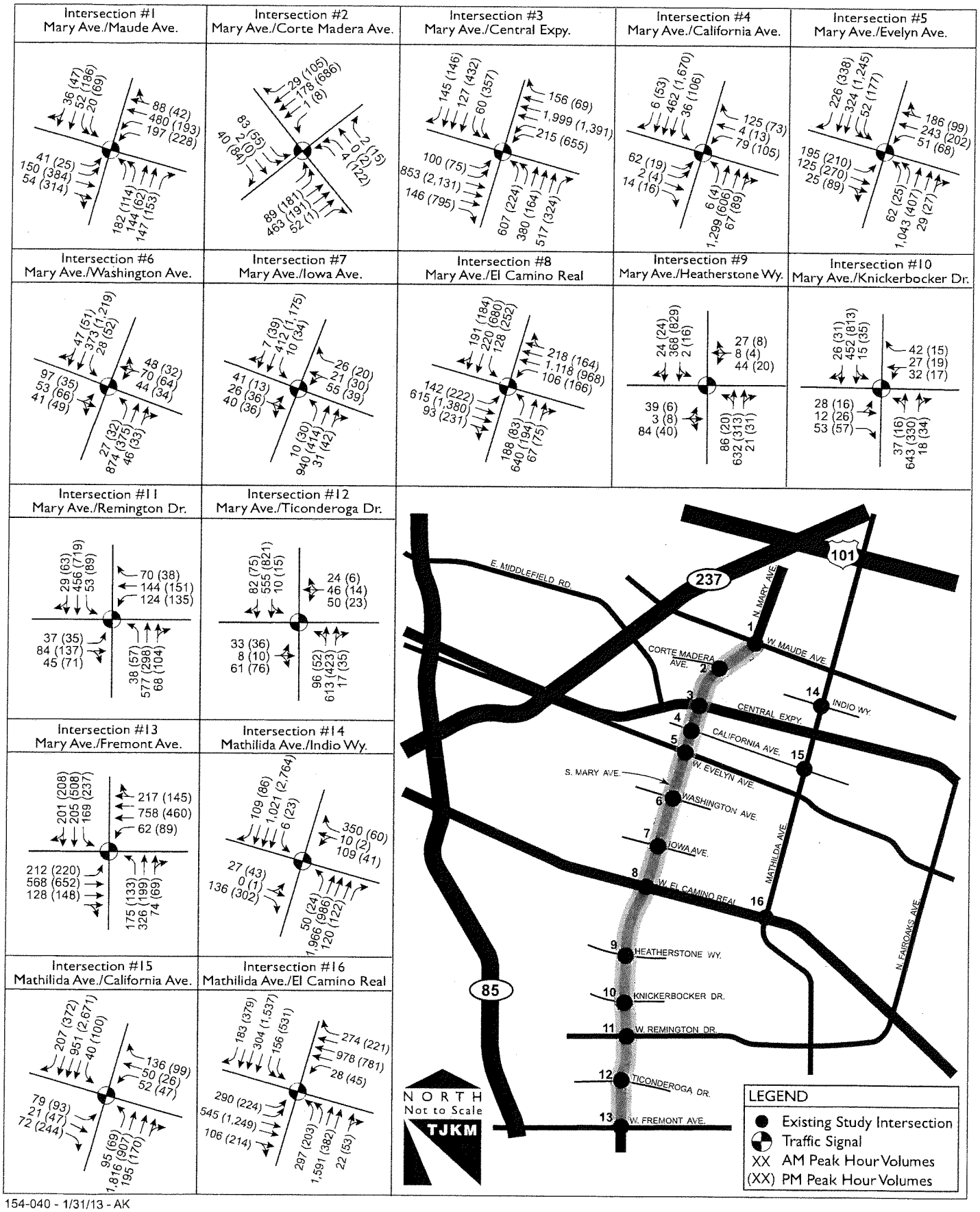
Table III: Peak Hour Intersection LOS – Existing Conditions with Alternative 2

ID	Intersection	Control	Existing Conditions				Existing Conditions with Alternative 2			
			A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Mary Avenue / Maude Avenue	Signal	25.0	C	24.5	C	25.0	C	24.5	C
2	Mary Avenue / Corte Madera Avenue	Signal	13.8	B	22.9	C	13.7	B	22.9	C
3	Mary Avenue / Central Expressway	Signal	105.2	**F**	327.0	**F**	105.2	**F**	327.0	**F**
4	Mary Avenue / California Avenue	Signal	15.4	B	15.4	B	15.4	B	15.4	B
5	Mary Avenue / Evelyn Avenue	Signal	32.7	C	36.5	D	32.6	C	37.2	D
6	Mary Avenue / Washington Avenue	Signal	20.2	C	18.0	B	19.9	B	16.4	B
7	Mary Avenue / Iowa Avenue	Signal	12.2	B	11.0	B	12.2	B	11.0	B
8	Mary Avenue / El Camino Real (SR 82)	Signal	45.0	D	53.1	D	45.0	D	53.1	D
9	Mary Avenue / Heatherstone Way	Signal	7.2	A	4.1	A	7.2	A	4.1	A
10	Mary Avenue / Knickerbocker Drive	Signal	5.2	A	4.8	A	5.2	A	4.8	A
11	Mary Avenue / Remington Drive	Signal	26.5	C	30.7	C	26.5	C	30.7	C
12	Mary Avenue / Ticonderoga Drive	Signal	8.6	A	5.1	A	8.6	A	5.1	A
13	Mary Avenue / Fremont Avenue	Signal	49.8	D	46.9	D	49.8	D	46.9	D
14	Mathilda Avenue / Indio Way	Signal	17.2	B	18.1	B	17.2	B	18.1	B
15	Mathilda Avenue / California Avenue	Signal	23.8	C	31.6	C	23.8	C	31.6	C
16	Mathilda Avenue / El Camino Real	Signal	49.0	D	52.9	D	49.0	D	52.9	D

Notes: 1) LOS / delay = level of service and average control delay for overall intersection
2) **Bold** values exceed applicable jurisdictional standards

City of Sunnyvale – Mary Avenue Street Space Allocation Study – Alternatives Traffic Operations Analysis Figure 6

Existing Intersection Vehicle Volumes, Lane Geometry, and Traffic Controls (Alternative 2)



154-040 - 1/31/13 - AK

Existing Conditions with Alternative 3

Figure 7 shows study intersection vehicle volumes, lane geometries, and traffic controls proposed under Existing Conditions with implementation of Alternative 3. Table IV compares the intersection LOS results of Existing Conditions under current lane geometry with Alternative 3 lane geometry. Appendix O includes the LOS analysis sheets for Existing Conditions with Alternative 3.

Under Alternative 3, all intersections except one (Mary Avenue / Central Expressway) are expected to remain operating acceptably based on applicable City LOS standards, even with some increases in overall average delay and LOS along the Mary Avenue Residential segment. Although the Residential segment intersections are expected to experience a slight decrease in peak hour volumes due to diversion, this reduction is offset by the reduced capacity to one travel lane per direction along this segment. The Mary Avenue / Central Expressway intersection is expected to continue operating at LOS F as under Existing Conditions, but with slightly reduced overall average delay due to the diversion of some vehicles from the proposed road diet along the Residential segment.

Table IV: Peak Hour Intersection LOS – Existing Conditions with Alternative 3

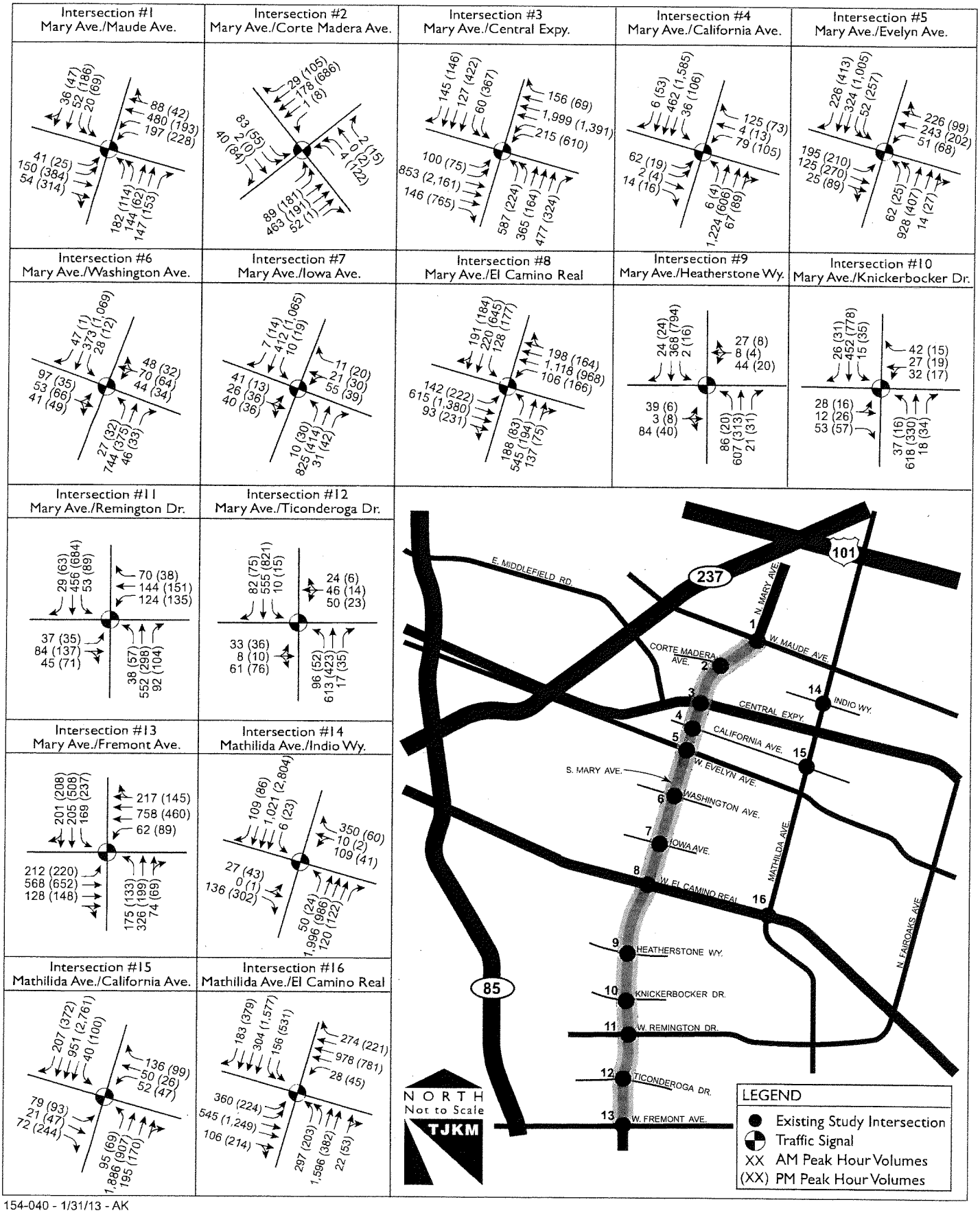
ID	Intersection	Control	Existing Conditions				Existing Conditions with Alternative 3			
			A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Mary Avenue / Maude Avenue	Signal	25.0	C	24.5	C	25.0	C	24.5	C
2	Mary Avenue / Corte Madera Avenue	Signal	13.8	B	22.9	C	13.7	B	22.9	C
3	Mary Avenue / Central Expressway	Signal	105.2	**F**	327.0	**F**	103.2	**F**	324.2	**F**
4	Mary Avenue / California Avenue	Signal	15.4	B	15.4	B	15.3	B	15.3	B
5	Mary Avenue / Evelyn Avenue	Signal	32.7	C	36.5	D	33.4	C	37.5	D
6	Mary Avenue / Washington Avenue	Signal	20.2	C	18.0	B	24.3	C	30.7	C
7	Mary Avenue / Iowa Avenue	Signal	12.2	B	11.0	B	15.1	B	21.6	C
8	Mary Avenue / El Camino Real (SR 82)	Signal	45.0	D	53.1	D	43.9	D	49.5	D
9	Mary Avenue / Heatherstone Way	Signal	7.2	A	4.1	A	8.4	A	6.1	A
10	Mary Avenue / Knickerbocker Drive	Signal	5.2	A	4.8	A	6.7	A	6.8	A
11	Mary Avenue / Remington Drive	Signal	26.5	C	30.7	C	37.1	D	42.2	D
12	Mary Avenue / Ticonderoga Drive	Signal	8.6	A	5.1	A	10.5	B	6.8	A
13	Mary Avenue / Fremont Avenue	Signal	49.8	D	46.9	D	49.8	D	46.9	D
14	Mathilda Avenue / Indio Way	Signal	17.2	B	18.1	B	17.4	B	18.5	B
15	Mathilda Avenue / California Avenue	Signal	23.8	C	31.6	C	24.7	C	36.1	D
16	Mathilda Avenue / El Camino Real	Signal	49.0	D	52.9	D	52.5	D	53.9	D

Notes: 1) LOS / delay = level of service and average control delay for overall intersection
2) **Bold** values exceed applicable jurisdictional standards

City of Sunnyvale – Mary Avenue Street Space Allocation Study – Alternatives Traffic Operations Analysis

Existing Intersection Vehicle Volumes, Lane Geometry, and Traffic Controls (Alternative 3)

Figure 7



154-040 - 1/31/13 - AK

Existing Conditions with Alternative 4

Figure 8 shows study intersection vehicle volumes, lane geometries, and traffic controls proposed under Existing Conditions with implementation of Alternative 4. Table V compares the intersection LOS results of Existing Conditions under current lane geometry with Alternative 4 lane geometry. Appendix P includes the LOS analysis sheets for Existing Conditions with Alternative 4.

Under Alternative 4, all intersections except one (Mary Avenue / Central Expressway) are expected to remain operating acceptably based on applicable City LOS standards, even with some increases in overall average delay and LOS along the Mary Avenue Residential segment. Although the Residential segment intersections are expected to experience a slight decrease in peak hour volumes due to diversion, this reduction is offset by the reduced capacity to one travel lane per direction along this segment. The Mary Avenue / Central Expressway intersection is expected to continue operating at LOS F as under Existing Conditions, but with slightly reduced overall average delay due to the diversion of some vehicles from the proposed road diet along the Residential segment.

Table V: Peak Hour Intersection LOS – Existing Conditions with Alternative 4

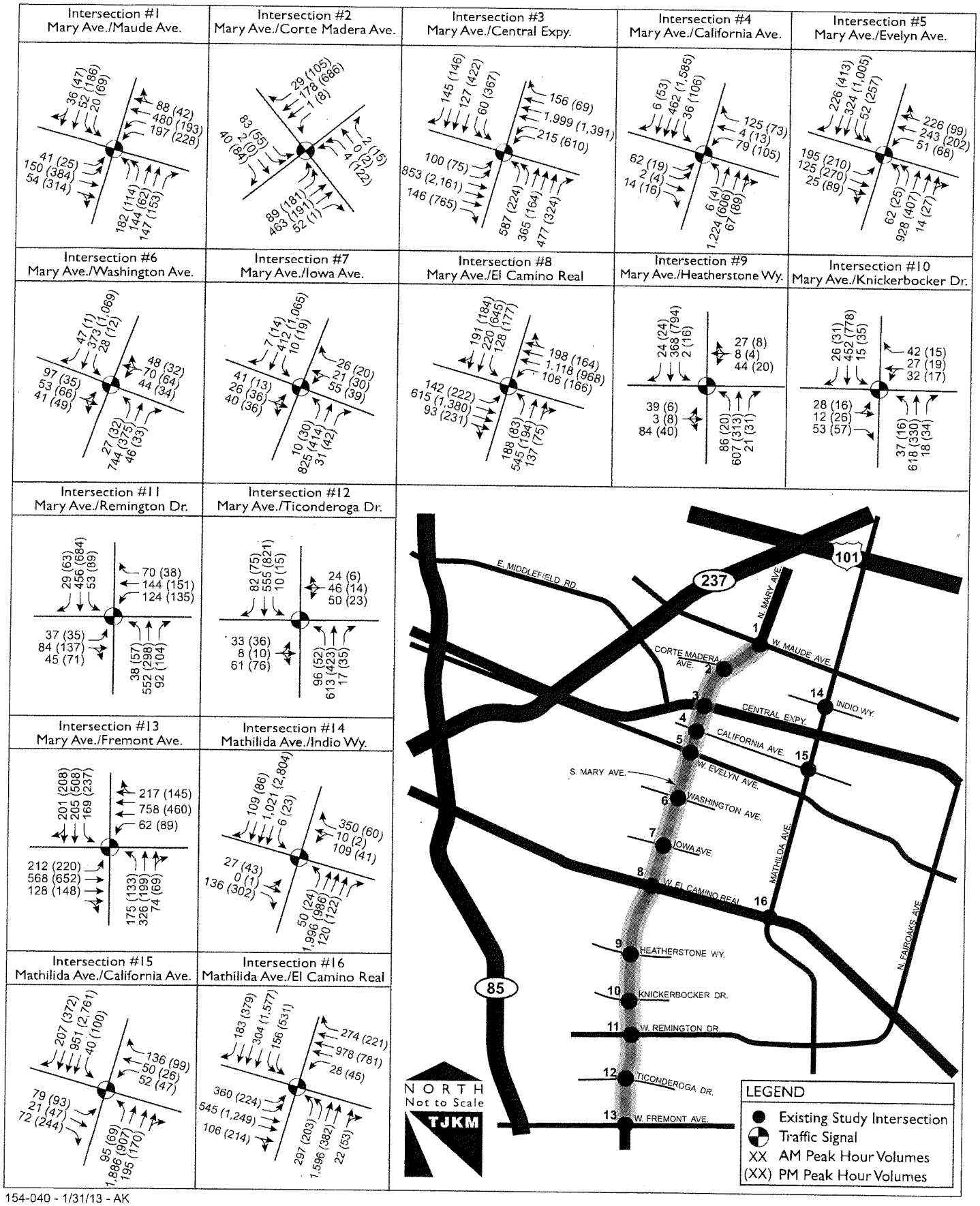
ID	Intersection	Control	Existing Conditions				Existing Conditions with Alternative 4			
			A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Mary Avenue / Maude Avenue	Signal	25.0	C	24.5	C	25.0	C	24.5	C
2	Mary Avenue / Corte Madera Avenue	Signal	13.8	B	22.9	C	14.0	B	23.6	C
3	Mary Avenue / Central Expressway	Signal	105.2	**F**	327.0	**F**	103.2	**F**	324.2	**F**
4	Mary Avenue / California Avenue	Signal	15.4	B	15.4	B	15.3	B	15.3	B
5	Mary Avenue / Evelyn Avenue	Signal	32.7	C	36.5	D	33.4	C	37.5	D
6	Mary Avenue / Washington Avenue	Signal	20.2	C	18.0	B	24.3	C	30.7	C
7	Mary Avenue / Iowa Avenue	Signal	12.2	B	11.0	B	15.1	B	21.6	C
8	Mary Avenue / El Camino Real (SR 82)	Signal	45.0	D	53.1	D	43.9	D	49.5	D
9	Mary Avenue / Heatherstone Way	Signal	7.2	A	4.1	A	8.4	A	6.1	A
10	Mary Avenue / Knickerbocker Drive	Signal	5.2	A	4.8	A	6.7	A	6.8	A
11	Mary Avenue / Remington Drive	Signal	26.5	C	30.7	C	37.1	D	42.2	D
12	Mary Avenue / Ticonderoga Drive	Signal	8.6	A	5.1	A	10.5	B	6.8	A
13	Mary Avenue / Fremont Avenue	Signal	49.8	D	46.9	D	49.8	D	46.9	D
14	Mathilda Avenue / Indio Way	Signal	17.2	B	18.1	B	17.4	B	18.5	B
15	Mathilda Avenue / California Avenue	Signal	23.8	C	31.6	C	24.7	C	36.1	D
16	Mathilda Avenue / El Camino Real	Signal	49.0	D	52.9	D	52.5	D	53.9	D

Notes: 1) LOS / delay = level of service and average control delay for overall intersection
2) **Bold** values exceed applicable jurisdictional standards

City of Sunnyvale – Mary Avenue Street Space Allocation Study – Alternatives Traffic Operations Analysis

Existing Intersection Vehicle Volumes, Lane Geometry, and Traffic Controls (Alternative 4)

Figure 8



154-040 - 1/31/13 - AK

2020 Baseline Conditions

This section details expected traffic conditions at the study intersections under 2020 Baseline Conditions, which includes {PRIVATE }expected traffic growth along the Mary Avenue study corridor between now and Year 2020.

Anticipated Future Roadway Projects

TJKM reviewed the Sunnyvale Resource Allocation Plan, Sunnyvale Transportation Strategic Program, and Valley Transportation Plan (VTP) 2030 and consulted with City staff in terms of expected future roadway projects along the Mary Avenue study corridor. These future projects would result in modified roadway lane geometry at some of the study corridor intersections. TJKM assumed these modified lane geometries under 2020 Baseline Conditions as follows:

- Mary Avenue / El Camino Real – the southbound Mary Avenue approach would be widened by one lane and reconfigured to include one left turn lane, two through lanes, and one exclusive right turn lane.
- Mary Avenue / Fremont Avenue – a second left turn lane would be added to the eastbound Fremont Avenue approach, while the westbound Fremont Avenue approach would be widened by one lane and reconfigured to include one left turn lane, three through lanes, and one exclusive right turn lane.

2020 Traffic Volumes

Year 2020 Baseline Conditions traffic volumes at the study intersections were developed by applying an annual growth factor derived from the latest City of Sunnyvale travel demand model to the Existing Conditions intersection traffic volumes collected for this study. TJKM applied the following annual growth factors to develop Year 2020 Baseline Conditions traffic volumes according to City roadway classifications in the LUTE:

- Arterials: 2 percent during the a.m. peak hour and 1.75 percent during the p.m. peak hour
- Collectors: 2.28 percent during the a.m. peak hour and 2.34 percent during the p.m. peak hour
- Local Streets: 0.5 percent during both a.m. and p.m. peak hours

Figure 9 shows the resulting 2020 Baseline traffic volumes at the study intersections, as well as assumed intersection traffic controls and lane geometries that include the above mentioned anticipated future roadway projects.

2020 Baseline Conditions Peak Hour Intersection LOS Analysis

Table VI shows the results of the intersection peak hour LOS analysis conducted for the 13 study intersections along the Mary Avenue corridor and three Mathilda Avenue study intersections. Appendix Q includes the LOS analysis sheets for 2020 Baseline Conditions.

Table VI: Peak Hour Intersection LOS – 2020 Baseline Conditions

ID	Intersection	Control	2020 Baseline Conditions			
			A.M. Peak Hour		P.M. Peak Hour	
			Delay	LOS	Delay	LOS
1	Mary Avenue / Maude Avenue	Signal	35.5	D	34.0	C
2	Mary Avenue / Corte Madera Avenue	Signal	13.5	B	23.3	C
3	Mary Avenue / Central Expressway	Signal	154.3	**F**	423.9	**F**
4	Mary Avenue / California Avenue	Signal	16.6	B	17.1	B
5	Mary Avenue / Evelyn Avenue	Signal	37.7	D	43.4	D
6	Mary Avenue / Washington Avenue	Signal	23.9	C	21.8	C
7	Mary Avenue / Iowa Avenue	Signal	14.0	B	12.7	B
8	Mary Avenue / El Camino Real (SR 82)	Signal	61.6	E	56.0	E
9	Mary Avenue / Heatherstone Way	Signal	7.5	A	4.2	A
10	Mary Avenue / Knickerbocker Drive	Signal	6.2	A	5.9	A
11	Mary Avenue / Remington Drive	Signal	30.9	C	35.8	D
12	Mary Avenue / Ticonderoga Drive	Signal	10.1	B	5.5	A
13	Mary Avenue / Fremont Avenue	Signal	47.1	D	49.4	D
14	Mathilda Avenue / Indio Way	Signal	21.9	C	27.5	C
15	Mathilda Avenue / California Avenue	Signal	35.8	D	75.2	E
16	Mathilda Avenue / El Camino Real	Signal	67.2	E	77.2	E

Notes: 1) LOS / delay = level of service and average control delay for overall intersection
2) **Bold** values exceed applicable jurisdictional standards

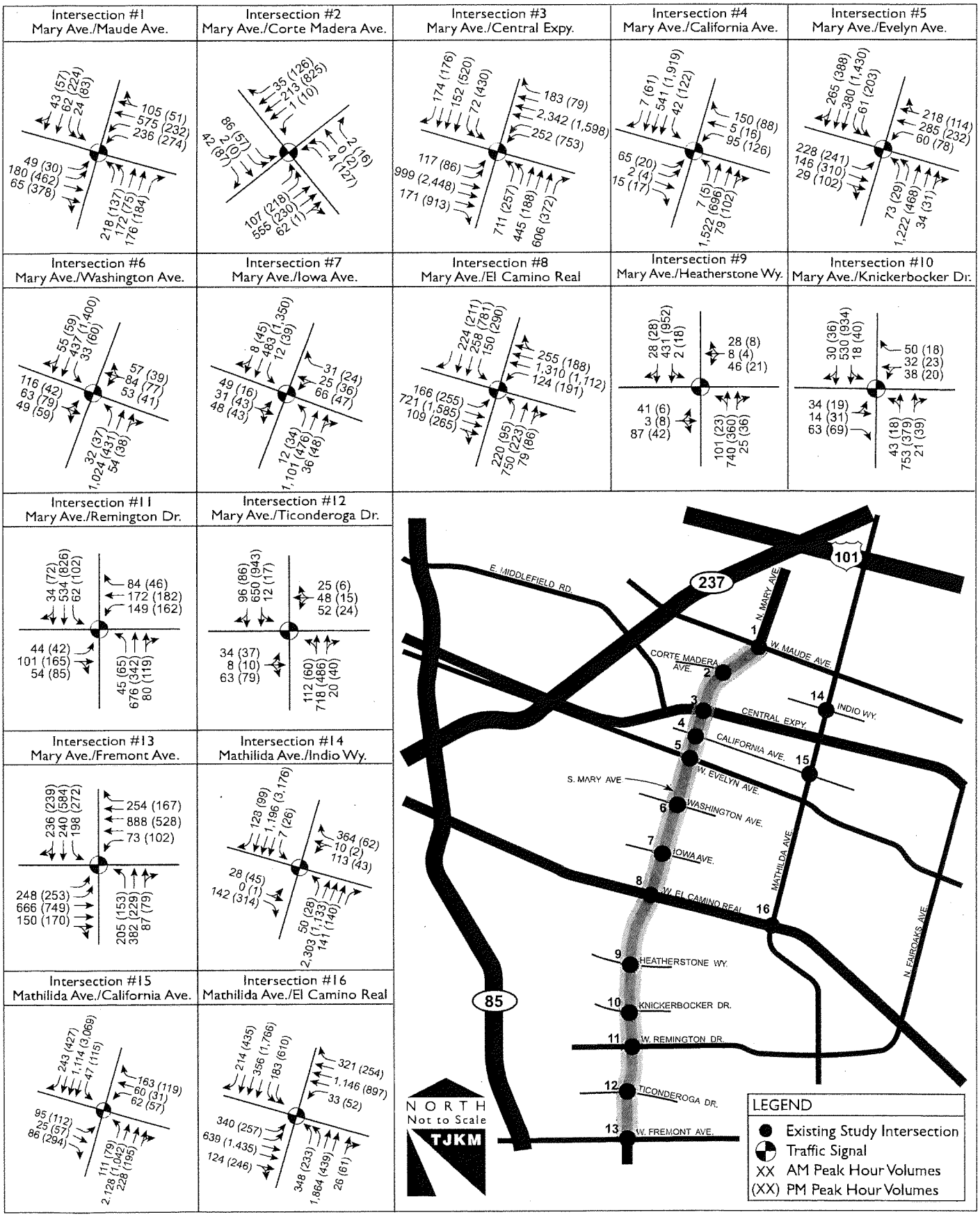
Under 2020 Baseline Conditions, all study intersections are expected to continue operating within acceptable City LOS standards, except for the following intersections:

- Mary Avenue / Central Expressway (LOS F both peak hours)
- Mary Avenue / California Avenue (LOS F during p.m. peak hour)

It should be noted that both intersections are expected to operate at LOS F prior to implementation of any of the street space allocation alternatives. In addition, delay at Mary Avenue / Fremont Avenue is expected to slightly improve compared to Existing Conditions due to the future improvement of a second eastbound left turn lane.

City of Sunnyvale – Mary Avenue Street Space Allocation Study – Alternatives Traffic Operations Analysis Figure

2020 Intersection Vehicle Volumes, Lane Geometry, and Traffic Controls (Baseline) 9



154-040 - 1/31/13 - AK

2020 Plus Project Alternatives Conditions

TJKM conducted an intersection LOS analysis of all four street space allocation design alternatives, the results of which are detailed in the following sections.

2020 Conditions with Alternative 1

Figure 10 shows study intersection vehicle volumes, lane geometries, and traffic controls proposed under Year 2020 Conditions with implementation of Alternative 1. Table VII compares the intersection LOS results for 2020 Baseline Conditions under baseline lane geometry with conditions under the Alternative 1 lane geometry and reduced Mary Avenue traffic volumes due to the Residential road diet. Appendix R includes the LOS analysis sheets for 2020 Conditions with Alternative 1.

Under Alternative 1, all intersections except one (Mary Avenue / Central Expressway) are expected to remain operating acceptably based on applicable City LOS standards, even with some increases in overall average delay and LOS along the Mary Avenue Residential segment. Although the Residential segment intersections are expected to experience a slight decrease in peak hour volumes due to diversion, this reduction is offset by the reduced capacity to one travel lane per direction along this segment. The Mary Avenue / Central Expressway intersection is expected to continue operating at LOS F as under 2020 Baseline Conditions, but with slightly reduced overall average delay due to the diversion of some vehicles from the proposed road diet along the Residential segment. Therefore, no significant operational impacts are expected to result from implementation of Alternative 1.

Table VII: Peak Hour Intersection LOS Analysis – 2020 Conditions with Alternative 1

ID	Intersection	Control	2020 Baseline Conditions				2020 Conditions with Alternative 1			
			A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Mary Avenue / Maude Avenue	Signal	35.5	D	34.0	C	35.5	D	34.0	C
2	Mary Avenue / Corte Madera Avenue	Signal	13.5	B	23.3	C	13.7	B	24.3	C
3	Mary Avenue / Central Expressway	Signal	154.3	**F**	423.9	**F**	152.3	**F**	420.7	**F**
4	Mary Avenue / California Avenue	Signal	16.6	B	17.1	B	16.4	B	17.0	B
5	Mary Avenue / Evelyn Avenue	Signal	37.7	D	43.4	D	38.0	D	43.0	D
6	Mary Avenue / Washington Avenue	Signal	23.9	C	21.8	C	41.3	D	42.3	D
7	Mary Avenue / Iowa Avenue	Signal	14.0	B	12.7	B	20.6	C	51.9	D
8	Mary Avenue / El Camino Real (SR 82)	Signal	61.6	E	56.0	E	60.1	E	50.9	D
9	Mary Avenue / Heatherstone Way	Signal	7.5	A	4.2	A	9.2	A	7.4	A
10	Mary Avenue / Knickerbocker Drive	Signal	6.2	A	5.9	A	9.2	A	10.5	B
11	Mary Avenue / Remington Drive	Signal	30.9	C	35.8	D	47.3	D	52.3	D

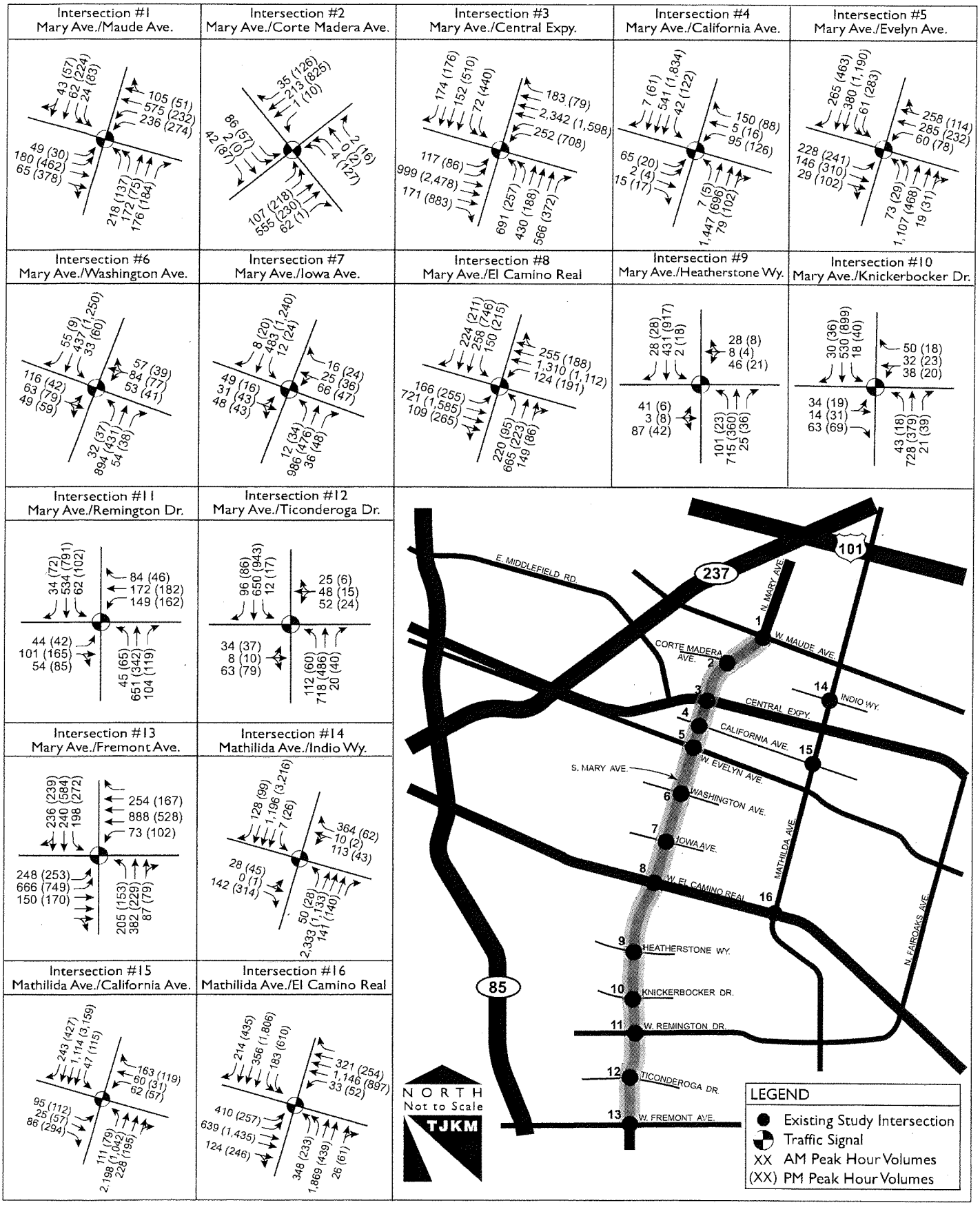
Table VII (continued): Peak Hour Intersection LOS Analysis – 2020 Conditions with Alternative 1

ID	Intersection	Control	2020 Baseline Conditions				2020 Conditions with Alternative 1			
			A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
12	Mary Avenue / Ticonderoga Drive	Signal	10.1	B	5.5	A	14.1	B	8.5	A
13	Mary Avenue / Fremont Avenue	Signal	47.1	D	49.4	D	47.1	D	49.4	D
14	Mathilda Avenue / Indio Way	Signal	21.9	C	27.5	C	22.1	C	29.1	C
15	Mathilda Avenue / California Avenue	Signal	35.8	D	75.2	E	40.6	D	78.3	E
16	Mathilda Avenue / El Camino Real	Signal	67.2	E	77.2	E	72.5	E	78.2	E

Notes: 1) LOS / delay = level of service and average control delay for overall intersection
2) **Bold** values exceed applicable jurisdictional standards

City of Sunnyvale – Mary Avenue Street Space Allocation Study – Alternatives Traffic Operations Analysis Figure

2020 Intersection Vehicle Volumes, Lane Geometry, and Traffic Controls (Alternative 1) 10



154-040 - 1/31/13 - AK

2020 Conditions with Alternative 2

Figure 11 shows study intersection vehicle volumes, lane geometries, and traffic controls proposed under Year 2020 Conditions with implementation of Alternative 2. Table VIII compares the intersection LOS results for 2020 Baseline Conditions with conditions under Alternative 2. Appendix S includes the LOS analysis sheets for 2020 Conditions with Alternative 2. Under Alternative 2, the same one intersection (Mary Avenue at Central Expressway) is expected to continue operating below applicable City LOS standards, just as under 2020 Baseline Conditions. However, the overall LOS and delay at this intersection and all other study intersections would remain identical to 2020 Baseline Conditions, given that traffic volumes and lane geometry under Alternative 2 would be the same as 2020 Baseline Conditions. Therefore, no significant operational impacts are expected to result from implementation of Alternative 2.

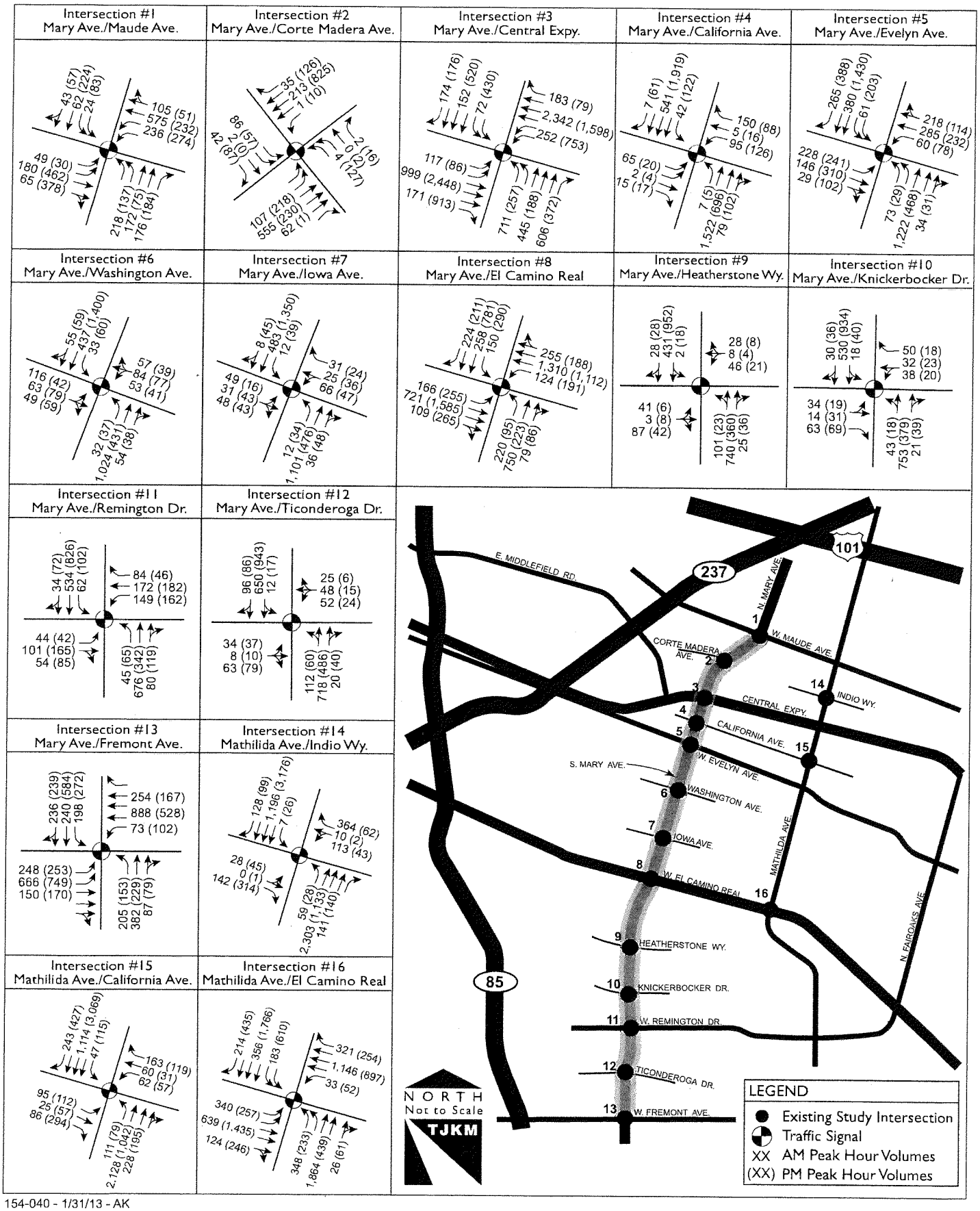
Table VIII: Peak Hour Intersection LOS Analysis – 2020 Conditions with Alternative 2

ID	Intersection	Control	2020 Baseline Conditions				2020 Conditions with Alternative 2			
			A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Mary Avenue / Maude Avenue	Signal	35.5	D	34.0	C	35.5	D	34.0	C
2	Mary Avenue / Corte Madera Avenue	Signal	13.5	B	23.3	C	13.5	B	23.3	C
3	Mary Avenue / Central Expressway	Signal	154.3	**F**	423.9	**F**	154.3	**F**	423.9	**F**
4	Mary Avenue / California Avenue	Signal	16.6	B	17.1	B	16.6	B	17.1	B
5	Mary Avenue / Evelyn Avenue	Signal	37.7	D	43.4	D	37.7	D	43.4	D
6	Mary Avenue / Washington Avenue	Signal	23.9	C	21.8	C	23.9	C	21.8	C
7	Mary Avenue / Iowa Avenue	Signal	14.0	B	12.7	B	14.0	B	12.7	B
8	Mary Avenue / El Camino Real (SR 82)	Signal	61.6	E	56.0	E	61.6	E	56.0	E
9	Mary Avenue / Heatherstone Way	Signal	7.5	A	4.2	A	7.5	A	4.2	A
10	Mary Avenue / Knickerbocker Drive	Signal	6.2	A	5.9	A	6.2	A	5.9	A
11	Mary Avenue / Remington Drive	Signal	30.9	C	35.8	D	30.9	C	35.8	D
12	Mary Avenue / Ticonderoga Drive	Signal	10.1	B	5.5	A	10.1	B	5.5	A
13	Mary Avenue / Fremont Avenue	Signal	47.1	D	49.4	D	47.1	D	49.4	D
14	Mathilda Avenue / Indio Way	Signal	21.9	C	27.5	C	21.9	C	27.5	C
15	Mathilda Avenue / California Avenue	Signal	35.8	D	75.2	E	35.8	D	75.2	E
16	Mathilda Avenue / El Camino Real	Signal	67.2	E	77.2	E	67.2	E	77.2	E

Notes: 1) LOS / delay = level of service and average control delay for overall intersection
2) **Bold** values exceed applicable jurisdictional standards

City of Sunnyvale – Mary Avenue Street Space Allocation Study – Alternatives Traffic Operations Analysis Figure 11

2020 Intersection Vehicle Volumes, Lane Geometry, and Traffic Controls (Alternative 2)



154-040 - 1/31/13 - AK

2020 Conditions with Alternative 3

Figure 12 shows study intersection vehicle volumes, lane geometries, and traffic controls proposed under Year 2020 Conditions with implementation of Alternative 3. Table IX compares the intersection LOS results for 2020 Baseline Conditions under baseline lane geometry with conditions under the Alternative 3 lane geometry and reduced Mary Avenue traffic volumes due to the Residential road diet. Appendix T includes the LOS analysis sheets for 2020 Conditions with Alternative 3.

Under Alternative 3, all intersections except one (Mary Avenue / Central Expressway) are expected to remain operating acceptably based on applicable City LOS standards, even with some increases in overall average delay and LOS along the Mary Avenue Residential segment. Although the Residential segment intersections are expected to experience a slight decrease in peak hour volumes due to diversion, this reduction is offset by the reduced capacity to one travel lane per direction along this segment. The Mary Avenue / Central Expressway intersection is expected to continue operating at LOS F as under 2020 Baseline Conditions, but with slightly reduced overall average delay due to the diversion of some vehicles from the proposed road diet along the Residential segment. Therefore, no significant operational impacts are expected to result from implementation of Alternative 3.

Table IX: Peak Hour Intersection LOS Analysis – 2020 Conditions with Alternative 3

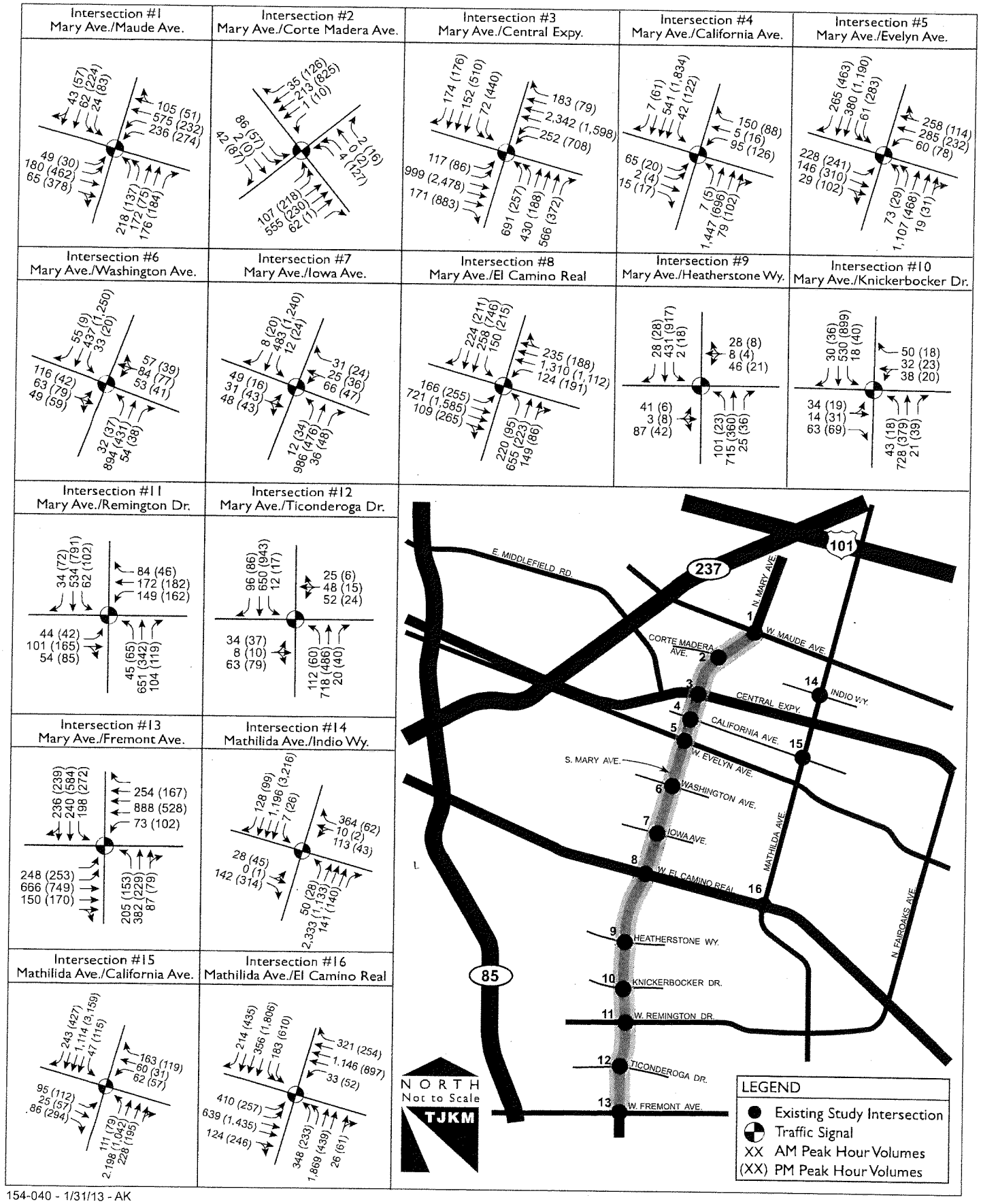
ID	Intersection	Control	2020 Baseline Conditions				2020 Conditions with Alternative 3			
			A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Mary Avenue / Maude Avenue	Signal	35.5	D	34.0	C	35.5	D	34.0	C
2	Mary Avenue / Corte Madera Avenue	Signal	13.5	B	23.3	C	13.7	B	24.3	C
3	Mary Avenue / Central Expressway	Signal	154.3	**F**	423.9	**F**	152.3	**F**	420.7	**F**
4	Mary Avenue / California Avenue	Signal	16.6	B	17.1	B	16.4	B	17.0	B
5	Mary Avenue / Evelyn Avenue	Signal	37.7	D	43.4	D	38.0	D	43.0	D
6	Mary Avenue / Washington Avenue	Signal	23.9	C	21.8	C	41.3	D	42.3	D
7	Mary Avenue / Iowa Avenue	Signal	14.0	B	12.7	B	20.6	C	51.9	D
8	Mary Avenue / El Camino Real (SR 82)	Signal	61.6	E	56.0	E	60.1	E	50.9	D
9	Mary Avenue / Heatherstone Way	Signal	7.5	A	4.2	A	9.2	A	7.4	A
10	Mary Avenue / Knickerbocker Drive	Signal	6.2	A	5.9	A	9.2	A	10.5	B
11	Mary Avenue / Remington Drive	Signal	30.9	C	35.8	D	47.3	D	52.3	D
12	Mary Avenue / Ticonderoga Drive	Signal	10.1	B	5.5	A	14.1	B	8.5	A
13	Mary Avenue / Fremont Avenue	Signal	47.1	D	49.4	D	47.1	D	49.4	D
14	Mathilda Avenue / Indio Way	Signal	21.9	C	27.5	C	22.1	C	29.1	C
15	Mathilda Avenue / California Avenue	Signal	35.8	D	75.2	E	40.6	D	78.3	E
16	Mathilda Avenue / El Camino Real	Signal	67.2	E	77.2	E	72.5	E	78.2	E

Notes: 1) LOS / delay = level of service and average control delay for overall intersection
2) **Bold** values exceed applicable jurisdictional standards

City of Sunnyvale – Mary Avenue Street Space Allocation Study – Alternatives Traffic Operations Analysis

2020 Intersection Vehicle Volumes, Lane Geometry, and Traffic Controls (Alternative 3)

Figure 12



154-040 - 1/31/13 - AK

2020 Conditions with Alternative 4

Figure 13 shows study intersection vehicle volumes, lane geometries, and traffic controls proposed under Year 2020 Conditions with implementation of Alternative 4. Table X compares the intersection LOS results for 2020 Baseline Conditions under baseline lane geometry with conditions under the Alternative 4 lane geometry and reduced Mary Avenue traffic volumes due to the Residential road diet. Appendix U includes the LOS analysis sheets for 2020 Conditions with Alternative 4.

Under Alternative 4, all intersections except one (Mary Avenue / Central Expressway) are expected to remain operating acceptably based on applicable City LOS standards, even with some increases in overall average delay and LOS along the Mary Avenue Residential segment. Although the Residential segment intersections are expected to experience a slight decrease in peak hour volumes due to diversion, this reduction is offset by the reduced capacity to one travel lane per direction along this segment. The Mary Avenue / Central Expressway intersection is expected to continue operating at LOS F as under 2020 Baseline Conditions, but with slightly reduced overall average delay due to the diversion of some vehicles from the proposed road diet along the Residential segment. Therefore, no significant operational impacts are expected to result from implementation of Alternative 4.

Table X: Peak Hour Intersection LOS Analysis – 2020 Conditions with Alternative 4

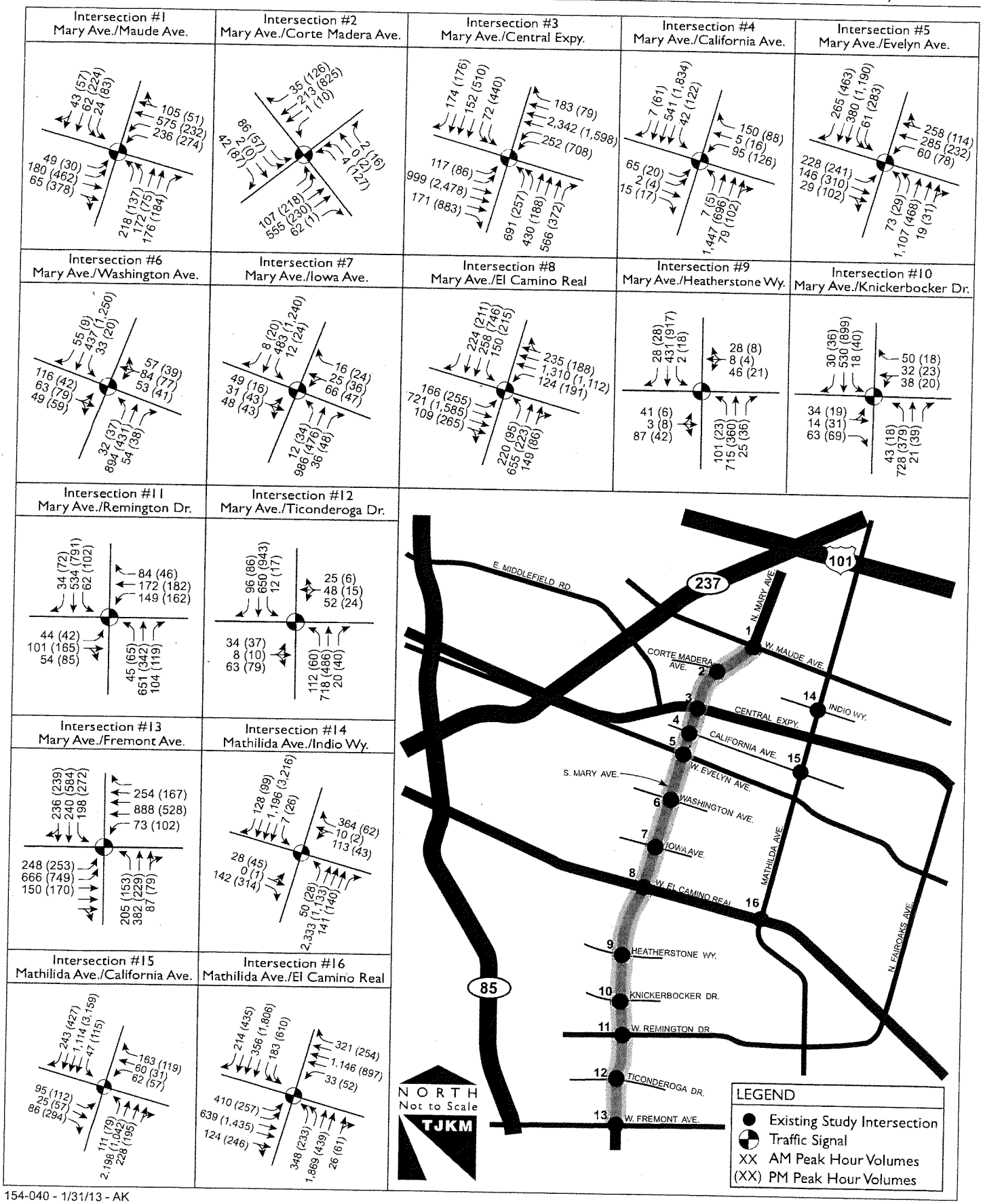
ID	Intersection	Control	2020 Baseline Conditions				2020 Conditions with Alternative 4			
			A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Mary Avenue / Maude Avenue	Signal	35.5	D	34.0	C	35.5	D	34.0	C
2	Mary Avenue / Corte Madera Avenue	Signal	13.5	B	23.3	C	13.7	B	24.3	C
3	Mary Avenue / Central Expressway	Signal	154.3	**F**	423.9	**F**	152.3	**F**	420.7	**F**
4	Mary Avenue / California Avenue	Signal	16.6	B	17.1	B	16.4	B	17.0	B
5	Mary Avenue / Evelyn Avenue	Signal	37.7	D	43.4	D	38.0	D	43.0	D
6	Mary Avenue / Washington Avenue	Signal	23.9	C	21.8	C	41.3	D	42.3	D
7	Mary Avenue / Iowa Avenue	Signal	14.0	B	12.7	B	20.6	C	51.9	D
8	Mary Avenue / El Camino Real (SR 82)	Signal	61.6	E	56.0	E	60.1	E	50.9	D
9	Mary Avenue / Heatherstone Way	Signal	7.5	A	4.2	A	9.2	A	7.4	A
10	Mary Avenue / Knickerbocker Drive	Signal	6.2	A	5.9	A	9.2	A	10.5	B
11	Mary Avenue / Remington Drive	Signal	30.9	C	35.8	D	47.3	D	52.3	D
12	Mary Avenue / Ticonderoga Drive	Signal	10.1	B	5.5	A	14.1	B	8.5	A
13	Mary Avenue / Fremont Avenue	Signal	47.1	D	49.4	D	47.1	D	49.4	D
14	Mathilda Avenue / Indio Way	Signal	21.9	C	27.5	C	22.1	C	29.1	C
15	Mathilda Avenue / California Avenue	Signal	35.8	D	75.2	E	40.6	D	78.3	E
16	Mathilda Avenue / El Camino Real	Signal	67.2	E	77.2	E	72.5	E	78.2	E

Notes: 1) LOS / delay = level of service and average control delay for overall intersection
2) **Bold** values exceed applicable jurisdictional standards

City of Sunnyvale – Mary Avenue Street Space Allocation Study – Alternatives Traffic Operations Analysis

2020 Intersection Vehicle Volumes, Lane Geometry, and Traffic Controls (Alternative 4)

Figure 13



154-040 - 1/31/13 - AK

Conclusions

TJKM has reached the following conclusions regarding traffic operations both without and with the four design alternatives prepared for the Mary Avenue Street Space Allocation Study in the City of Sunnyvale:

Existing Conditions

- Currently, all 16 study intersections are operating at acceptable LOS based on City of Sunnyvale standards (LOS D/E) as defined in the City of Sunnyvale General Plan Land Use and Transportation Element (LUTE), with the exception of the Mary Avenue / Central Expressway intersection that is currently operating at LOS F during both peak hours.

Existing Conditions with Street Space Design Alternatives

- With implementation of any of the design alternatives (Alternatives 1, 2, 3, and 4), all intersections are expected to remain operating acceptably based on City LOS standards, with the exception of the Mary Avenue / Central Expressway intersection, which is expected to continue operating at LOS F during both peak hours but with no increase in average delay.
- Under Alternatives 1, 3, and 4, in which the road diet is proposed along the Residential segment, LOS and delay is expected to increase at some Residential segment intersections due to the expected diversion of some vehicles, although overall LOS would still remain acceptable. Therefore, no significant traffic operational impacts are expected to result from constructing any of the four street space allocation alternatives in Existing Conditions.

2020 Baseline Conditions

- Under 2020 Baseline Conditions (without implementation of any design alternative), all study intersections are expected to continue operating within acceptable City LOS standards, with the exception of the Mary Avenue / Central Expressway intersection. This intersection is expected to operate at LOS F during both peak hours before implementation of any of the four street space allocation alternatives.

2020 Conditions with Street Space Design Alternatives

- With implementation of any of the four design alternatives, all intersections are expected to remain operating acceptably based on City LOS standards, with the exception of the Mary Avenue / Central Expressway intersection, which is expected to continue operating at LOS F during both peak hours as under 2020 Baseline Conditions. However, no increase in average delay is expected at that intersection under any alternative.
- Under Alternatives 1, 3, and 4, in which the road diet is proposed along the Residential segment, LOS and delay is expected to increase at some Residential segment intersections due to the expected diversion of some vehicles, although overall LOS would still remain acceptable. Therefore, no significant traffic operational impacts are expected to result from constructing any of the four street space allocation alternatives in Year 2020.

Study References

TJKM Staff

Richard Haygood, P.E.	Project Manager
Andrew Kluter, P.E.	Deputy Project Manager
Joanna Liu, P.E.	Senior Transportation Engineer
Vishnu Gandluru	Transportation Engineer
Steve Delsid, P.E.	Assistant Transportation Engineer
Kai Han, P.E.	Assistant Transportation Engineer
Jeffrey Lacap	Assistant Transportation Engineer / Graphics
Travis Richards, P.E.	Assistant Transportation Engineer
Kim Goodrich	Word Processing

CirclePoint Staff

John Cook, AICP	Senior Project Manager
Chris Colwick	Senior Project Manager
Lawrence McGuire	Project Manager
Jennifer Kincaid	Project Coordinator
Samantha Robinson	Project Coordinator

Bicycle Solutions

John Ciccarelli	President

Traffic Data Collection

Quality Counts	May 2012; May - June 2010

City of Sunnyvale

Jack Witthaus	Traffic and Transportation Manager, Division of Transportation and Traffic, Department of Public Works
Joel Arreola	Staff Engineer, Division of Transportation and Traffic, Department of Public Works
Adam Levermore-Rich	Communications Office

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- *A Policy on Geometric Design of Highways and Streets,* American Association of State Highway and Transportation Officials (AASHTO Green Book), 2004
- *Bicycle Technical Guidelines,* Santa Clara Valley Transportation Authority (VTA), 2008
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