# CITY OF SUNNYVALE
# LAND USE AND TRANSPORTATION ELEMENT
## DRAFT ENVIRONMENTAL IMPACT REPORT

SCH No. 2012032003

*Prepared for:*

CITY OF SUNNYVALE
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SUNNYVALE, CA 94086

*Prepared by:*

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**AUGUST 2016**

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## ES – EXECUTIVE SUMMARY



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# ES – Executive Summary

This chapter summarizes the City of Sunnyvale Draft Land Use and Transportation Element (Draft LUTE), identifies the alternatives evaluated in this Draft Environmental Impact Report (DEIR; Draft EIR), discusses areas of controversy and issues to be resolved associated with the Draft LUTE, and summarizes its environmental impacts.

## ES.1 PURPOSE AND SCOPE OF THE ENVIRONMENTAL IMPACT REPORT

This DEIR analyzes the potential physical environmental effects associated with the implementation of the Draft LUTE, pursuant to the California Environmental Quality Act (CEQA) (Public Resources Code Sections 21000–21177). The analysis focuses on the physical environmental impacts that could arise from implementation of the project through development of the land uses in Sunnyvale as regulated and guided by the Draft LUTE. The DEIR has been prepared as a program EIR per CEQA Guidelines Section 15168.

## ES.2 PROJECT CHARACTERISTICS

The Land Use and Transportation Element is a part of the City of Sunnyvale General Plan. The element establishes the fundamental framework as to how the city would be laid out (streets and buildings) and how various land uses, developments, and transportation facilities would function together. The LUTE includes a series of land use and transportation goals, policies, and actions that provide direction for how much the city would change and grow, and where the growth would take place for an approximate 20-year horizon—a time frame that is referred to as Horizon 2035.

The Draft LUTE is intended to implement local land use and transportation planning efforts in a manner consistent with the Metropolitan Transportation Commission's (MTC) Sustainable Communities Strategy (SCS), Plan Bay Area. Plan Bay Area is a regional growth strategy required under Senate Bill (SB) 375 that, in combination with transportation policies and programs, strives to reduce greenhouse gas emissions.

The Draft LUTE includes a Land Use Map designating appropriate locations for existing and proposed land uses. The map indicates areas such as existing single-family neighborhoods that are meant to be preserved, new Village Centers, and industrial areas that are meant to improve and evolve over time but that are not planned for a major character shift. The Draft LUTE also establishes standards for residential density and nonresidential building intensity for all land located in the Planning Area. The following table summarizes the development assumptions of the Draft LUTE. The development assumptions include the proposed Peery Park Specific Plan and the proposed Lawrence Station Area Plan.

**TABLE ES-1**
**DRAFT LUTE LAND USE CHARACTERISTICS (2014–2035)**

| | 2014 Existing Conditions | LUTE Horizon 2035 (Buildout) | Change (2014–2035) | |
|---|---|---|---|---|
| | | | Number | Percentage |
| Population | 147,055 | 174,500 | 27,445 | 19% |
| Housing Units | 57,000 | 72,100 | 15,100 | 26% |
| Industrial/Office/Commercial (million square feet) | 47.3 | 59.8 | 12.5 | 27% |
| Jobs | 82,000 | 124,410 | 42,410 | 52% |
| Jobs to Housing Units Ratio | 1.44 | 1.73 | 0.29 | 20% |

## ES.3 PROJECT ALTERNATIVES SUMMARY

CEQA Guidelines Section 15126.6 requires that an EIR describe a range of reasonable alternatives to the project which could feasibly attain the basic objectives of the project and avoid and/or lessen the environmental effects of the project. Further, CEQA Guidelines Section 15126.6(e) requires that a "no project" alternative be evaluated in an EIR. The Draft EIR evaluates the following alternatives:

- **Alternative 1 – Existing LUTE Alternative (No Project Alternative).** Under Alternative 1, the Draft LUTE would not be adopted and the current 1997 LUTE (included in the 2011 Consolidated General Plan) would remain in effect. The development potential of this alternative in comparison to the Draft LUTE is shown in **Table 5.0-1** (see Section 5.0, Alternatives). While the overall extent of urban development between the existing LUTE and the proposed project would be the same, notable differences include the lack of mixed-use land use designations in the existing LUTE. The existing LUTE would also not include new policy provisions (e.g., Environmental Sustainability, Multimodal Transportation, and Village Centers) that support the project objectives.

- **Alternative 2 – Reduced Jobs/Housing Ratio Alternative.** Alternative 2 would be similar to the proposed project except that the residential development potential of the Draft LUTE would be increased and the employment potential of the Draft LUTE would be reduced in order to achieve a jobs/housing ratio of approximately 1.49. This alternative would increase the number of housing units in all areas of growth (Downtown, Industrial to Residential (ITR) sites, planned mixed-use areas, El Camino Real, and other areas) by 60 percent. Alterative 2 would also reduce planned nonresidential floor area at the ITR 5 site (Northrop Grumman) by 40 percent. The proposed employment potential of all other project areas would be retained. **Table 5.0-1** shows a breakdown of the development potential of Alternative 2. The policy provisions of the Draft LUTE would be included in this alternative.

- **Alternative 3 – Redistribute a Portion of Neighborhood Village Growth to Commercial Nodes Alternative.** Alternative 3 would relocate 600 housing units (approximately 66 percent) currently identified in the Village Mixed Use land use designation to the Transit Mixed Use and Corridor Mixed Use land use designations. Specifically, planned housing units in four of the Neighborhood Village areas would be redistributed, resulting in a higher concentration of these uses along transportation corridors (e.g., El Camino Real) and in Transit Village Centers (e.g., Downtown, Lawrence Station). Proposed Neighborhood Village Centers would be retained as neighborhood commercial uses. The development potential of this alternative is identified in **Table 5.0-1**. All other policy provisions of the Draft LUTE would be included in this alternative.

## ES.4 AREAS OF CONTROVERSY AND ISSUES TO BE RESOLVED

A Notice of Preparation (NOP) dated March 2, 2012, was completed for the project under the project title Sunnyvale Land Use and Transportation Element (LUTE) Update and Climate Action Plan (SCH #2012032003), and a scoping meeting was held on March 22, 2012. Since that time, the scope of the proposed project has changed. Specifically, the Climate Action Plan (CAP) was separated from the proposed project and presented to the City Council for adoption independently from the Draft LUTE. An Initial Study/Negative Declaration (IS/ND) was prepared for the CAP, and the IS/ND and the CAP were adopted on May 20, 2014.

The City reissued an NOP for the current project on May 22, 2015. This reissued NOP removed the CAP from the proposed project, identified changes to the Draft LUTE since initial public release of the NOP in 2012, and established a new baseline for environmental and regulatory setting discussions. The NOP was circulated to the public, local, state, and federal agencies, and other interested parties to solicit comments. A scoping meeting was held on June 17, 2015, to receive additional comments. No public comments were received.

Areas of controversy and issues raised in response to the reissued NOP include the following:

- Project and cumulative (2035) impacts of the Draft LUTE on roadways (intersections and freeways), transit, and bicycle/pedestrian facilities
- Consideration of vehicle miles traveled (VMT) and trip reduction measures
- Consistency with Valley Transportation Authority (VTA) Congestion Management Program (CMP)
- Effects of sea level rise
- Development in areas under San Francisco Bay Conservation and Development Commission (BCDC) jurisdiction

The complete text of the reissued NOP and NOP comments and where they are addressed in the Draft EIR are included as **Appendix A**.

## ES.5 SUMMARY OF ENVIRONMENTAL IMPACTS

**Table ES-1** contains a summary of impacts for the Draft LUTE and proposed mitigation measures that would avoid or minimize potential impacts. In the table, the level of significance is indicated both before and after the implementation of each mitigation measure.

For detailed discussions of these environmental impacts, refer to the appropriate environmental topic section (i.e., Sections 3.1 through 3.13 and Section 4.0).

**TABLE ES-1**
**DRAFT LUTE IMPACTS AND PROPOSED MITIGATION MEASURES**

| Impact | Level of Significance Without Mitigation | Mitigation Measure | Resulting Level of Significance |
|---|---|---|---|
| **3.1 Land Use** | | | |
| **Impact 3.1.1** Implementation of the Draft LUTE would not result in the division of an existing community. | LS | None required. | LS |
| **Impact 3.1.2** Implementation of the LUTE would not lead to inconsistency with other land use plans, ordinances, and regulations adopted by other agencies that address physical effects to the environment. | LS | None required. | LS |
| **Impact 3.1.3** The Draft LUTE contains provisions that ensure it would not conflict with the Sunnyvale General Plan and Zoning Code. | LS | None required | LS |
| **Impact 3.1.4** No habitat conservation plan or natural community conservation plan has been adopted for land in Sunnyvale. | NI | None required. | NI |
| **Impact 3.1.5** Implementation of the Draft LUTE would not contribute to cumulative land use impacts associated with the division of an established community or conflicts with land use plans and regulations that provide environmental protection. | LCC | None required. | LCC |
| **3.2 Population, Housing, and Employment** | | | |
| **Impact 3.2.1** New development resulting from implementation of the Draft LUTE would accommodate residential and employment growth anticipated by the year 2035 and any additional growth capacity beyond the year 2035. | LS | None required. | LS |
| **Impact 3.2.2** Subsequent land use activities associated with implementation of the Draft LUTE would not result in the displacement of substantial numbers of people or housing. | LS | None required. | LS |

| Impact | Level of Significance Without Mitigation | Mitigation Measure | Resulting Level of Significance |
|---|---|---|---|
| **Impact 3.2.3** Subsequent land use activities associated with implementation of the Draft LUTE, in addition to 2035 buildout in surrounding Santa Clara County cities, could result in a cumulative increase in population and housing growth in Sunnyvale as well as in the surrounding region, along with associated environmental impacts. | LCC | None required. | LCC |
| **Impact 3.2.4** Subsequent land use activities associated with implementation of the Draft LUTE would not result in cumulative displacement of substantial numbers of people or housing. | LCC | None required. | LCC |
| **3.3 Hazards and Human Health** | | | |
| **Impact 3.3.1** Implementation of the Draft LUTE would provide for existing and future land uses that would involve the transportation, use, and disposal of hazardous materials in the city. Such activities would continue to be regulated in order to protect public health. | LS | None required. | LS |
| **Impact 3.3.2** Implementation of the Draft LUTE could result in upset and accident conditions involving the release of hazardous materials into the environment. Such activities would continue to be regulated in order to protect public health. | LS | None required. | LS |
| **Impact 3.3.3** Implementation of the Draft LUTE could lead to schools being located in the vicinity of land uses involving the use, transport, disposal, or release of hazardous materials. Such activities would continue to be regulated in order to protect public health, while new school facility siting would be regulated by health and safety requirements under the California Code of Regulations (Education Code). | LS | None required. | LS |
| **Impact 3.3.4** Implementation of the Draft LUTE could result in a safety hazard for people residing or working in the vicinity of public and private airports in the city. | LS | None required. | LS |
| **Impact 3.3.5** Implementation of the Draft LUTE would not interfere with adopted emergency response and evacuation plans in the city. | LS | None required. | LS |

| Impact | Level of Significance Without Mitigation | Mitigation Measure | Resulting Level of Significance |
|---|---|---|---|
| **Impact 3.3.6** Potential development under the Draft LUTE, along with increased urban development in Santa Clara County, would not result in cumulative hazards impacts. | LCC | None required. | LCC |
| **3.4 Transportation and Circulation** | | | |
| **Impact 3.4.1** Subsequent land use activities associated with implementation of the Draft LUTE would be accommodated by transit services and facilities in the area. | LS | None required. | LS |
| **Impact 3.4.2** Subsequent land use activities associated with implementation of the Draft LUTE would result in traffic operations in the Planning Area that would adversely impact transit travel times | S/CC | None feasible. | SU |
| **Impact 3.4.3** Subsequent land use activities associated with implementation of the Draft LUTE would increase the demand for bicycle facilities. However, implementation of Draft LUTE policies would improve and expand bicycle facilities and support bicycle use. | LS | None required. | LS |
| **Impact 3.4.4** Subsequent land use activities associated with implementation of the Draft LUTE would increase the demand for pedestrian facilities as well as provide improved pedestrian facilities and opportunities. | LS | None required. | LCC |
| **Impact 3.4.5** Implementation of the Draft LUTE would increase the number of people and vehicles in the Planning Area, which could increase the risk of vehicle and bicycle/pedestrian conflicts, and would intensify urban uses in areas adjacent to the Caltrain tracks. | LS | None required. | LS |
| **Impact 3.4.6** Implementation of the Draft LUTE would not adversely affect emergency access. | LS | None required. | LS |

| Impact | Level of Significance Without Mitigation | Mitigation Measure | Resulting Level of Significance |
|---|---|---|---|
| **Impact 3.4.7** Subsequent land use activities associated with implementation of the Draft LUTE would contribute to significant traffic operational impacts to intersections and freeway segments as compared to existing conditions. | CC | **MM 3.4.7a** The following roadway improvements shall be included in the City's fee program:<br>• Restripe the westbound leg to one left turn lane, one shared through-right lane, and one right turn lane.<br>Or<br>• Convert the intersection to a two-lane roundabout.<br>**MM 3.4.7b** The following roadway improvements shall be included in the City's fee program:<br>Construction of an exclusive southbound right turn lane for the length of the segment. The northbound leg will also require a second left turn lane. The eastbound inner left turn lane will require restricting the U-turn movement to allow for a southbound overlap right turn phase. Depending on the extent of the median on the north leg that could be removed, the north leg will be widened between 3 and 11 feet. The north leg will be realigned to accommodate the southbound right turn. There is existing right-of-way on the northeast quadrant of the intersection. The second northbound left turn lane will need to be the same length as the existing left turn lane. Right-of-way acquisition would be required from the southwest quadrant. The south leg will need to be realigned. The south leg will be widened by 10 feet. | CC/SU |
| **3.5 Air Quality** | | | |
| **Impact 3.5.1** Subsequent land use activities associated with implementation of the proposed Draft LUTE would not conflict with the Bay Area 2010 Clean Air Plan. | LS | None required. | LS |
| **Impact 3.5.2** Subsequent land use activities associated with implementation of the proposed Draft LUTE would not conflict with the Bay Area 2010 Clean Air Plan; however, such activities would result in a vehicle miles traveled increase greater than the projected population increase. Therefore, consistent with BAAQMD guidance, the Draft LUTE would result in an air quality violation. | S | None feasible. | SU |

*N – No Impact* *PS – Potentially Significant* *SU – Significant and Unavoidable* *LCC – Less than Cumulatively Considerable*
*LS – Less Than Significant* *S – Significant* *CC – Cumulatively Considerable*

| Impact | Level of Significance Without Mitigation | Mitigation Measure | Resulting Level of Significance |
|---|---|---|---|
| **Impact 3.5.3** Subsequent land use activities associated with implementation of the proposed Draft LUTE could result in short-term construction emissions that could violate or substantially contribute to a violation of federal and state standards. | S | **MM 3.5.3** The following will be added as policies to the Environmental Management Chapter of the General Plan:<br>NEW POLICY: Prior to the issuance of grading or building permits, the City of Sunnyvale shall ensure that the Bay Area Air Quality Management District's (BAAQMD) basic construction mitigation measures from Table 8-1 of the BAAQMD 2011 CEQA Air Quality Guidelines (or subsequent updates) are noted on the construction documents.<br>NEW POLICY: In the cases where construction projects are projected to exceed the BAAQMD's air pollutant significance thresholds for $NO_X$, $PM_{10}$, and/or $PM_{2.5}$, all off-road diesel-fueled equipment (e.g., rubber-tired dozers, graders, scrapers, excavators, asphalt paving equipment, cranes, tractors) shall be at least California Air Resources Board (CARB) Tier 3 Certified or better. | SU |
| **Impact 3.5.4** Subsequent land use activities associated with implementation of the proposed Draft LUTE would not contribute to localized concentrations of mobile-source CO that would exceed applicable ambient air quality standards. | LS | None required. | LS |
| **Impact 3.5.5** Subsequent land use activities associated with implementation of the proposed Draft LUTE could result in increased exposure of existing or planned sensitive land uses to construction-source toxic air contaminant (TAC) emissions. | PS | **MM 3.5.5** The following will be added as policies to the Environmental Management Chapter of the General Plan:<br>NEW POLICY: In the case when a subsequent project's construction span is greater than 5 acres and/or is scheduled to last more than two years, the subsequent project applicant shall be required to prepare a site-specific construction pollutant mitigation plan in consultation with Bay Area Air Quality Management District (BAAQMD) staff prior to the issuance of grading permits. A project-specific construction-related dispersion modeling acceptable to the BAAQMD shall be used to identify potential toxic air contaminant impacts, including diesel particulate matter. If BAAQMD risk thresholds (i.e., probability of contracting cancer is greater than 10 in one million) would be exceeded, mitigation | LS |

| Impact | Level of Significance Without Mitigation | Mitigation Measure | Resulting Level of Significance |
|---|---|---|---|
| | | measures shall be identified in the construction pollutant mitigation plan to address potential impacts and shall be based on site-specific information such as the distance to the nearest sensitive receptors, project site plan details, and construction schedule. The City shall ensure construction contracts include all identified measures and that the measures reduce the health risk below BAAQMD risk thresholds. Construction pollutant mitigation plan measures shall include but not be limited to:<br>1. Limiting the amount of acreage to be graded in a single day.<br>2. Restricting intensive equipment usage and intensive ground disturbance to hours outside of normal school hours.<br>3. Notifying affected sensitive receptors one week prior to commencing on-site construction so that any necessary precautions (such as rescheduling or relocation of outdoor activities) can be implemented. The written notification shall include the name and telephone number of the individual empowered to manage construction of the project. In the event that complaints are received, the individual empowered to manage construction shall respond to the complaint within 24 hours. The response shall include identification of measures being taken by the project construction contractor to reduce construction-related air pollutants. Such a measure may include the relocation of equipment. | |
| **Impact 3.5.6** Subsequent land use activities associated with implementation of the proposed Draft LUTE could result in the development of housing units (sensitive land uses) near stationary or mobile-source TACs. In addition, future development could generate new sources of TACs in the city, which could expose existing or new sensitive receptors to unhealthy levels of TACs and $PM_{2.5}$. | PS | **MM 3.5.6** The following will be added as policies to the Environmental Management Chapter of the General Plan:<br>NEW POLICY: The following measures shall be utilized in site planning and building designs to reduce TAC and $PM_{2.5}$ exposure where new receptors are located within 1,000 feet of emissions sources: | LS |

| Impact | Level of Significance Without Mitigation | Mitigation Measure | Resulting Level of Significance |
|---|---|---|---|
| | | • Future development that includes sensitive receptors (such as residences, schools, hospitals, daycare centers, or retirement homes) located within 1,000 feet of Caltrain, Central Expressway, El Camino Real, Lawrence Expressway, Mathilda Avenue, Sunnyvale-Saratoga Road, US 101, State Route 237, State Route 85, and/or stationary sources shall require site-specific analysis to determine the level of health risk. This analysis shall be conducted following procedures outlined by the BAAQMD. If the site-specific analysis reveals significant exposures from all sources (i.e., health risk in terms of excess cancer risk greater than 100 in one million, acute or chronic hazards with a hazard Index greater than 10, or annual $PM_{2.5}$ exposures greater than 0.8 $\mu g/m^3$) measures shall be employed to reduce the risk to below the threshold (e.g., electrostatic filtering systems or equivalent systems and location of vents away from TAC sources). If this is not possible, the sensitive receptors shall be relocated.<br>• Future nonresidential developments identified as a permitted stationary TAC source or projected to generate more than 100 heavy-duty truck trips daily will be evaluated through the CEQA process or BAAQMD permit process to ensure they do not cause a significant health risk in terms of excess cancer risk greater than 10 in one million, acute or chronic hazards with a hazard Index greater than 1.0, or annual $PM_{2.5}$ exposures greater than 0.3 $\mu g/m^3$ through source control measures.<br>• For significant cancer risk exposure, as defined by the BAAQMD, indoor air filtration systems shall be installed to effectively reduce particulate levels to avoid adverse public health impacts. Projects shall submit performance specifications and design details to demonstrate that lifetime residential exposures would not result in adverse public health impacts (less than 10 in one million chances). | |

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*LS – Less Than Significant* *S – Significant* *CC – Cumulatively Considerable*

| Impact | Level of Significance Without Mitigation | Mitigation Measure | Resulting Level of Significance |
|---|---|---|---|
| **Impact 3.5.7** Subsequent land use activities associated with implementation of the proposed Draft LUTE could include sources that could create objectionable odors affecting a substantial number of people or expose new residents to existing sources of odor. | PS | The following will be added as a policy and actions to the Environmental Management Chapter of the General Plan:<br>NEW POLICY: Avoid Odor Conflicts. Coordinate land use planning to prevent new odor complaints.<br>NEW ACTION: Consult with the BAAQMD to identify the potential for odor complaints from various existing and planned or proposed land uses in Sunnyvale. Use BAAQMD odor screening distances or city-specific screening distances to identify odor potential.<br>NEW ACTION: Prohibit new sources of odors that have the potential to result in frequent odor complaints unless it can be shown that potential odor complaints can be mitigated.<br>NEW ACTION: Prohibit sensitive receptors from locating near odor sources where frequent odor complaints would occur, unless it can be shown that potential odor complaints can be mitigated. | LS |
| **Impact 3.5.8** Subsequent land use activities associated with implementation of the proposed Draft LUTE, in combination with cumulative development in the SFBAAB, could result in a cumulatively considerable net increase of criteria air pollutants for which the air basin is designated nonattainment. | CC | Implement mitigation measures MM 3.5.3 and MM 3.5.6. | CC/SU |
| **3.6 Noise** | | | |
| **Impact 3.6.1** New development under the proposed LUTE would include noise-sensitive land uses that would be located in varying noise environments. New development would be required to comply with City noise standards set forth in the General Plan and the Municipal Code and would not change those standards. The proposed project would not expose new residents to traffic noise or stationary sources of noise in excess of established standards. | LS | None required. | LS |

| Impact | Level of Significance Without Mitigation | Mitigation Measure | Resulting Level of Significance |
|---|---|---|---|
| **Impact 3.6.2** New development under the Draft LUTE would generate increased local traffic volumes that could cause a substantial permanent increase in ambient noise levels for existing noise-sensitive receptors. | SU | None available. | SU |
| **Impact 3.6.3** The Draft LUTE would provide for development of sensitive land uses in areas of the city adjacent to the existing Caltrain and light rail corridors. Groundborne vibration from construction activities could be substantial. Implementation of the Draft LUTE would not result in excessive operational vibration but does not address construction vibration. | PS | **MM 3.6.3** The following will be included as a policy or implementation measure to the Safety and Noise Chapter of the General Plan:<br>New development and public projects shall employ site-specific noise attenuation measures during construction to reduce the generation of construction noise and vibration. These measures shall be included in a Noise Control Plan that shall be submitted for review and approval by the City. Measures specified in the Noise Control Plan and implemented during construction shall include, at a minimum, the following noise control strategies:<br>• Equipment and trucks used for construction shall use the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds;<br>• Impact tools (e.g., jackhammers, pavement breakers, and rock drills) used for construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools; and<br>• Stationary noise sources shall be located as far from adjacent receptors as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or include other measures.<br>• Noise and vibration reducing pile-driving techniques shall be employed during construction and will be monitored to ensure no damage to nearby structures occurs (i.e., vibrations above peak particle velocity (PPVs) of 0.25 | LS |

| Impact | Level of Significance Without Mitigation | Mitigation Measure | Resulting Level of Significance |
|---|---|---|---|
| | | inches per second at nearby structures). These techniques shall include:<br>- Installing intake and exhaust mufflers on pile-driving equipment;<br>- Vibrating piles into place when feasible, and installing shrouds around the pile- driving hammer where feasible;<br>- Implementing "quiet" pile-driving technology (such as pre-drilling of piles and the use of more than one pile driver to shorten the total pile driving duration), where feasible, in consideration of geotechnical and structural requirements and conditions;<br>- Using cushion blocks to dampen impact noise, if feasible based on soil conditions. Cushion blocks are blocks of material that are used with impact hammer pile drivers. They consist of blocks of material placed atop a piling during installation to minimize noise generated when driving the pile. Materials typically used for cushion blocks include wood, nylon and micarta (a composite material); and<br>- At least 48 hours prior to pile-driving activities, notifying building owners and occupants within 600 feet of the project area of the dates, hours, and expected duration of such activities. | |
| **Impact 3.6.4** New development provided for by the Draft LUTE could result in the exposure of persons to or generation of noise levels in excess of City noise standards. | PS | Implementation of mitigation measure MM 3.6.3. | LS |
| **Impact 3.6.5** Development pursuant to the Draft LUTE would include noise-sensitive land uses in the vicinity of Moffett Federal Airfield. However, with compliance with ALUC and City noise and land use policies and standards, new development would not expose new residents and uses to substantial airport noise impacts. | LS | None required. | LS |

| Impact | Level of Significance Without Mitigation | Mitigation Measure | Resulting Level of Significance |
|---|---|---|---|
| **Impact 3.6.6** New development pursuant to the Draft LUTE would contribute to a substantial increase in permanent traffic noise levels on area roadways. | SU/CC | None available. | SU/CC |
| **3.7 Geology, Soils, and Paleontological Resources** | | | |
| **Impact 3.7.1** Future development associated with implementation of the Draft LUTE would result in the exposure of people, structures, and infrastructure to strong seismic ground shaking. However, California Building Code standards, as implemented by the City through Chapter 16.16 of the Municipal Code, would address seismic hazards. | LS | None required. | LS |
| **Impact 3.7.2** Implementation of the Draft LUTE would allow intensification of some land uses that could involve construction and grading activities, which could increase soil erosion. However, continued implementation of the City's Municipal Code and state Construction General Permit requirements would ensure that there are no adverse impacts from erosion. | LS | None required. | LS |
| **Impact 3.7.3** Implementation of the Draft LUTE could allow development on a geologic unit or soil that is unstable, thus creating risks to life and property. However, continued adherence to the City's Municipal Code and compliance with the CBC would ensure that potential development is not adversely impacted by unstable soils. | LS | None required. | LS |
| **Impact 3.7.4** Implementation of the Draft LUTE could indirectly result in the potential disturbance of previously unknown paleontological resources (i.e., fossils and fossil formations) in Sunnyvale. | LS | None required. | LS |
| **Impact 3.7.5** Subsequent land use activities associated with implementation of the Draft LUTE, in combination with other existing, planned, proposed, and reasonably foreseeable development in the city, may result in cumulative geologic and soil hazards. However, adherence to the City's Municipal Code would ensure that potential future development is not adversely impacted by cumulative geologic and seismic hazards. | LCC | None required. | LCC |

| Impact | Level of Significance Without Mitigation | Mitigation Measure | Resulting Level of Significance |
|---|---|---|---|
| **Impact 3.7.6** Subsequent land use activities associated with implementation of the Draft LUTE, in combination with other existing, planned, proposed, and reasonably foreseeable development in Santa Clara County, may result in potentially significant cumulative impacts to paleontological resources. | LCC | None required. | LCC |
| **3.8 Hydrology and Water Quality** | | | |
| **Impact 3.8.1** Future development or redevelopment pursuant to the Draft LUTE would include construction activities that could expose soil to erosion during storm events, causing degradation of water quality. Such development or redevelopment could also increase impervious surfaces, and as a result, alter drainage patterns and increase drainage rates and runoff over existing conditions. Runoff from urban uses may also contribute to the degradation of water quality in the area. However, these impacts would be reduced through the implementation of Draft LUTE policies and actions, in conjunction with compliance with existing regulatory programs. | LS | None required. | LS |
| **Impact 3.8.2** Implementation of the Draft LUTE would result in the exposure of additional people and/or structures to potential risks from flooding hazards and sea level rise. However, with compliance with existing regulations in conjunction with Draft LUTE policies and actions, this impact is considered less than significant. | LS | None required. | LS |
| **Impact 3.8.3** Implementation of the Draft LUTE would not result in the exposure of additional people and/or structures to potential risks from inundation by seiche, tsunami, or mudflow. | LS | None required. | LS |
| **Impact 3.8.4** Future land uses and development pursuant to the Draft LUTE, in combination with current land uses in the local watersheds and future planned land uses and development in the cities and other agencies in the Santa Clara Basin, could introduce additional non-point source pollutants to surface waters. | LCC | None required. | LCC |

| Impact | Level of Significance Without Mitigation | Mitigation Measure | Resulting Level of Significance |
|---|---|---|---|
| **Impact 3.8.5** Implementation of the Draft LUTE could increase impervious surfaces and alter drainage conditions and rates in Sunnyvale, which could contribute to cumulative flood conditions within the Santa Clara Basin. | LCC | None required. | LCC |
| **3.9 Biological Resources** | | | |
| **Impact 3.9.1** Future land uses and development consistent with the Draft LUTE could result in the loss of special-status plant and animal species and other species protected by state and federal law. | LS | None required. | LS |
| **Impact 3.9.2** Future land uses and development consistent with the Draft LUTE could adversely affect protected wetlands and other waters as well as riparian habitats. | LS | None required. | LS |
| **Impact 3.9.3** Implementation of the Draft LUTE would result in revitalization and development of existing urban areas of Sunnyvale and would not expand the existing urban footprint of the city so as to substantially conflict with wildlife movement. | LS | None required. | LS |
| **Impact 3.9.4** Implementation of the Draft LUTE would not conflict with any adopted biological resource–related protection plans or standards. | LS | None required. | LS |
| **Impact 3.9.5** Implementation of the Draft LUTE could contribute to significant cumulative impacts on special-status species and natural habitats. | CC | None required. | LCC |
| **3.10 Cultural Resources** | | | |
| **Impact 3.10.1** Implementation of the Draft LUTE could indirectly result in impacts on historic structures. | PS | None available. | SU |
| **Impact 3.10.2** Implementation of the Draft LUTE could indirectly result in potential disturbance of undiscovered cultural resources (i.e., prehistoric sites, historic sites, isolated artifacts and features) and unrecorded human remains. | LS | None required. | LS |

| Impact | Level of Significance Without Mitigation | Mitigation Measure | Resulting Level of Significance |
|---|---|---|---|
| **Impact 3.10.3** Implementation of the Draft LUTE, in addition to existing, approved, proposed, and reasonably foreseeable development in the region, could result in significant cumulative impacts to cultural resources in Santa Clara County. | CC | None available. | CC/SU |
| **3.11 Utilities and Service Systems** | | | |
| **Impact 3.11.1.1** Subsequent development under the Draft LUTE would increase the demand for water, but new water supply entitlements or expansion of local or regional water supplies would not be required. | LS | None required. | LS |
| **Impact 3.11.1.2** Subsequent development under the Draft LUTE would increase demand for water supply and thus require additional water supply infrastructure to meet the projected demands. Implementation of Draft LUTE policies and continued implementation of City standards would ensure adequate water supply infrastructure is provided. | LS | None required. | LS |
| **Impact 3.11.1.3** Implementation of the Draft LUTE, in combination with other existing, planned, proposed, approved, and reasonably foreseeable development in the cumulative setting, would increase the cumulative demand for water supplies and related infrastructure. | LCC | None required. | LCC |
| **Impact 3.11.2.1** Subsequent development under the Draft LUTE would increase wastewater generation in the city. However, projected wastewater flows would remain within the capacity of Sunnyvale's wastewater collection and treatment system and would not exceed the wastewater treatment requirements of the RWQCB. | LS | None required. | LS |
| **Impact 3.11.2.2** Subsequent development under the Draft LUTE would increase wastewater flows and require the use of infrastructure and treatment facilities to accommodate anticipated demands. | LS | None required. | LS |
| **Impact 3.11.2.3** Implementation of the Draft LUTE, along with other existing, planned, proposed, approved, and reasonably foreseeable development in the cumulative setting, would contribute to the cumulative demand for wastewater service. | LCC | None required. | LCC |

*N – No Impact* *PS – Potentially Significant* *SU – Significant and Unavoidable* *LCC – Less than Cumulatively Considerable*
*LS – Less Than Significant* *S – Significant* *CC – Cumulatively Considerable*

| Impact | Level of Significance Without Mitigation | Mitigation Measure | Resulting Level of Significance |
|---|---|---|---|
| **Impact 3.11.3.1** Subsequent development under the Draft LUTE would generate increased amounts of solid waste that would need to be disposed of in landfills or recycled. | LS | None required. | LS |
| **Impact 3.11.3.2** Implementation of the Draft LUTE would not result in conflicts with any federal, state, or local solid waste regulations. | LS | None required. | LS |
| **Impact 3.11.3.3** Implementation of the Draft LUTE, along with other existing, planned, proposed, approved, and reasonably foreseeable development in the region, would result in increased demand for landfill capacity. | LCC | None required. | LCC |
| **Impact 3.11.4.1** Development of subsequent projects under the Draft LUTE would result in increased energy demand under both project and cumulative conditions. | LCC | None required. | LCC |
| **3.12 Visual Resources and Aesthetics** | | | |
| **Impact 3.12.1** Implementation of the Draft LUTE would not have a substantial effect on a scenic vista. | LS | None required. | LS |
| **Impact 3.12.2** Implementation of the Draft LUTE would not result in the significant alteration of scenic resources associated with a scenic highway. | NI | None required. | NI |
| **Impact 3.12.3** Implementation of the Draft LUTE would not result in substantial alteration of the city's visual character. | LS | None required. | LS |
| **Impact 3.12.4** Implementation of the Draft LUTE could result in an increase of daytime glare and/or nighttime lighting. However, continued compliance with the Citywide Design Guidelines and existing lighting regulations would result in a less than significant impact. | LS | None required. | LS |
| **Impact 3.12.5** Implementation of the Draft LUTE, in combination with cumulative development in surrounding communities, could result in potentially significant light and glare impacts. | LCC | None required. | LCC |

| Impact | Level of Significance Without Mitigation | Mitigation Measure | Resulting Level of Significance |
|---|---|---|---|
| **3.13 Greenhouse Gases and Climate Change** | | | |
| **Impact 3.13.1** The Draft LUTE may conflict with the Sunnyvale Climate Action Plan (CAP), as it consists of growth beyond what was utilized in the CAP. | CC | **MM 3.13.1** Upon adoption of the Draft LUTE, the City will update the Climate Action Plan to include the new growth projects of the Draft LUTE and make any necessary adjustments to the CAP to ensure year 2020 and 2035 greenhouse gas emission reduction targets are attained. | LCC |
| **4.0 Public Services** | | | |
| **Impact 4.1.1** Implementation of the Draft LUTE would increase the demand for fire protection and emergency medical services. Any new or expanded fire or emergency medical facilities associated with increased demand have been programmatically considered in the technical analyses of this DEIR as part of overall development of the city. | LS | None required. | LS |
| **Impact 4.1.2** Implementation of the Draft LUTE, along with potential development in the city, would increase cumulative demand for fire protection and emergency medical services. | LCC | None required. | LCC |
| **Impact 4.2.1** Implementation of the Draft LUTE would increase the demand for law enforcement services. Any new or expanded law enforcement facilities associated with increased demand have been programmatically considered in the technical analyses of this Draft EIR as part of overall development of the city. | LS | None required. | LS |
| **Impact 4.2.2** Implementation of the Draft LUTE, along with potential development in the city, would increase cumulative demand for law enforcement services. | LCC | None required. | LCC |
| **Impact 4.3.1** Implementation of the Draft LUTE would increase population in the local school districts' service areas, which would subsequently increase student enrollment in local schools. Subsequent development under the Draft LUTE would be subject to school facility fees to pay for additional school facility needs. | LS | None required. | LS |

| Impact | Level of Significance Without Mitigation | Mitigation Measure | Resulting Level of Significance |
|---|---|---|---|
| **Impact 4.3.2** Population growth associated with implementation of the Draft LUTE, in combination with other existing, planned, proposed, approved, and reasonably foreseeable development within the boundaries of the school districts serving Sunnyvale, would result in a cumulative increase in student enrollment and could require new or expanded school facilities to accommodate the growth. | LCC | None required. | LCC |
| **Impact 4.4.1** Implementation of the Draft LUTE would result in an increase in the city's population, which could subsequently increase the use of existing parks and recreational facilities that could result in impacts to the physical environment. | LS | None required. | LS |
| **Impact 4.4.2** Implementation of the Draft LUTE, along with anticipated future development throughout the region, would increase the use of existing parks and require additional park and recreational facilities. | LCC | None required. | LCC |

# 1.0 Introduction

This Draft Environmental Impact Report (Draft EIR; DEIR) was prepared in accordance with and in fulfillment of the California Environmental Quality Act (CEQA) and the CEQA Guidelines. As described in CEQA Guidelines Section 15121(a), an environmental impact report (EIR) is a public informational document that assesses the potentially significant environmental impacts of a project. CEQA requires that an EIR be prepared by the agency with primary responsibility over the approval of a project (the lead agency). The City of Sunnyvale (City) is the lead agency for the proposed City of Sunnyvale Land Use and Transportation Element (LUTE) (Draft LUTE; proposed project). Public agencies are charged with the duty to consider and minimize environmental impacts of proposed development where feasible and have the obligation to balance economic, environmental, and social factors.

## 1.1 PURPOSE OF THE EIR

This Draft EIR has been prepared to provide the public and responsible and trustee agencies with information about the probable effects of adoption and implementation of the comprehensive update of the City of Sunnyvale LUTE. This Draft EIR identifies policies and actions in the Draft LUTE that mitigate these effects, as well as any necessary mitigation measures to minimize significant impacts to the environment from implementation of the Draft LUTE. This EIR also evaluates reasonable alternatives to the proposed project.

CEQA requires the preparation of an EIR prior to approving any project that may have a significant effect on the environment. The City has determined that the Draft LUTE is a project under CEQA.

The City of Sunnyvale has determined that preparation of an EIR is the appropriate CEQA-required documentation because of the potential for significant environmental impacts that could result from implementation of the Draft LUTE. This Draft EIR evaluates the existing environmental resources in the vicinity of the city and its sphere of influence, analyzes potential impacts on those resources due to the Draft LUTE, and if necessary, identifies mitigation measures that could avoid or reduce the magnitude of those impacts. This EIR provides a programmatic review of the environmental effects of land uses and implementation of the Draft LUTE. This EIR will be used to evaluate the direct and indirect environmental effects of subsequent development under the Draft LUTE (i.e., residential development, commercial structures, park sites, recreation facility development, and infrastructure improvements).

## 1.2 KNOWN TRUSTEE AND RESPONSIBLE AGENCIES

For the purpose of CEQA, the term *trustee agency* means a state agency having jurisdiction by law over natural resources affected by a project which are held in trust for the people of the state of California. Specifically, the following trustee agencies may have an interest in the Draft LUTE and its implementation:

- California Department of Fish and Wildlife (CDFW)
- California Department of Parks and Recreation
- California State Lands Commission
- San Francisco Bay Conservation and Development Commission (BCDC)

In CEQA, the term *responsible agency* includes all public agencies other than the lead agency that may have discretionary actions associated with the implementation of the proposed project or an aspect of subsequent implementation of the proposed project. Since potential future implementation decisions may occur many years from now, they cannot be known with certainty. However, the following agencies may have some role in implementing the proposed project and have been identified as potential responsible agencies:

- Bay Area Air Quality Management District (BAAQMD)
- San Francisco Bay Conservation and Development Commission (BCDC)
- California Department of Fish and Wildlife (CDFW)
- California Department of Housing and Community Development (HCD)
- California Department of Transportation (Caltrans)
- California State Lands Commission
- San Francisco Bay Regional Water Quality Control Board (RWQCB)
- Federal Emergency Management Agency (FEMA)
- State Water Resources Control Board (SWRCB)
- US Army Corps of Engineers (USACE)
- US Environmental Protection Agency (EPA)
- US Fish and Wildlife Service (USFWS)

## 1.3 TYPE OF DOCUMENT

The CEQA Guidelines identify several types of EIRs, each applicable to different project circumstances. This EIR serves as a program EIR. Program EIRs are defined by the State CEQA Guidelines (Section 15168) as:

> *[A] series of actions that may be characterized as one large project and may be related either:*
>
> *1) Geographically;*
>
> *2) As logical parts in the chain of contemplated actions;*
>
> *3) In connection with the issuance of rules, regulations, plans or other general criteria to govern the conduct of a continuing program; or*
>
> *4) As individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which may be mitigated in similar ways.*

The program-level analysis considers the broad environmental effects of the overall proposed project. This EIR will be used to evaluate subsequent projects (public and private) under the Draft LUTE with CEQA and the State CEQA Guidelines. When individual projects or activities under the Draft LUTE are proposed, the City would be required to examine the projects or activities to determine whether their effects were adequately analyzed in this EIR as provided under State CEQA Guidelines Sections 15168 and 15183.

## 1.4 INTENDED USE OF THE EIR

This Draft EIR is intended to evaluate the environmental impacts of adoption and implementation of the proposed project. The document will serve as a source of information in the review of subsequent planning and development proposals, including subsequent environmental review of development projects, for infrastructure provision and individual development proposals and for public facilities to serve new development.

## 1.5 ORGANIZATION AND SCOPE

Sections 15122 through 15132 of the State CEQA Guidelines identify content requirements for Draft and Final EIRs. An EIR must include a description of the environmental setting, an environmental impact analysis, mitigation measures, alternatives, significant irreversible environmental changes, growth-inducing impacts, and cumulative impacts. The environmental issues addressed in the Draft EIR were established through review of environmental documentation developed for the project, environmental documentation for nearby projects, and public agency responses to the Notice of Preparation. This Draft EIR is organized in the following sections:

### SECTION ES – EXECUTIVE SUMMARY

This section provides a project narrative and identifies environmental impacts and mitigation measures in a summary table consistent with State CEQA Guidelines Section 15123.

### SECTION 1.0 – INTRODUCTION

This section provides an overview describing the intended use of the EIR as well as the review and certification process.

### SECTION 2.0 – PROJECT DESCRIPTION

This section provides a detailed description of the proposed project and project objectives, along with background information and physical characteristics consistent with State CEQA Guidelines Section 15124.

### SECTION 3.0 – ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

This section contains technical analyses relative to each environmental topic. Included in this section is a comprehensive analysis related to impacts and mitigations that correspond to project implementation. Each subsection contains a description of the existing setting of the project area. The environmental topics are summarized as follows:

- Land Use
- Population, Housing, and Employment
- Hazards and Human Health
- Transportation and Circulation
- Air Quality
- Noise
- Geology, Soils, and Paleontological Resources
- Hydrology and Water Quality
- Biological Resources
- Cultural Resources
- Utilities and Service Systems
- Visual Resources and Aesthetics
- Greenhouse Gases and Climate Change Adaptation

### SECTION 4.0 – PUBLIC SERVICES

This section contains technical analyses relative to public services. Included in this section is a comprehensive analysis related to impacts and mitigations that correspond to project implementation. Each subsection contains a description of the existing setting of the project area. Public services topics include fire protection and emergency medical services, law enforcement, public schools, and parks and recreation.

### SECTION 5.0 –ALTERNATIVES

This section discusses alternatives to the proposed project, including the CEQA mandatory "No Project" alternative, that are intended to avoid or reduce significant environmental impacts of the Draft LUTE.

### SECTION 6.0 – OTHER CEQA ANALYSIS

This section contains discussions of significant irreversible environmental changes that would be involved in the proposed project should it be implemented, as well as unavoidable significant environmental effects, including those that can be mitigated but not reduced to a level of insignificance.

### SECTION 7.0 – REPORT PREPARERS

This section lists all authors and agencies that assisted in the preparation of the report by name, title, and company or agency affiliation.

### TECHNICAL APPENDICES

The appendices contain technical material prepared to support the analysis.

## 1.6 ENVIRONMENTAL REVIEW PROCESS

The review and certification process for the EIR will involve the following general procedural steps:

### NOTICE OF PREPARATION

In accordance with Section 15082 of the State CEQA Guidelines, the City has prepared a Notice of Preparation (NOP) for the project. The City was identified as the lead agency for the Draft LUTE.

A NOP dated March 2, 2012, was completed for the project under the project title *Sunnyvale Land Use and Transportation Element (LUTE) Update and Climate Action Plan (CAP)* (SCH #2012032003), and a scoping meeting was held on March 22, 2012. Since that time, the scope of the proposed project has changed. Specifically, the Climate Action Plan (CAP) was separated from the proposed project and presented to the City Council for adoption independently from the Draft LUTE. An Initial Study/Negative Declaration (IS/ND) was prepared for the CAP, and the IS/ND and the CAP were adopted on May 20, 2014.

The City reissued a NOP for the current project on May 22, 2015. This reissued NOP removed the CAP from the proposed project, identified changes to the Draft LUTE since initial public release of the NOP in 2012, and established a new baseline for environmental and regulatory setting discussions. The NOP was circulated to the public, local, state, and federal agencies, and other interested parties to solicit comments. A scoping meeting was held on June 17, 2015, to receive additional comments. Concerns raised in response to the reissued NOP were considered during preparation of the Draft EIR. The reissued NOP and responses by interested parties are presented in **Appendix A.** A list of comments received, issues identified, and the location in which they are addressed in the Draft EIR is provided in Table A-1. **Appendix A** also includes the previous NOP and comments received in 2012. Under CEQA, the previous (2012) NOP comments are not required to be considered; however, the comment letters have been included in this Draft EIR for completeness.

### DRAFT EIR

This document constitutes the Draft EIR. The Draft EIR contains a description of the project, description of the environmental setting, identification of project impacts, and mitigation measures for impacts found to be significant, as well as an analysis of project alternatives. Upon completion of the Draft EIR, the City will file the Notice of Completion (NOC) with the Governor's Office of Planning and Research to begin the public review period (Public Resources Code Section 21161).

### PUBLIC NOTICE/PUBLIC REVIEW

Concurrent with the NOC, the City will provide public notice of the availability of the Draft EIR for public review and invite comment from the general public, agencies, organizations, and other interested parties. The public review and comment period is required to be a minimum of 45 days. Public comment on the Draft EIR will be accepted both in written form and orally at a

public hearing. Notice of the time and location of the hearing will be published prior to the hearing. All comments or questions regarding the Draft EIR should be addressed to:

**City of Sunnyvale**
Community Development
456 West Olive Avenue
PO Box 3707
Sunnyvale, CA 94088-3707
Attention: Jeff Henderson

Email: horizon2035@sunnyvale.ca.gov

### RESPONSE TO COMMENTS/FINAL EIR

Following the public review period, a Final EIR (FEIR) will be prepared. The Final EIR will respond to written comments received during the public review period and to oral comments made at any public hearing.

### CERTIFICATION OF THE EIR/PROJECT CONSIDERATION

The City will review and consider the Final EIR. If the City finds that the FEIR is "adequate and complete," the City may certify the FEIR. Upon review and consideration of the FEIR, the City may act upon the Draft LUTE. A decision to approve the project would be accompanied by written findings in accordance with State CEQA Guidelines Section 15091 and, if applicable, Section 15093. The City would also adopt a Mitigation Monitoring and Reporting Program, as described below, for mitigation measures that have been incorporated into or imposed upon the project to reduce or avoid significant effects on the environment. The Mitigation Monitoring and Reporting Program will be designed to ensure that these measures are carried out during project implementation.

### MITIGATION MONITORING

Public Resources Code Section 21081.6(a) requires lead agencies to adopt a mitigation monitoring and reporting program to describe measures that have been adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment. The specific "reporting or monitoring" program required by CEQA is not required to be included in the EIR; however, the Mitigation Monitoring and Reporting Program will be presented to the City Council for adoption and incorporation into the General Plan.

# 2.0 Project Description

This section of the Draft Environmental Impact Report (Draft EIR; DEIR) comprises the project description of the draft City of Sunnyvale Land Use and Transportation Element (Draft LUTE; proposed project). The purpose of the project description is to describe the project in a way that will be meaningful to the public, reviewing agencies, and decision-makers. As described in Section 15124 of the California Environmental Quality Act (CEQA) Guidelines, a complete project description must contain the following information but is not required to supply extensive detail beyond that needed for evaluation and review of the environmental impact: (1) the location and boundaries of the proposed project on a regional and detail map; (2) a statement of objectives sought by the proposed project; (3) a general description of the proposed project's technical, economic, and environmental characteristics; and (4) a statement briefly describing the intended uses of the EIR.

State law (California Government Code Section 65300) requires that each California city and county adopt a comprehensive, long-term general plan for its physical development. Seven elements are required for every general plan: land use, circulation, housing, conservation, open space, noise, and safety. The City last updated the Land Use and Circulation elements of its General Plan in 1995. These elements are currently, and will remain, incorporated into the Land Use and Transportation chapter of the Sunnyvale General Plan. The Land Use and Transportation chapter also contains the Open Space Element, which is not a part of the proposed project and will not be updated at this time.

## 2.1 REGIONAL AND LOCAL SETTING

### PROJECT LOCATION

The City of Sunnyvale LUTE Planning Area is located in Santa Clara County, California (**Figure 2.0-1**). The Planning Area includes Sunnyvale and the City's Sphere of Influence. The Sphere of Influence is located in unincorporated Santa Clara County and comprises a portion of Moffett Federal Airfield in unincorporated Santa Clara County and one unincorporated county island. The Planning Area boundaries are consistent with the currently adopted General Plan and consist of approximately 24 square miles of land located in the northwestern portion of Santa Clara County (**Figure 2.0-2**). Sunnyvale is located in the greater San Francisco Bay Area, southeast of Mountain View, west of Santa Clara, and north of Cupertino.

### PROJECT SETTING

The general area where Sunnyvale is located is commonly referred to as the South Bay and is also known as the Silicon Valley, as this region is home to many of the world's largest technology corporations. Sunnyvale is almost entirely surrounded by the cities of Santa Clara, Cupertino, Los Altos, and Mountain View and San Francisco Bay, generally between Calabazas Creek on the east and Stevens Creek on the west. Sunnyvale is located between two major earthquake faults, the San Andreas fault approximately 14 miles to the west and the Hayward fault approximately 18 miles to the east.

Sunnyvale is at the crossroads of five of the South Bay's major freeways and expressways—US 101 and State Route (SR) 237 to the north, State Route (SR) 85 to the west, Interstate 280 (I-280) to the south, and Lawrence Expressway to the east. It also has airports nearby, including San Jose International and Moffett Federal Airfield. Elevations in the city rise slightly from sea level at San Francisco Bay to 300 feet in the Planning Area's southwest corner.

Nearly all properties in Sunnyvale are developed; only 0.9 percent of land area is vacant. Residential areas account for the single largest land use, amounting to 54 percent of the developed area, while industrial and office uses constitute 25 percent of the developed area, excluding baylands and streets. The balance comprises open space and commercial and other urban land uses.

## 2.2 PROJECT BACKGROUND

The City's current General Plan was reorganized in July 2011 and was consolidated and assembled from 22 separate General Plan chapters and subchapters that were adopted and updated at different times. With the General Plan consolidation effort, narrative was reorganized and streamlined. The overall focus of the Sunnyvale General Plan is to guide the physical development of the Planning Area. The Draft LUTE establishes the fundamental framework as to how the Planning Area would be laid out (streets and buildings) and how various land uses, developments, and transportation facilities would function together. The Draft LUTE has been developed to help guide the City's land use and transportation decisions for an approximate 20-year horizon—a time frame that is referred to as Horizon 2035.

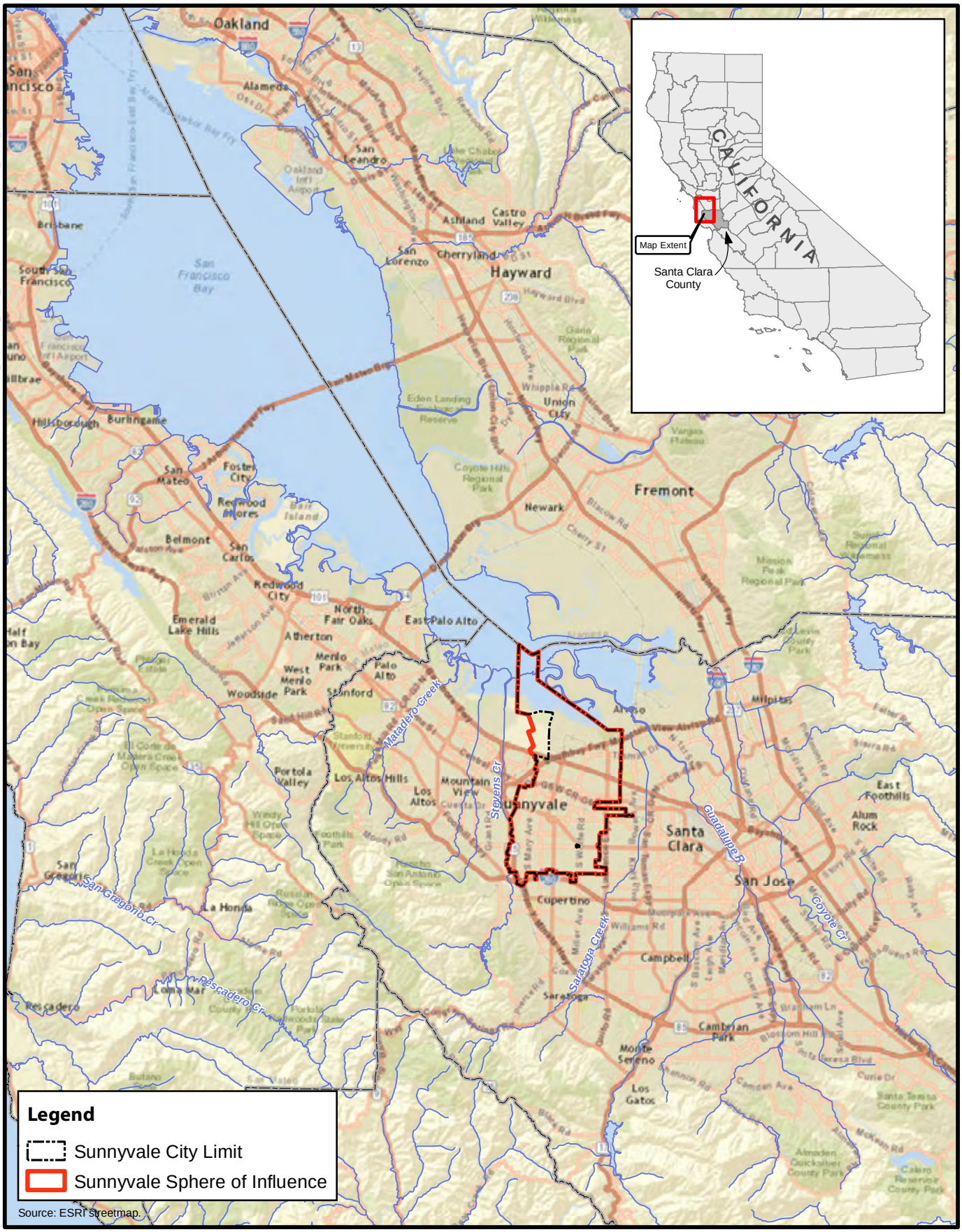
The Draft LUTE is intended to implement local land use and transportation planning efforts in a manner consistent with the Metropolitan Transportation Commission's (MTC) Sustainable Communities Strategy (SCS), called Plan Bay Area. Plan Bay Area is a regional growth strategy required under Senate Bill (SB) 375 that, in combination with transportation policies and programs, strives to reduce greenhouse gas (GHG) emissions. It is designed to achieve regional GHG reduction targets set by the California Air Resources Board. The SCS is part of a Regional Transportation Plan, must comply with federal law, and must be based on "current planning assumptions" that include the information in local general plans.

The public participation and development process for the Draft LUTE included significant involvement from the Horizon 2035 Advisory Committee, City-sponsored community workshops, stakeholder focus group meetings, development of a project website, and interagency coordination.

The City first began developing the Draft LUTE in 2011. At that time, the City convened the Horizon 2035 Advisory Committee. The Draft LUTE was also initially developed alongside Sunnyvale's Climate Action Plan (CAP). In 2014, the City determined that the Climate Action Plan should be adopted as a separate project. An Initial Study/Negative Declaration (IS/ND) was prepared for the CAP, and the IS/ND and the CAP were adopted on May 20, 2014. The CAP is considered a Qualified Climate Action Plan and Plan for the Reduction of Greenhouse Gas Emissions within the contexts established by State CEQA Guidelines Section 15183.5 and the Bay Area Air Quality Management District (BAAQMD) CEQA Guidelines.

Therefore, the proposed project now includes only the Draft LUTE. A second round of outreach, which included input from the Horizon 2035 Advisory Committee, updates to the project website, online town halls, and interagency coordination, was conducted between March and September 2015.

T:_GIS\Santa_Clara_County\Mxds\Sunnyvale\CAP_LUTE_NOP\Figure 1.mxd (6/27/2016)




0 2 4
MILES

**FIGURE 2.0-1**
Regional Location

Michael Baker INTERNATIONAL

T:_GIS\Santa_Clara_County\Mxds\Sunnyvale\CAP_LUTE_NOP\Figure 2.mxd (6/27/2016)

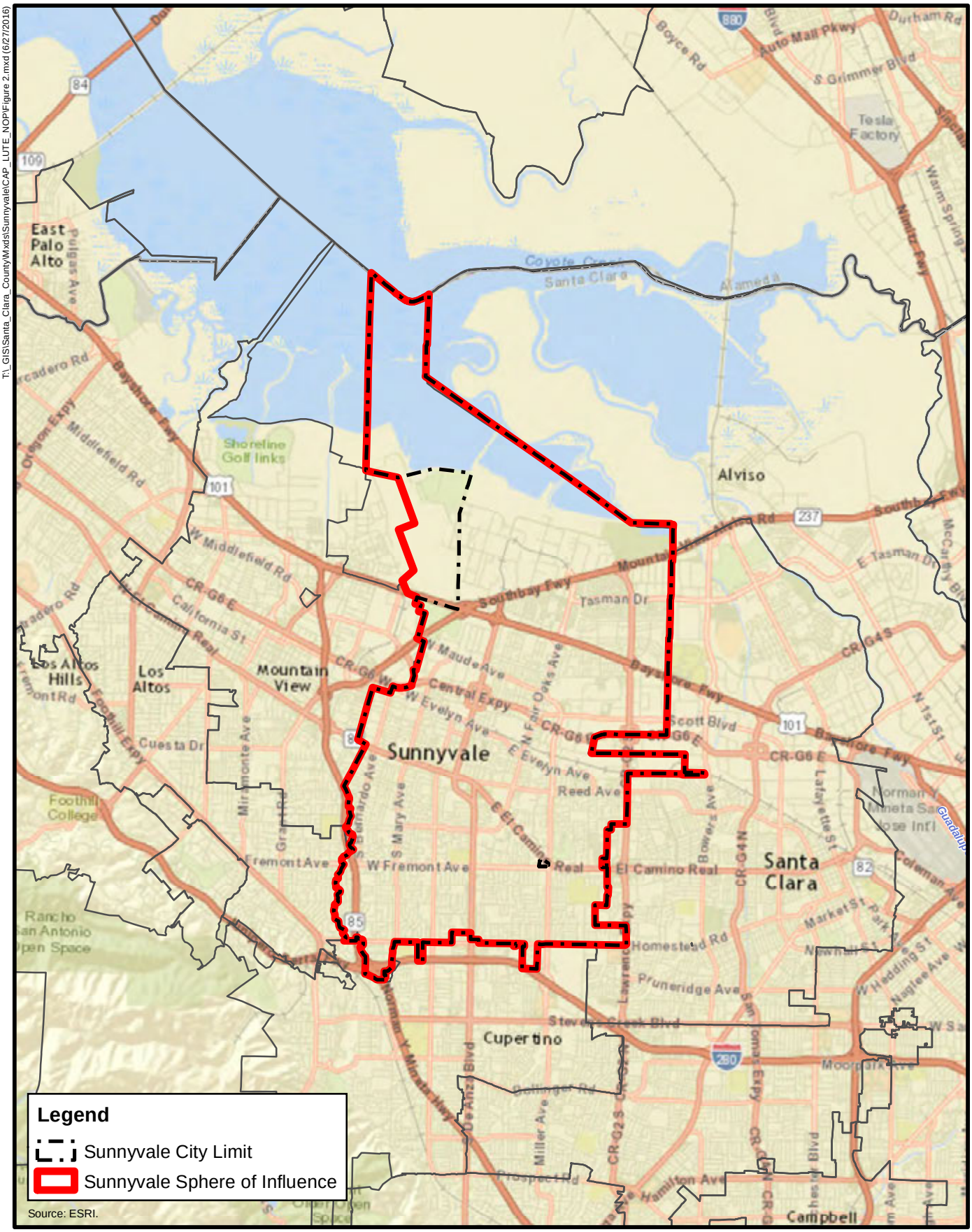



**FIGURE 2.0-2**
Project Location

Michael Baker INTERNATIONAL

## 2.3 PROJECT OBJECTIVES

The City of Sunnyvale has identified the following objectives to be achieved through adoption and implementation of the Draft LUTE:

1. **Complete Community.** Create a place to live that is less dependent on automobiles, and reduces environmental impacts, with distinctive activity centers and neighborhoods with character and access to nearby services.

2. **Neighborhood and Transit-Oriented Placemaking.** Develop mixed-use areas that incorporate commercial, public, and residential uses that are compatible with surrounding neighborhoods, create dynamic gathering spaces, establish unique visual character, provide nearby services, and reduce reliance on automobiles.

3. **Economic Development**. The City fosters an economic development environment which provides a wide variety of businesses and promotes a strong economy that can resist downturns within existing environmental, social, fiscal, and land use constraints**.**

4. **Environmental Sustainability.** Provide environmental leadership through sustainable land use patterns, renewable energy opportunities, and a multimodal transportation system.

5. **Multimodal Transportation.** Offer the community a variety of options for travel in and around the city that are connected to regional transportation systems and destinations.

6. **Healthy Living.** Maximize healthy living choices by providing easy access to fresh and healthy food, a range of recreation and open space options for community members of all ages, and convenient and safe biking and walking options throughout the community.

7. **Attractive Design.** Protect the design and feel of buildings and spaces to ensure an attractive community for residents and businesses.

8. **Diverse Housing.** Provide residential options for all incomes and lifestyles, including a variety of dwelling types, sizes, and densities that contribute positively to the surrounding area and the diversity of the community.

9. **Special and Unique Land Uses.** Allow for land uses such as child care, nursing homes, places of worship, etc., that complete the community fabric.

10. **Neighborhood Preservation.** Ensure that all residential areas and business districts in the planning area retain desired character and are enhanced through urban design and compatible mixes of activities.

## 2.4 PROJECT CHARACTERISTICS

The proposed project is the Draft LUTE, which upon adoption, would be incorporated into the Land Use and Transportation chapter of the General Plan. Project components are briefly described below.

The Draft LUTE establishes the fundamental framework as to how the city would be laid out (streets and buildings) and how various land uses, developments, and transportation facilities would function together. It includes a series of land use and transportation goals, policies, and actions that provide direction for how much the city would change and grow, and where the change or

growth would take place. These goals, policies, and programs reflect the economic, social, and cultural values of Sunnyvale. The land use policies identify the type, intensity, and design of land uses, and establish the desired mix and relationship between land uses.

The Draft LUTE includes a Land Use Map designating appropriate locations for existing and proposed future land uses. The Draft LUTE also establishes standards for residential density and nonresidential building intensity for all land located in the Planning Area.

Goals presented in the Draft LUTE include the following:

- Goal A: Coordinated regional and local planning
- Goal B: Environmentally sustainable land use and transportation planning and development
- Goal C: An effective multimodal transportation system
- Goal D: An attractive community for residents and businesses
- Goal E: Creation, preservation, and enhancement of Village Centers and neighborhood facilities that are compatible with residential neighborhoods
- Goal F: Protected, maintained, and enhanced residential neighborhoods
- Goal G: Diverse housing opportunities
- Goal H: Options for healthy living
- Goal I: Supportive economic development environment
- Goal J: A balanced economic base
- Goal K: Protected, maintained, and enhanced commercial areas, shopping centers, and business districts
- Goal L: Special and unique land uses that create a diverse and complete community

Each of these goals is supported by policies and actions that establish the City's preferred course of action over the next 20 years. The Planning Area can be expected to change as a result of a number of forces, including population growth, changing demographics, the need for newer buildings and homes, and an ever-changing economy. Other forces such as climate change and community members' demands for a sustainable community would also influence change.

**Figure 2.0-3** depicts the proposed Land Use Map with the land use designations proposed in the Draft LUTE. **Table 2.0-1** describes each land use designation's intended purpose, density and intensity ranges, and typical corresponding zoning district(s).

T:_CS\Work\Sunnyvale, City of\LUTE\Figures

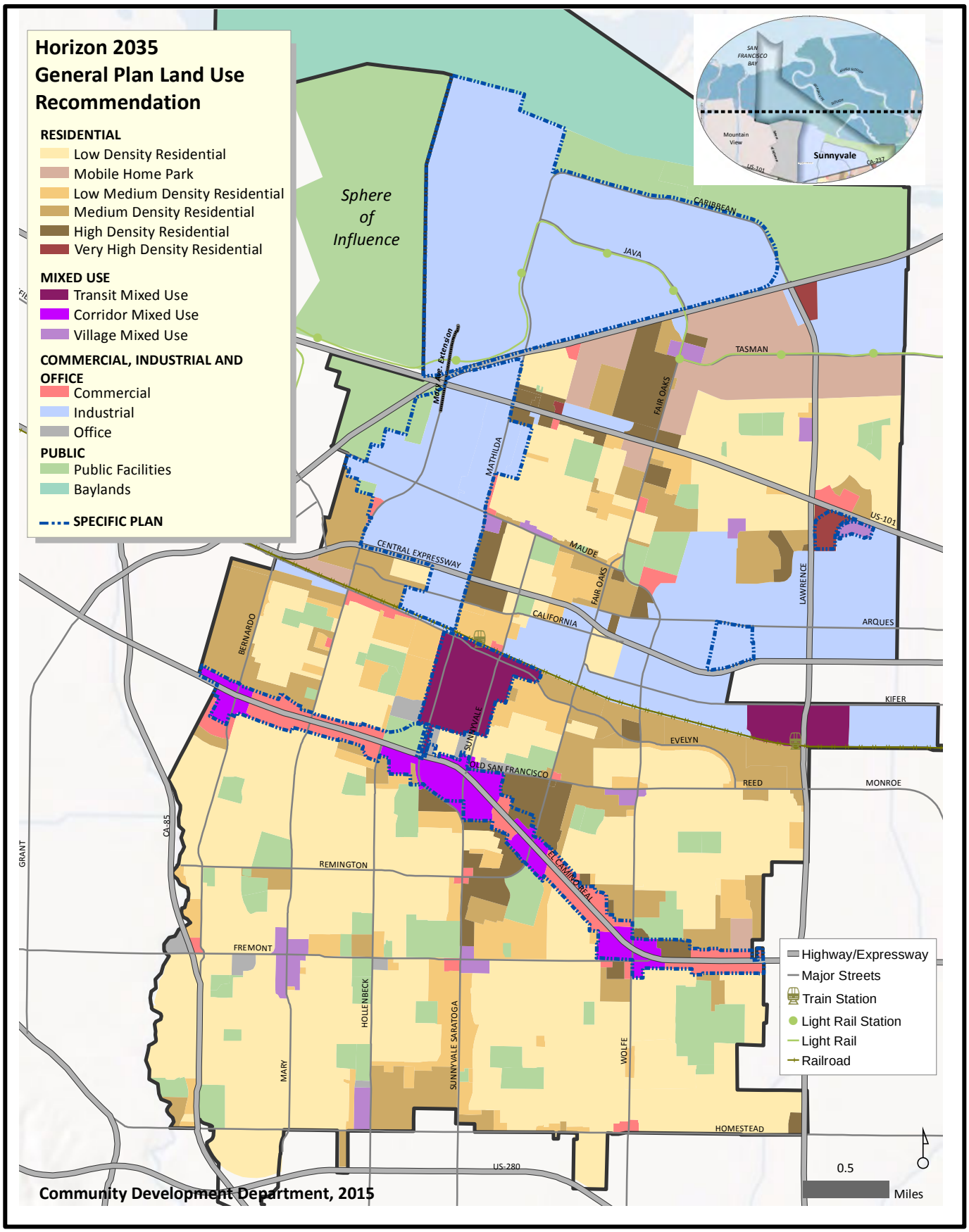



**FIGURE 2.0-3**

Proposed Horizon 2035 General Plan Land Use Map

Michael Baker INTERNATIONAL

**TABLE 2.0-1**
**DRAFT LUTE LAND USE DESIGNATIONS**

| Land Use Category | Description | Maximum Density or Intensity | Typical Zoning District(s) |
|---|---|---|---|
| **Residential Land Uses** | | | |
| Low Density Residential | Primarily preserves existing single-family neighborhoods designed around parks or schools and located along neighborhood streets or residential collector streets. Larger lots may accommodate accessory dwelling units. | 0–7 du/ac | R-0 and R-1 – Low Density Residential (7 du/acre) |
| Mobile Home Residential | Preserves existing mobile home parks found primarily found in the northern part of the city. Several smaller mobile home parks in the southern section of the city are designated to transition to other types of residential uses. No new mobile home park development is anticipated. | 0–12 du/ac | R-MH – Residential Mobile Home District (12 du/acre) |
| Low-Medium Density Residential | Preserves existing single-family, duplexes, and smaller multi-family use neighborhoods designed around parks or schools and located along neighborhood streets or residential collector streets. This designation includes small-lot single-family homes and zero lot line homes. Larger single-family lots may accommodate accessory living units. | 7–14 du/ac | R-1.5– Low-Medium Residential (10 du/acre)<br>R-2 – Low-Medium Residential (12 du/acre)<br>R-1.7/PD – Low-Medium Density Residential/Planned Development (14/du/acre) |
| Medium Density Residential | Allows townhomes, apartments, and condominiums. Medium-density neighborhoods and developments are generally located along arterials and residential collector streets, and may also be located near industrial or commercial areas. | 15–24 du/ac | R-3 – Medium Density Residential (24 du/acre) |
| High Density Residential | Allows apartments or condominiums, generally located next to expressways, major arterial roads, or freeways. Mixed-use projects are also encouraged when sites are located near public transit and where commercial uses would be beneficial to create a Village Center or meet a need for service in a residential or commercial neighborhood. | 25–36 du/ac | R-4 – High Density Residential (36 du/acre)<br>R-5 – High Density Residential/Office (45 du/acre) |
| Very High Density Residential | Allows for large-scale apartments or condominiums in Downtown or within Transit or Corridor Mixed Use areas. Very high density areas are limited to specific plan areas. | 36–45 du/ac | Specific Plan or Area Plan |

| Land Use Category | Description | Maximum Density or Intensity | Typical Zoning District(s) |
|---|---|---|---|
| **Mixed Land Uses** | | | |
| Transit Mixed Use | Allows a mix of residential uses at various densities, high-intensity commercial uses, regional commercial uses, and office uses located near rail stops or other mass transit. | Typically up to 65 du/acre near transit stations;. Specific densities and intensities determined by Specific Plan or Area Plan | Downtown Specific Plan Blocks 1–23 Lawrence Station Area Plan Lawrence Station Mixed Use Development |
| Corridor Mixed Use | Allows regional, community, or employment-serving retail uses in conjunction with residential uses along major corridors. | Commercial FAR: 25% Residential: 24 du/acre Specific densities and intensities determined by Specific Plan or Area Plan | C-1, C-2, R-3, R-4, P-F, O, and other properties located in the Precise Plan for El Camino Real MU-C – Mixed-Use Commercial |
| Village Mixed Use | Allows neighborhood-serving commercial uses integrated with residential uses, typically located near arterial intersections or major collector streets providing pedestrian and bicycle connections. Promotes residential uses concentrated near street corners above commercial uses and buffers between higher-intensity development and adjacent lower-density neighborhoods. | Commercial FAR minimum: 10% Typical maximum: 25% Specific densities and intensities determined by Specific Plan or Area Plan | MU-V – Mixed-Use Village LSP – Lakeside Specific Plan (47 du/acre) with 263 hotel rooms |
| **Commercial, Office, and Industrial Land Uses** | | | |
| Commercial | Supports retail and retail service uses, with varying character, corresponding to zoning districts: | | |
| | Neighborhood Commercial: Allows low-scale neighborhood-serving commercial uses such as grocery stores, retail, personal services, recreational studios, and tutoring. | Maximum height: 40 feet Lot coverage: 35% | C-1 – Neighborhood Business |
| | Highway Business: Allows retail and service uses such as "big-box" retailers, auto dealers, and hotels located along regionally significant roads. | Maximum height: 75 feet; greater heights allowable with conditional use permit Lot coverage: 35% | C-2 – Highway Business |
| | Commercial Central Business: Allows large-scale retail, commercial, shopping, and service facilities that serve the greater regional area. | Maximum height: 75 feet; greater heights allowable with conditional use permit Lot coverage: 35% | C-3 – Regional Business |

| Land Use Category | Description | Maximum Density or Intensity | Typical Zoning District(s) |
|---|---|---|---|
| | Service Commercial: Allows service commercial uses, including auto repair, other service shops, and self-storage | Maximum height: 40 feet<br>Lot coverage: 35% | C-4 – Service Commercial |
| Industrial | Allows research and development, manufacturing, office, and heavy industrial uses in the northern portion of the Planning Area. Retail restaurant and other retail service uses may also be appropriate. Sensitive receptors are limited or prohibited. | FAR: 35% with specialized areas of the city designated for more intensive development (see Specialized Areas Map) or as approved by conditional use permit. | M-S – Industrial Service (35% FAR)<br>M-3 – General Industrial (35% FAR)<br>MP-TOD – Moffett Park Transit-Oriented Development<br>MP-I – Moffett Park General Industrial<br>MP-C – Moffett Park Commercial |
| Office | Allows corporate, professional, and medical offices in close proximity to residential neighborhoods. Child-care facilities and places of assembly may also be appropriate. Not intended for retail, retail service, or uses involving hazardous or noxious chemicals. Conditionally compatible with residential zoning. | N/A | O – Office |
| **Public Designations** | | | |
| Public Facilities | Allows public and quasi-public services such as parks, schools, places of assembly, child care, civic facilities, public works facilities, Moffet Federal Airfield and other public services and facilities. | Varies | P-F – Public Facility |
| Baylands | Natural resource conservation areas north of the Sunnyvale Materials Recovery and Transfer Station (SMaRT® Station) and industrial campuses within the Moffett Park Specific Plan. This area may include trails and other public recreation uses, but no habitable structures or permanent development are anticipated. | N/A | P-F – Public Facility |

The 2035 buildout scenario represents potential changes from existing conditions, as shown in **Table 2.0-2**. Based on historic growth rates, buildout is not expected to occur by 2035. However, for purposes of the analysis in this EIR, it is assumed that buildout would occur by 2035. The Draft LUTE does not include any policy mandating that this extent of growth be achieved within this time frame.

**TABLE 2.0-2**
**DRAFT LUTE LAND USE CHARACTERISTICS (2014–2035)**

| | 2014 Existing Conditions | LUTE Horizon 2035 (Buildout) | Change (2014–2035) | |
|---|---|---|---|---|
| | | | Number | Percentage |
| Population | 147,055 | 174,500 | 27,445 | 19% |
| Housing Units | 57,000 | 72,100 | 15,100 | 26% |
| Industrial/Office/Commercial (million square feet) | 47.3 | 59.8 | 12.5 | 27% |
| Jobs | 82,000 | 124,410 | 42,410 | 52% |
| Jobs to Housing Units Ratio | 1.44 | 1.73 | 0.29 | 20% |

*Source: Sunnyvale 2015*

The Draft LUTE includes increased residential densities and mixed-use residential/commercial growth in key transit-oriented areas and in new areas transformed into Village Centers, relative to existing conditions. The Draft LUTE also identifies areas for additional business (or industrial) development relative to existing conditions. **Figure 2.0-4** indicates where change would be encouraged to occur and to what degree change can be expected with implementation of the Draft LUTE. The map indicates areas such as existing single-family neighborhoods that are intended to be preserved, new Village Centers, and industrial areas that will improve and evolve over time but that are not planned for a major character shift (in terms of land use type and scale of development). Some of the change areas portrayed on the map correspond to area plans that have already been adopted and areas where transformation is already occurring.

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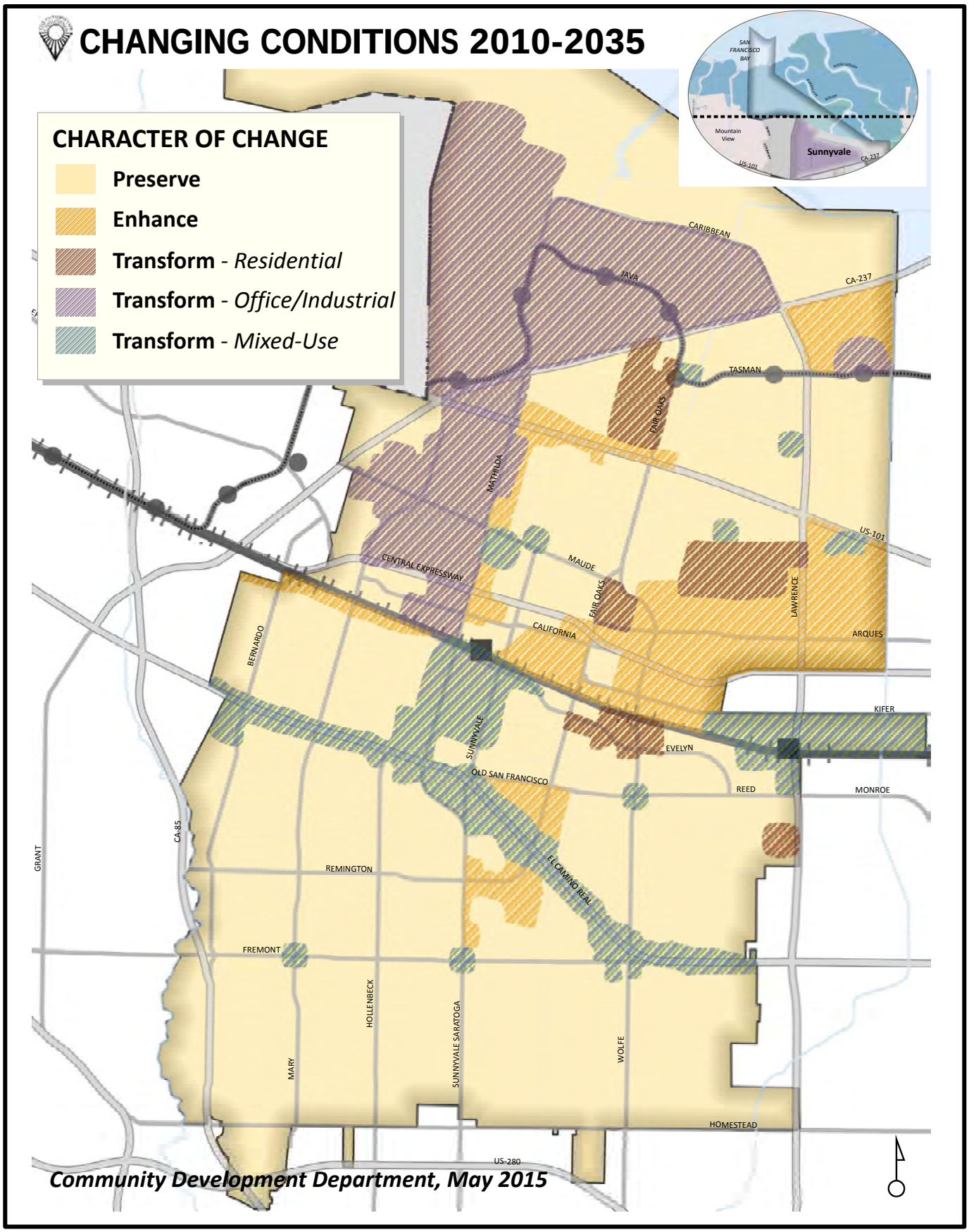


Not To Scale

**FIGURE 2.0-4**
Change and Growth Areas

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## Area and Specific Plans

The Draft LUTE includes nine area or specific plans and directs preparation of additional plans for each of the proposed Village Centers. Some of these plan areas are already fully or nearly fully built out, while others are identified for transformation. The area and specific plans are summarized in **Table 2.0-3** and identified in **Figure 2.0-5**.

**TABLE 2.0-3**
**SPECIFIC AND AREA PLANS**

| Name | Land Use Type(s) | Status |
|---|---|---|
| Downtown | Transit Mixed Use | Specific Plan complete. Identified as Transformation site in Draft LUTE. |
| Moffett Park | Corporate headquarters; R&D | Specific Plan complete. Identified as Transformation site in Draft LUTE. |
| The Woods | Small-scale industrial | Future Area Plan anticipated. |
| East Sunnyvale and other Industrial to Residential (ITR) sites | Residential | 80% of designated sites have transitioned to residential uses; possible expansion to provide additional sites. |
| El Camino Real | Corridor Mixed Use | Specific Plan update in progress. Identified as Transformation site in Draft LUTE. |
| Lawrence Station Area | Transit Mixed Use | Area Plan in progress. Identified as Transformation site in Draft LUTE. |
| Peery Park | Industrial; Commercial | Specific Plan in progress. Identified as Transformation site in Draft LUTE. |
| Neighborhood Village Centers | Transit Mixed Use | Future specific or area plans anticipated. Identified as Transformation sites in Draft LUTE. |
| Lakeside Specific Plan | Hotel; Residential | Specific Plan update in progress. Identified as Transformation site in Draft LUTE. |

Area and specific plans shown in **Table 2.0-3** accommodate the distribution of net new development anticipated in **Table 2.0-2** as described below. A small number of new residential units are anticipated throughout the Planning Area outside of these areas.

### Downtown

With implementation of the Draft LUTE, the roughly 125 acre Downtown area would accommodate both residential and nonresidential growth, including up to 1,300 net new housing units and up to 2.51 million total square feet of nonresidential space. This growth would be consistent with the approved Downtown Specific Plan.

### Moffett Park

With implementation of the Draft LUTE, the 1,100 acre Moffett Park area would accommodate up to 7.6 million square feet of net new nonresidential development (total buildout of 24.33 million square feet). This growth would be consistent with the approved Moffett Park Specific Plan. Moffett Park represents a primary location for new Class A office development consisting of corporate headquarters, office, and research/development facilities for high technology companies that represent the next wave of economic growth in Silicon Valley.

### The Woods

The Woods area is one of the five areas of employment centers in the Planning Area, and currently consists of primarily Class C industrial development[1]. With implementation of the Draft LUTE, the Woods area would accommodate up to 310,000 square feet of new nonresidential development. It would remain a primary location for Class C space, providing for affordable buildings suitable for start-up companies and service businesses.

### Futures Industrial to Residential (ITR) Area

With implementation of the Draft LUTE, the Futures ITR sites (including Tasman Crossing, Fair Oaks Junction, East Sunnyvale, Futures 4a, Futures 4b (which is also within the Lawrence Station Area Plan), and Futures 6a) would accommodate about 4,000 new housing units. This growth would be consistent with the established ITR zoning districts and with the Fair Oaks Junction Sense of Place Plan, the East Sunnyvale Sense of Place Plan, and the Tasman Crossing Pedestrian and Bicycle Circulation Plan. The ITR zone allows industrial/commercial/office uses to continue as conforming uses while an area transitions to planned residential use. Many ITR areas in the Planning Area have been developed, and future changes are anticipated to occur primarily in the East Sunnyvale area.

### El Camino Real

With implementation of the Draft LUTE, the El Camino Real corridor (about 4 miles long) would support new and retain existing community and regional retail uses and accommodate residential uses in several areas along the corridor, including up to 4,200 housing units consisting primarily of mixed-use commercial and residential projects and higher-density apartments. This growth would be consistent with the policies in the approved Precise Plan for El Camino Real; future updates to the plan will provide more guidance on land use changes.

### Lawrence Station Area

With implementation of the Draft LUTE, the area surrounding the Lawrence Caltrain Station (about 372 acres) would accommodate up to 2,323 net new housing units and 1.2 million square feet of net new nonresidential space. This growth would be consistent with the proposed Lawrence Station Area Plan. The Lawrence Station area is planned to accommodate higher-density and mixed-use industrial, commercial, office, and residential spaces within a half-mile radius of the station.

### Peery Park

With implementation of the Draft LUTE, the 450 acre Peery Park area would accommodate up to 215 new housing units and 2.2 million square feet of net new nonresidential space. This growth would be consistent with the proposed Peery Park Specific Plan. The Peery Park area is planned to become an innovation district and commercial center that accommodates select higher intensity industrial developments, promoting connectivity, sustainability, and economic viability.

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[1] Class C buildings are generally located in less desirable locations relative to the needs of major tenants in the marketplace. These buildings generally depend chiefly on a lower price to attract tenants.

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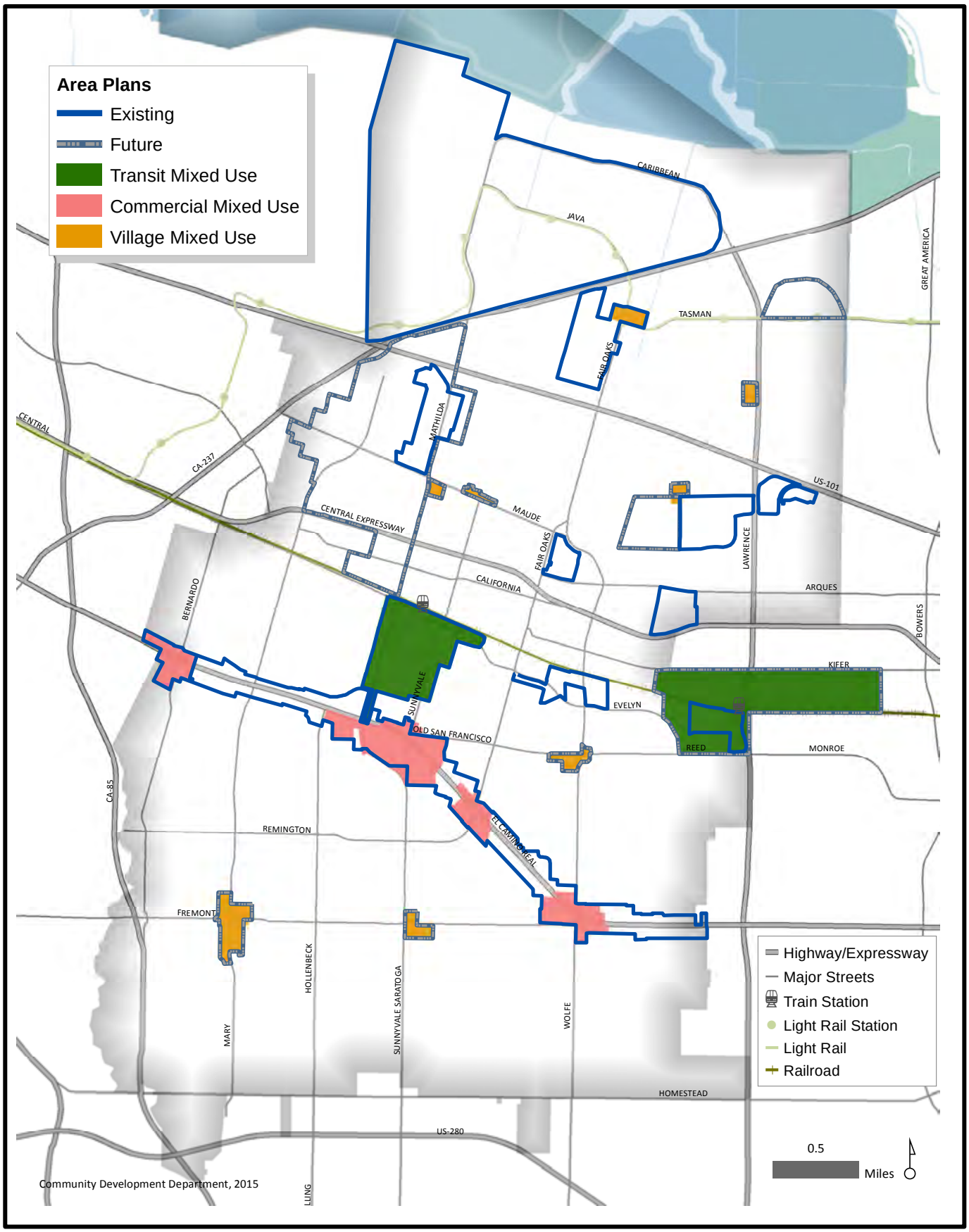


**FIGURE 2.0-5**
Area Plans

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### Neighborhood Village Centers

With implementation of the Draft LUTE, up to 900 new housing units would be accommodated in seven new neighborhood-scale Village Centers. Village Centers will help the community accommodate a small shift away from the historic pattern of land use separation and allow more mixing of uses, particularly residential and commercial uses in limited locations. Village Centers are also intended to provide access to more green space and to make these destinations easy to navigate to, by foot or bicycle, and with transit within walking range of homes, businesses, and services. Unlike the other mixed-use areas, Village Centers would be located near existing residential neighborhoods and are intended to provide commercial, retail, and service uses to serve the surrounding neighborhood, in addition to residential units that complement the surrounding neighborhood and provide additional housing opportunities for seniors wishing to downsize, young adults wishing to move out of their parents' homes, and employees of local businesses.

### Other Areas

With implementation of the Draft LUTE, additional areas distributed throughout the Planning Area would accommodate net new residential growth consisting of up to 1,730 units. The Draft LUTE also anticipates a net reduction of up to 1.7 million square feet of nonresidential space in areas distributed throughout the Planning Area as these uses become more concentrated at Moffett Park, Peery Park, and Lawrence Station and along El Camino Real.

## Transportation System

The Draft LUTE also envisions a more efficient and effective a future transportation system for Sunnyvale. The Planning Area roadways consist of major freeways, expressways, arterial streets, and neighborhood streets. The Planning Area is served by regional freeways consisting of US 101 and SR 237 on the north, SR 85 on the west, and I-280 on the south. Draft LUTE policies represent a continuing shift in focus from primarily automobile travel to increased use of public transit, bicycle, and pedestrian transportation modes. The Draft LUTE describes each component of the transportation system and identifies planned enhancements to the system.

The Roadway Classification Map (**Figure 2.0-6**) identifies the planned roadway system corresponding to the planned land uses in the Draft LUTE, and **Table 2.0-4** describes characteristics of each roadway classification. The roadway classifications account for intended levels of roadway use by cars, transit vehicles, bicyclists, and pedestrians in relation to nearby land uses and circulation patterns in the Planning Area and the larger region. The City uses the roadway classifications as a tool to accomplish LUTE goals and policies, as well as related policies in other elements of the General Plan. For each roadway type, the Draft LUTE identifies design guidelines illustrating how street space is divided among right-of-way, roadway travel lanes, sidewalks, parkways, bikeways, and spaces for other travel modes.

**TABLE 2.0-4**
**DRAFT LUTE ROADWAY CLASSIFICATIONS**

| Roadway Category | Description |
|---|---|
| State Freeway | Provides mostly uninterrupted travel by car, bus, or trucks, and designed for high speeds over long distances. Fully controlled access through on- and off-ramps, with some sort of separation between opposing traffic flow. Driveways and alternative modes of transportations such as walking or bicycling are forbidden, and intersections may only occur as freeway interchanges. |
| County Expressway | Provides partially controlled access on high-speed roads with a limited number of driveways and intersections. Expressways also allow bicycles; pedestrians are permitted in limited locations. Speed is typically between 45 and 70 miles per hour, dependent upon location. Expressways are generally designed for longer trips at the county or regional level. |
| Class I Arterial | Provides regional access to all transit modes, with a focus on regional transit and auto traffic. Includes pedestrian connections linking land uses to transit. Class I arterials may or may not have street parking or bike lanes. Six-lane arterials may provide up to 130 feet of right-of-way (ROW) with a median, while four-lane arterials may provide for up to 115 feet of ROW. |
| Class II Arterial | Provides access to all transportation modes with a focus on local access. Pedestrian connections link land uses to transit. Four-lane arterials may provide for up to 100 feet of ROW with a median. Two-lane arterials may provide for up to 90 feet of ROW with a median and may feature parking lanes and bike lanes. |
| Commercial/Industrial Corridor | Serves local cross-town traffic, and may also serve regional traffic. Industrial and commercial corridors connect local roads and streets to arterial roads. Provides access to local transit, and includes pedestrian connections designed to encourage multi-purpose trips. Four-lane corridors provide for up to 90 feet of ROW with street parking or bike lanes. Two-lane corridors may provide for up to 90 feet of ROW with street parking and may have bike lanes. |
| Residential Corridor | Serves local cross-town and residential traffic and may serve some regional traffic. Residential corridors are collector streets that connect cars, bicycles, and pedestrians to arterial roads and land uses. Residential corridors may have on-street parking and/or bike lanes, and a median may be present if there is no bike lane. The ROW includes sidewalks and traffic buffers, such as trees, on both sides. |

*Source: Sunnyvale 2015*

## Transportation Performance Measures

As with all infrastructure, transportation investments must be prioritized to improve system performance and reduce environmental impacts. The Draft LUTE prioritizes investment in pedestrian, bicycle, and transit improvements as a way to achieve greater mobility within the community and to comply with recent legislation related to the reduction of greenhouse gas emissions. Transportation performance metrics are established in the Draft LUTE to assess new projects consisting of a traditional approach using level of service (LOS). Draft LUTE transportation policies also outline future approaches the City may use measure and evaluate transportation system performance using alternative metrics, including, but not limited to, vehicle miles traveled (VMT). Draft LUTE policies focus on providing multiple transportation options to increase LOS for vehicle travel and decrease VMT by single-occupant cars.

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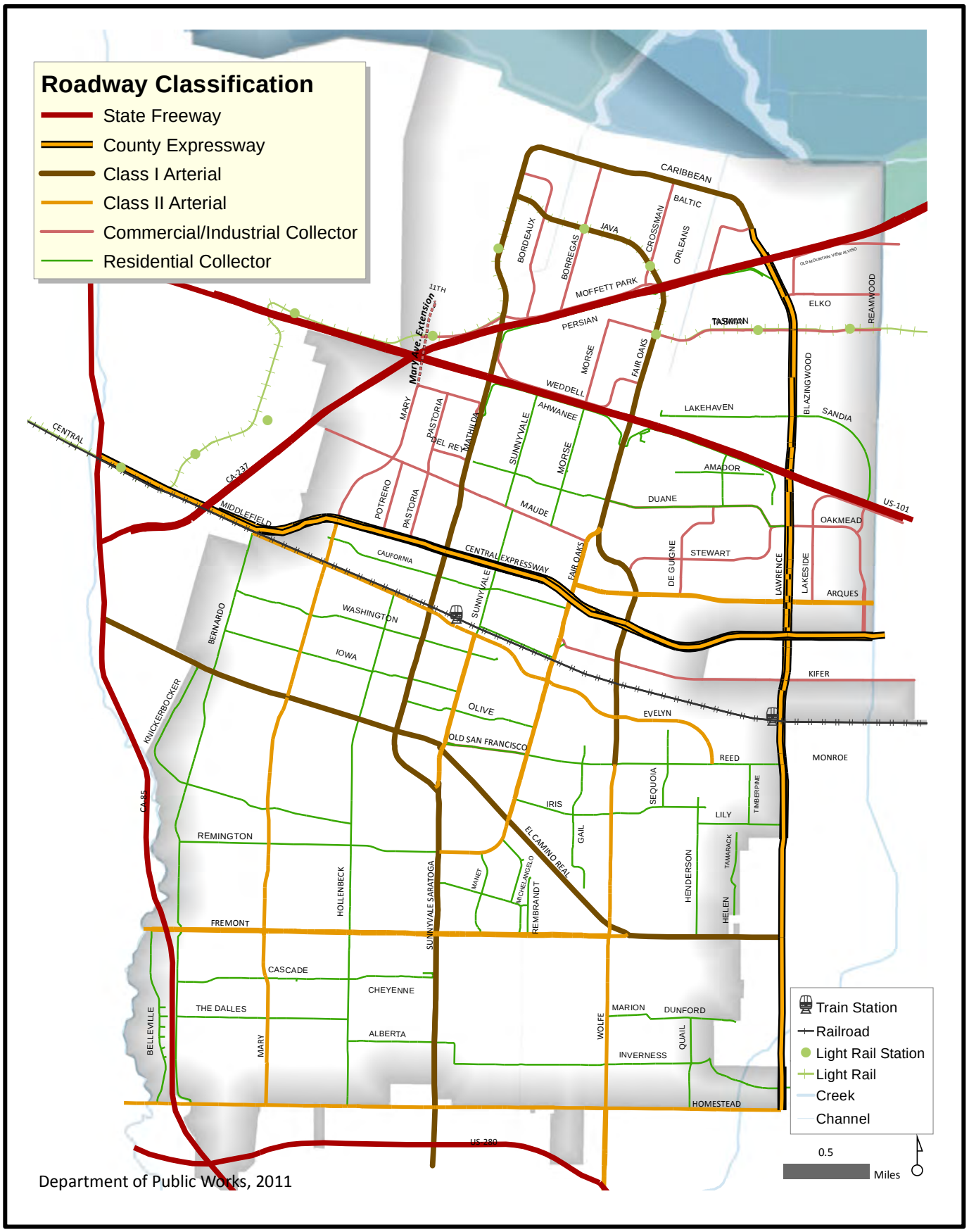


**FIGURE 2.0-6**

Proposed Roadway Classification

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## 2.5 REGULATORY REQUIREMENTS, PERMITS, AND APPROVALS

The Draft LUTE will be presented to the Planning Commission for review, comment, and recommendations for consideration by the City Council. The City Council, as the City's legislative body, is the approving authority for the Land Use and Transportation Element. In order to adopt the LUTE, the City Council would have to take the following actions:

- Certify the Final EIR
- Amend the General Plan and adopt the Draft LUTE
- Adopt required findings for the adoption of the Draft LUTE, including required findings under CEQA Guidelines Sections 15090, 15091, and 15093
- Adopt a Mitigation Monitoring and Reporting Program

## REFERENCES

Sunnyvale, City of. 2015. *Draft Sunnyvale General Plan, Chapter 3, Land Use and Transportation*.

# 3.0 Introduction to the Environmental Analysis and Assumptions Used

# 3.0 Introduction to the Environmental Analysis and Assumptions Used

The following is an introduction to the environmental analysis for the proposed Land Use and Transportation Element (LUTE) (Draft LUTE; proposed project), including the cumulative analysis and a discussion of general assumptions used in the environmental analysis. The reader is referred to the individual technical sections of the Draft Environmental Impact Report (Draft EIR; DEIR) (Sections 3.1 through 3.13 and 4.0) for further information on the specific assumptions and methodologies used in the analysis for each particular technical subject.

## Analysis Approach Used to Evaluate the Impacts of the Proposed Project

Section 15125(a) of the California Environmental Quality Act (CEQA) Guidelines requires that an environmental impact report (EIR) include a description of the physical environmental conditions in the vicinity of a project as they exist at the time the Notice of Preparation (NOP) is published and the environmental analysis is begun. The State CEQA Guidelines also specify that this description of the physical environmental conditions is to normally serve as the baseline physical conditions by which a lead agency determines whether impacts of a project are considered significant.

The environmental setting conditions of the City of Sunnyvale Planning Area are described in detail in the individual technical sections of the Draft EIR (see Sections 3.1 through 3.13 and 4.0). In general, these sections describe the setting in Sunnyvale and the City's Sphere of Influence as it existed when the reissued NOP for the proposed project was released on May 22, 2015. In some cases data on the environmental setting was used that was prior to May 2015 as it was the best available data at the time of the Draft EIR preparation and was materially similar to 2015 conditions.

Based on the city's historic growth rates, buildout is not expected to occur by 2035. However, for purposes of the analysis in this EIR, it was assumed that buildout would occur by 2035. **Table 2.0-2** in Section 2.0, Project Description, provides a summary of projected development at buildout under the Draft LUTE. These buildout projections were utilized in air quality, noise, and traffic impact modeling provided in the Draft EIR (see Sections 3.4 through 3.6).

### Structure of the Environmental Impact Analysis

Sections 3.1 through 3.13 and 4.0 of this Draft EIR contain a detailed description of current conditions (including applicable regulatory setting), an evaluation of the direct and indirect environmental effects resulting from the implementation of the Draft LUTE, and a determination as to whether significant environmental effects would remain after application of proposed policies and actions identified in the Draft LUTE and feasible mitigation measures.

The individual technical sections of the Draft EIR include the following information:

#### Existing Setting

This subsection includes a description of the physical setting associated with the technical area of discussion, consistent with State CEQA Guidelines Section 15125. As previously identified, the existing setting is based on conditions as they existed when the reissued NOP for the proposed project was released on May 22, 2015.

### Regulatory Framework

This subsection identifies applicable federal, state, regional, and local plans, policies, laws, and regulations that apply to the technical area of discussion.

### Impacts and Mitigation Measures

This subsection identifies direct and indirect environmental effects associated with implementation of the Draft LUTE. Standards of significance are identified and used to determine whether the environmental effects are considered significant and require the application of mitigation measures. Each environmental impact analysis is identified numerically (e.g., Impact 3.7.1 – Seismic Hazards) and is supported by substantial evidence. In addition to impacts created from the application of standards of significance, the Draft EIR addresses impacts resulting from the implementation of proposed Draft LUTE policies and actions that could result in physical effects to the environment.

Mitigation measures for the Draft LUTE were developed through a review of the environmental effects of the proposed project by consultants with technical expertise as well as by environmental professionals. The mitigation measures identified consist of performance standards that identify clear requirements that would avoid or minimize significant environmental effects (the use of performance standard mitigation is allowed under State CEQA Guidelines Section 15126.4(a) and is supported by case law in *Rio Vista Farm Bureau Center v. County of Solano* ([1st Dist. 1992] 5 Cal. App. 4th at pp. 371, 375–376 [7 Cal. Rptr. 2d 307]).

## APPROACH TO THE CUMULATIVE IMPACT ANALYSIS

State CEQA Guidelines Section 15130 requires that EIRs include an analysis of the cumulative impacts of a project when the project's effect is considered cumulatively considerable.

### Consideration of Cumulative Impacts

CEQA Guidelines Section 15130 requires that EIRs include an analysis of the cumulative impacts of a project when the project's effect is considered cumulatively considerable. Each technical section in the Draft EIR considers whether the project's effect on anticipated cumulative setting conditions is cumulatively considerable (i.e., a significant effect). The environmental effects of potential development within the city in the cumulative impact analysis are contained within each technical section.

The cumulative setting conditions considered in this Draft EIR are based on the following:

- **Local and Regional Adopted Plans**. The existing land use plans of the City of Sunnyvale current General Plan, as well as the proposed Peery Park Specific Plan. This also includes regional land use plans associated with the cities of Cupertino (including the Apple II Campus expansion), Santa Clara, Los Altos, and Mountain View. However, this list is not all-inclusive for each environmental issue area and not all of the general plans listed are used for cumulative analysis for each section. For a discussion of the cumulative setting and the applicable plan(s) used for a specific issue area, please refer to Draft EIR Sections 3.1 through 3.13.

- **Proposed Projects in the City**. The cumulative setting and analysis considers proposed projects in the City (see **Appendix I** for a listing of proposed projects).

**Effect of Regional Conditions**. The cumulative setting considers regional growth and background traffic volumes and patterns on state and regional roadways (e.g., State Route 237 and US Highway 101). Additionally, physical conditions in the region pertinent to each environmental issue area are considered in the cumulative setting. Those topics are discussed in Sections 3.1 through 3.13.

## COMMON TERMINOLOGY USED IN THE DRAFT EIR

This Draft EIR uses the following terminology to describe the environmental effects of the proposed project:

**Less Than Significant Impact:** A less than significant impact would cause no substantial change in the physical condition of the environment (no mitigation would be required for project effects found to be less than significant).

**Significant Impact and Potentially Significant Impact:** A significant impact would cause (or would potentially cause) a substantial adverse change in the physical conditions of the environment. Significant impacts are identified by the evaluation of project effects using specified standards of significance provided in each technical section of the Draft EIR. Identified significant impacts are those where the project would result in an impact that can be measured or quantified, while identified potentially significant impacts are those impacts where an exact measurement of the project's effects cannot be made but substantial evidence indicates that the impact would exceed standards of significance. A potentially significant impact may also be an impact that may or may not occur and where a definite determination cannot be foreseen. Mitigation measures and/or project alternatives are identified to avoid or reduce project effects to the environment to a less than significant level.

**Significant and Unavoidable Impact:** A significant and unavoidable impact would result in a substantial negative change in the environment that cannot be avoided or mitigated to a less than significant level if the project is implemented.

**Less Than Cumulatively Considerable Impact:** A less than cumulatively considerable impact would cause no substantial change in the physical condition of the environment under cumulative conditions.

**Cumulatively Considerable Impact:** A cumulatively considerable impact would result when the incremental effects of an individual project result in a significant adverse physical impact on the environment under cumulative conditions.

**Standards of Significance:** The standards are a set of significance criteria to determine at what level or "threshold" an impact would be considered significant. Significance criteria used in this EIR are based on the State CEQA Guidelines; factual or scientific information; regulatory performance standards of local, state, and federal agencies; and City goals, objectives, and policies. Specified significance criteria used by the City of Sunnyvale are identified at the beginning of the impact analyses in each technical section of the Draft EIR.

**Subsequent Projects/Activities:** These are anticipated development projects (e.g., residential, commercial, industrial, or parks/open space projects) that could occur in the future as a result of the implementation of the Draft LUTE. These projects could also include public infrastructure and utility extension projects, including but not limited to roadway improvements and water, stormwater, and wastewater distribution improvements.

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# 3.1 Land Use

This section describes existing land uses in Sunnyvale and the vicinity, land use trends in the city, and relevant plans and policies. Much of the background information in this section is adapted from the Sunnyvale General Plan (2011) and the Horizon 2035 Existing Land Use Conditions and Background Report (2010). Potential land use impacts of the Draft LUTE are evaluated in this section.

A summary of the impact conclusions for land use is provided below.

| Impact Number | Impact Topic | Impact Significance |
|---|---|---|
| 3.1.1 | Physically Divide an Established Community | Less than significant |
| 3.1.2 | Conflict with Adopted Land Use Plans, Policies, or Regulations | Less than significant |
| 3.1.3 | Conflict with City Land Use Plans | Less than significant |
| 3.1.4 | Conflict with a Habitat Conservation Plan or Natural Community Conservation Plan | No impact |
| 3.1.5 | Cumulative Land Use Impacts | Less than cumulatively considerable |

## 3.1.1 EXISTING SETTING

Sunnyvale is located in Santa Clara County, approximately 10 miles northwest of San Jose. Sunnyvale is bordered by the San Francisco Bay and portions of San Jose to the north, Moffett Federal Airfield to the northwest, Mountain View to the west, Los Altos to the southwest, Cupertino to the south, and Santa Clara to the east.

### EXISTING LAND USES

Nearly all parcels in Sunnyvale and its Planning Area have development on them; only 0.5 percent of parcels are vacant. The distribution of land uses over the developed area of Sunnyvale in 2011 (baylands and streets excluded) consists of residential (52 percent), industrial/office (26 percent), open space (8 percent), commercial (7 percent), and other uses (7 percent) (Sunnyvale 2011). This distribution did not substantially change between 2011 and 2015. Current land use designations in the Planning Area are depicted in **Figure 3.1-1**, and the acreage breakdown of these uses is depicted in **Table 3.1-1**. A further description of these land uses is provided below.

#### Residential

The current General Plan categorizes residential land as Residential Low Density (RLO, 0–7 dwelling units per acre, Residential Low Medium Density (RLM 7–14 dwelling units per acre), Residential Medium Density (RMED, 14–27 dwelling units per acre), Residential High Density (RHI, 27–45 dwelling units per acre), Residential Very High Density (RVH, 45–65 dwelling units per acre), and Mobile Home Park (MHP). These land uses are spread throughout the city and take up most of the city south of the Union Pacific Railroad tracks and in the city's central northern portion north of the tracks.

#### Commercial, Office, and Industrial

The current General Plan categorizes commercial/office land as Commercial Neighborhood Shopping (CNS), Commercial General Business (CGB), Commercial Central Business (CCB), and Office (O). Commercial and office uses are dispersed throughout Sunnyvale in neighborhood shopping areas and are also highly concentrated along El Camino Real and in the downtown area. Industrial (I) uses are concentrated in the area of the city north of the Union Pacific

Railroad tracks, accounting for about half of the land in that portion of the city. Scattered areas designated Industrial also exist south of the railroad tracks.

### Public/Quasi-Public Uses

Facilities operated by a government agency or a private agency serving the general public are provided for in the General Plan under the category of Public/Quasi-Public Facilities. Public and quasi-public facilities in Sunnyvale consist of the following:

- Parks (PARK), located in small portions of land throughout the city and in two large portions—the Sunnyvale Golf Course on the northwest corner of the city and the land bordering the bay on the far northern border of the city including Baylands Park
- Schools (SCH), located throughout the residential portions of the city
- Environmental Services (ENV), consisting of the Water Pollution Control Plant and the Sunnyvale Materials Recovery and Transfer Station (SMaRT Station) on the city's northern border
- Civic Center (CC), consisting of Sunnyvale's Civic Center in central Sunnyvale
- Moffett Federal Airfield (MOF), located on the city's northern boundary
- Baylands (BAY), consisting of the baylands in the far northern section of the city

**TABLE 3.1-1**
**ACREAGES OF LAND USES IN SUNNYVALE (2011)**

| General Plan Land Use Designation | Acreage |
|---|---|
| Low Density Residential (0–7 du/ac) | 4,397 |
| Low Medium Density Residential (7–14 du/ac) | 649 |
| Medium Density Residential (14–27 du/ac) | 924 |
| High Density Residential (27–45 du/ac) | 364 |
| Very High Density Residential (45–65 du/ac) | 56 |
| Mobile Home Residential | 456 |
| Neighborhood Commercial | 128 |
| General Business | 407 |
| Office | 64 |
| Industry | 1,644 |
| Industrial Intensification | 76 |
| Industrial to Residential (Low Med Density) | 99 |
| Industrial to Residential (Med Density) | 170 |
| Industrial to Residential (Medium to High Density) | 102 |
| Industrial to Residential (High Density) | 16 |
| Parks | 795 |
| Schools | 459 |
| Environmental Services | 37 |
| Moffett Park | 1,306 |
| Downtown Specific Plan | 147 |

*Source: Sunnyvale 2011*

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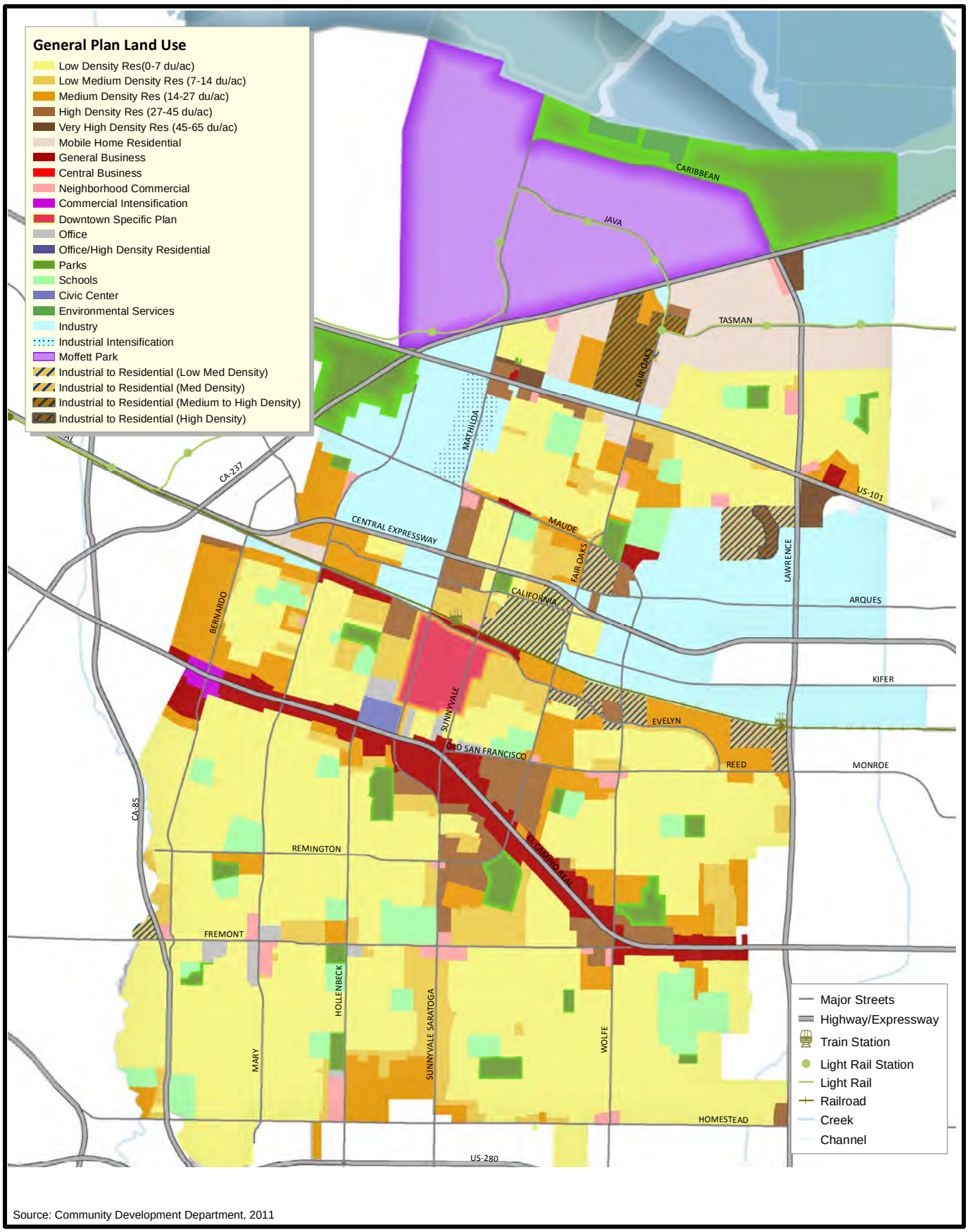


Source: Community Development Department, 2011

0 .5 1
MILES

**FIGURE 3.1-1**
Existing General Plan Land Uses

Michael Baker
INTERNATIONAL

## 3.1.2 REGULATORY FRAMEWORK

### REGIONAL

#### San Francisco Bay Plan

The San Francisco Bay Plan (Bay Plan) is a policy tool that, under the provisions of the McAteer-Petris Act, allows the San Francisco Bay Conservation and Development Commission (BCDC) to "exercise its authority to issue or deny permit applications for placing fill, extracting materials, or changing the use of any land, water, or structure within the area of its jurisdiction." The BCDC's area of jurisdiction includes all of San Francisco Bay, a shoreline band extending 100 feet from the water, and salt ponds, managed wetlands, and certain waterways associated with the bay. The Bay Plan stipulates: "Any public agency or private owner holding shoreline land is required to obtain a permit from the Commission before proceeding with (shoreline) development."

Sunnyvale's San Francisco Bay shoreline is within the jurisdiction of the BCDC, and associated development activities are regulated by the Bay Plan. The Bay Plan Map 7 policies pertaining to Sunnyvale and its immediate surroundings include the following:

> Policy 10. If not needed for salt production, ponds north of Moffett Federal Airfield should be reserved for possible airport expansion.
>
> Policy 11, Moffett Naval Air Station. If and when not needed by the Navy, this site should be evaluated for a commercial airport by a regional airport system study. (Moffett NAS not within BCDC permit jurisdiction.)
>
> Policy 12, South Bay. Enhance and restore valuable wildlife habitat. Bay tidal marshes and salt ponds may be acquired as part of the Don Edwards San Francisco Bay National Wildlife Refuge and managed to maximize wildlife and aquatic life values. Salt ponds can be managed for the benefit of aquatic life and wildlife. Provide continuous public access to the Bay and salt ponds along levees if in a manner protective of sensitive wildlife. Provide opportunities for non-motorized small boat launching facility where compatible with wildlife and habitat protection. [Please note that this policy and other similar policies may be affected by the South Bay Salt Ponds Restoration Project, discussed below.]

In October 2011, the BCDC added a new section to Part IV of the Bay Plan to deal broadly with climate change and adapting to sea level rise. Policies 2 through 8 in the new Climate Change section are measures that help protect shoreline areas from the effects of sea level rise. The Bay Plan policies in the Climate Change section apply only to projects and activities located in the following areas: San Francisco Bay, the 100-foot shoreline band, salt ponds, managed wetlands, and certain waterways, as these areas are described in Government Code Section 66610. Therefore, they apply to Sunnyvale's San Francisco Bay shoreline, which is not proposed to be altered under the Draft LUTE.

#### Plan Bay Area

Senate Bill 375 (SB 375), known as the Sustainable Communities Strategy and Climate Protection Act, was signed into law in September 2008. SB 375 calls on each of the state's 18 metropolitan areas to develop a Sustainable Communities Strategy to accommodate future population growth and reduce greenhouse gas emissions from cars and light trucks. Plan Bay Area was jointly approved by the Association of Bay Area Governments (ABAG) Executive Board and the Metropolitan Transportation Commission (MTC) in 2013. The plan is a long-range integrated

transportation and land-use/housing strategy through 2040 for the San Francisco Bay Area. It includes the region's Sustainable Communities Strategy and the 2040 Regional Transportation Plan.

### Regional Airport System Planning Analysis

The Regional Airport System Planning Analysis, which was published in 2011, is a precursor to an updated Regional Airport System Plan. The purpose of the analysis is to assist in planning efforts at Bay Area regional airports such that future demand for aviation can be accommodated. The Metropolitan Transportation Commission is overseeing the planning effort with the Association of Bay Area Governments, the BCDC, and the Regional Airport Planning Committee (which includes the Bay Area Air Quality Management District, the Federal Aviation Administration, San Francisco International Airport, San Jose International Airport, and the California Department of Transportation). For Sunnyvale, the most relevant aspect is its analysis of Moffett Federal Airfield. According to the Regional Airport System Planning Analysis, the airfield is not needed to serve the region's long-term air passenger demand, but "its potential to serve in some regional aviation capacity should be protected" until future aviation demand studies are conducted. A future study (identified as low priority in the analysis) would "look at the need for Moffett Federal Airfield for emergency, limited air cargo, and future general aviation use" (Regional Airport Planning Committee 2011).

### Moffett Federal Airfield Comprehensive Land Use Plan

In 2012, Santa Clara County completed a Comprehensive Land Use Plan (CLUP) for Moffett Federal Airfield (Santa Clara County Airport Land Use Commission 2012). Moffett Federal Airfield was a US Naval Air Station until it was transferred to NASA in 1994. The California Air National Guard is based at and operating from the airport. The remainder of airport operation includes NASA test flights and US government personnel and air cargo flights. There are a limited number of civilian operations at the airport, which are anticipated to remain the same throughout the study period. Because Moffett Federal Airfield is a US government airport, it is not included in many of the other Federal Aviation Administration regulations.

The CLUP is a 20-year planning document. The original base year for aviation activity was 1992, and existing projections were made up to the year 2010. The document forecast that there will be no significant changes in activity at the airport through the CLUP period to the year 2022. That is, no significant changes in airport activity are forecast.

## LOCAL

### City of Sunnyvale General Plan

The Sunnyvale General Plan was first adopted in 1957. The LUTE was most recently amended in 1997. The General Plan is the comprehensive planning document governing development in Sunnyvale, and it articulates the community's vision for the future through a description of goals, policies, and actions. In 2011, the General Plan was consolidated from 22 separate General Plan chapters and subchapters that were adopted at different times. This consolidated and streamlined General Plan contains all necessary goal and policy language to address the required chapters in a concise and easy-to-use fashion.

The General Plan includes the following vision statement, which establishes a framework for future strategies and actions and a benchmark from which to evaluate future proposals:

*It is the aspiration of the people of Sunnyvale to build upon the attributes which the City currently enjoys, so that Sunnyvale of the future will become:*

- *A strong, diverse community…that is inclusive of and accessible to people of all cultures, ages, and lifestyles. Neighborhood and citywide events regularly provide residents with opportunities to connect with each other and to actively participate in city government. Sunnyvale offers a variety of housing options for its diverse and changing population.*

- *A community with a vibrant and innovative local economy…comprised of cutting-edge businesses that provide meaningful employment and partnership opportunities. Sunnyvale continues to be the heart of innovation in Silicon Valley.*

- *A regional leader in environmental sustainability…advocating to reduce dependence on non-renewable resources by providing greater transportation options, reducing waste, protecting our natural resources, and promoting alternative energy usage and research. We take environmental preservation and protection seriously and consider how each action will affect Sunnyvale for future generations.*

- *A safe, secure and healthy place for all people…where the health and safety of residents is a primary concern. Sunnyvale is a clean and attractive city with many opportunities for physical activity in a natural environment.*

- *A city managed by a responsible and responsive government…that delivers quality services in a comprehensive, cost-effective manner. The City evolves gracefully with the changing needs of the community and regularly communicates with residents and businesses to engage them in decision-making processes.*

- *A community with a distinctive identity…enhanced by a Downtown that provides a sense of place, convenience and is pedestrian-oriented. New development is concentrated in nodes along major transportation corridors and around transit hubs.*

Sunnyvale's General Plan consists of a Community Vision and five supporting chapters addressing the city's physical development. The chapters consist of the following:

<u>Land Use and Transportation Chapter</u> *(State-mandated land use, open space, and circulation elements; transportation section)*

- Land use – information on land use categories and the General Plan Land Use Map, with discussion and policies relating to future land use development

- Transportation – goals and policies related to transportation improvements

- Economy – information on current economic conditions and discussion and policies relating to future trends and challenges

- Open space – information on open space areas, service needs, and future policies to meet demand for open space

Community Character Chapter

- Design – building and street design, including policies on gateways, public art, special districts, and public facilities
- Heritage Preservation – protection of heritage structures and natural features, including programs to increase knowledge of Sunnyvale's heritage
- Library – existing conditions and future issues with expansion of the library and continuous improvement of the library collection
- Arts – facilities for the encouragement of arts programming and activities
- Recreation – issues and trends related to quality recreation programming

Housing Chapter *(State-mandated housing element, describing housing in the community)*

- Housing Needs Assessment – an evaluation of Sunnyvale's demographic, household, and housing stock characteristics, and existing and future regional housing needs
- Housing Constraints – an assessment of potential governmental and market constraints to the development and improvement of housing in Sunnyvale
- Housing Resources – an evaluation of the availability of sites to address Sunnyvale's regional housing growth needs; financial and administrative resources for housing are also presented, as are opportunities for energy conservation and green building
- Housing Plan – an evaluation of accomplishments under Sunnyvale's adopted 2009 Housing and Community Revitalization Subchapter; presentation of the City's housing goals, policies, programs, and quantified objectives for the 2015–2023 planning period

Safety and Noise Chapter *(State-mandated safety and noise elements)*

- Hazards and disaster preparedness and response – information on existing natural and manmade hazards and policies and plans to mitigate these hazards and prepare for disasters.
- Police, fire, and emergency services – information on police, fire, and emergency services and policies and plans to continue to improve these services
- Noise – information on existing and projected noise conditions with policies and programs to maintain or reduce noise from transportation, land use operations, and single-event noise

Environmental Management Chapter *(State-mandated conservation and circulation elements; public utilities section)*

- Water supply – information on various sources of potable and nonpotable water, and policies to ensure adequate supplies, water conservation efforts, and water quality
- Wastewater collection and treatment – information on the wastewater collection system and the Water Pollution Control Plant and policies for future treatment issues

- Urban runoff – information on sources of urban runoff and treatment methods, as well as policies to minimize quantity of urban runoff and improve quality
- Air quality – information on sources air pollution and policies for addressing this pollution through transportation and land use
- Solid waste – information on collection, recycling programs, and disposal and policies to reduce future waste and increase recycling efforts

### City of Sunnyvale Zoning Code

The Zoning Map and the Zoning Code (Title 19 of the Municipal Code) are tools that allow the City of Sunnyvale to regulate the location and development of land uses in a more precise manner than through the General Plan. The Zoning Code identifies and defines zoning districts and development standards, and regulates such issues as uses, setbacks, building heights, building additions, population densities, parking requirements, landscaping, and land use compatibility.

### City of Sunnyvale Design Guidelines

In an effort to protect the attractiveness of Sunnyvale's distinct neighborhoods, the City has put into place a number of design guidelines to direct the visual impact of future growth and improvements. These include the Industrial Guidelines, the Citywide Design Guidelines, the Sunnyvale Single-Family Home Design Techniques, the Eichler Design Guidelines, and an update to the Taaffe-Frances Heritage Neighborhood Design Guidelines. The City also adopted a telecommunications ordinance as part of the Zoning Code to aesthetically guide the location of telecommunications facilities throughout the community.

### City of Sunnyvale Heritage Preservation Program

In 2008/2009, the City of Sunnyvale completed a review of potential new heritage housing districts and individual heritage resources in an effort to promote reasonable historic preservation. Although several individual local landmark houses have been adopted since 1997, the City has not adopted any new heritage housing districts since 1979. One new neighborhood was studied in 2009 for heritage housing district status but was considered ineligible. Another, an Eichler neighborhood, was potentially eligible but not designated. It was determined that stronger design guidelines would suffice in preserving some unique neighborhoods regardless of historic status. However, the City remains committed to its Heritage Preservation Program, which is guided by policies in the Heritage Preservation Subchapter of the General Plan.

### City of Sunnyvale Area Plans

The City has implemented several area plans. These plans and districts consist of the following:

#### Residential

- ITR (Industrial-to-Residential), in various locations throughout the city, predominantly north of the Union Pacific Railroad tracks

Mixed Use

- Lakeside Specific Plan, located directly east of the Lawrence 101 Specific Plan
- Downtown Specific Plan, located in central Sunnyvale

Commercial

- Precise Plan for El Camino Real, located along El Camino Real

Industrial

- Moffett Park Specific Plan, located on the northern border of the city
- Arques Specific Plan, located in the eastern part of the city, along Central Expressway

### 3.1.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

Based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines, land use impacts are considered to be significant if the following could result from the implementation of the Draft LUTE:

1) Physically divide an established community.

2) 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.

3) Conflict with any applicable habitat conservation plan or natural community conservation plan.

4) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use.

5) Conflict with existing zoning for agricultural use, or a Williamson Act contract.

6) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to nonagricultural use.

While Sunnyvale was historically an agricultural city, it has since transitioned to urban uses, and the General Plan does not designate any land in Sunnyvale for agricultural uses. Furthermore, while the city has some small pockets of remaining orchards zoned for nonagricultural uses, it does not does not contain any agricultural operations. Therefore, the Draft LUTE would not result in physical environmental impacts to agricultural uses, and standards of significance 4, 5, and 6 will not be discussed further in this Draft EIR.

## METHODOLOGY

Evaluation of potential land use impacts in Sunnyvale resulting from implementation of the Draft LUTE was based on a review of planning documents pertaining to Sunnyvale, including the current Sunnyvale General Plan and the Zoning Code.

The focus of this impact analysis is whether implementation of the Draft LUTE would physically divide an existing community or potentially conflict with existing plans adopted to avoid or reduce environmental impacts. Specific physical environmental impacts and issues associated with population and housing, hazards, geology and soils, hydrology, aesthetics, recreation, cultural resources, biological resources, and public services and utilities are addressed in other technical sections, and the reader is referred to these EIR sections for detailed analyses of these environmental effects.

## PROJECT IMPACTS AND MITIGATION MEASURES

### Physically Divide an Established Community (Standard of Significance 1)

**Impact 3.1.1** Implementation of the Draft LUTE would not result in the division of an existing community. This impact is considered **less than significant.**

Division of an established community commonly occurs as a result of development and construction of physical features that constitute a barrier to easy and frequent travel between two or more constituent parts of a community. For example, a large freeway structure with few crossings could effectively split a community. Likewise, geographic features could similarly affect a community, such as the development of a large residential project on the opposite side of a river from an existing community.

The Draft LUTE does not propose large-scale infrastructure projects such as new freeways or high-volume roadways that would divide an established community. Likewise, critical transportation infrastructure linking one neighborhood to another would not be removed as part of the Draft LUTE. In fact, the proposed Mary Avenue extension would improve connectivity to the Moffett Park area. Implementation of the proposed policy provisions listed below would ensure integration and compatibility of new development with existing land use conditions. Furthermore, the Draft LUTE does not propose any change to land use designations that would divide any established communities.

The Draft LUTE contains the following policies and actions that include specific, enforceable requirements and/or restrictions and corresponding performance standards to directly address this impact.

Policy 54: Preserve and enhance the character of Sunnyvale's residential neighborhoods by promoting land use patterns and transportation opportunities that support a neighborhood concept as a place to live, work, shop, entertain, and enjoy public services, open space and community near one's home and without significant travel.

Action 1: Enhance existing residential neighborhoods by retaining and creating Village Centers with safe and convenient pedestrian and bicycle access.

Action 2: Support a full spectrum of conveniently located commercial, public, and quasi-public uses that support and enhance the livability of residential neighborhoods.

Action 3: In addition to parks, promote small-scale, well-designed, pedestrian-friendly spaces within neighborhoods to establish safe and attractive gathering areas.

Action 4: Require amenities in new development and Village Centers that serve the needs of residents.

Policy 55: Require new development, renovation, and redevelopment to be compatible and well-integrated with existing residential neighborhoods.

Action 1: Utilize adopted City design guidelines to achieve compatible and complementary architecture and scale for new development, renovation and redevelopment.

Action 2: Consider land use transitions, such as blended or mixed-use zoning and graduated densities in areas to be defined around Village Centers.

Action 3: Where an opportunity arises, consider integrating or co-locating a Village Center with a neighborhood park or open space.

Policy 56: Improve and preserve the character and cohesiveness of existing residential neighborhoods.

Action 1: Support neighborhood associations throughout Sunnyvale to facilitate community building and neighborhood identity and to encourage participation in land use and transportation decisions.

Action 2: Explore developing design standards and guidelines, similar to the Eichler Design Guidelines, to preserve the defining character of existing distinctive neighborhoods.

Action 3: Use land use and transportation policies, guidelines, regulations and engineering specifications to respect community and neighborhood identities and values for quality and design.

Action 4: Establish standards and promote and support programs that result in the maintenance and rehabilitation of existing housing and residential neighborhoods.

Action 5: Develop special area plans and neighborhood preservation programs to guide change in neighborhoods that need special attention.

Action 6: Look for opportunities to reclaim unneeded and underperforming paved areas (public and private) that could be converted to neighborhood-enhancing features such as additional tree coverage, gathering areas, pocket parks, or community gardens.

Policy 57: Limit the intrusion of incompatible uses and inappropriate development in and near residential neighborhoods but allow transition areas at the edges of neighborhoods.

Action 1: Where appropriate, use higher density residential and higher-intensity uses as buffers between neighborhood commercial centers and transportation and rail corridors.

Action 2: Require appropriate noise attenuation, visual screening, landscape buffers or setbacks between residential areas and dissimilar land uses.

Action 3: While respecting the character of existing residential neighborhoods, consider interspersing duets, paired homes and similar housing that are designed to appear as one dwelling within new single-family subdivisions to introduce greater housing choices.

Policy 59: Allow compatible and supporting uses such as group homes, places of assembly, community centers, recreational centers and child care centers in residential neighborhoods (including single-family neighborhoods) subject to review and consideration of operations, traffic, parking, and architecture.

Policies 54, 55, 56, 57, and 59 would require that new development and redevelopment preserve and enhance existing areas of Sunnyvale and its neighborhoods through land use and transportation improvement designed to integrate with existing uses and provide land use transition for uses to ensure compatibility.

Under the Draft LUTE, the City is anticipating a transformation of selected sites to mixed use by 2035. These areas are near public transit and major thoroughfares. Mixed-use development promotes the integration of residential and commercial/office uses on the same site. These compact developments facilitate walkability, reduce vehicle trips, and create centers of activity in different neighborhoods. Implementation of the policies listed above would ensure that new mixed-use land use categories defined in the Draft LUTE would be compatible with existing uses and would provide increased connectivity, which would limit the potential for physical division of an existing community. Thus, the Draft LUTE would result in a **less than significant** impact regarding division of an established community.

Mitigation Measures

None required.

### Conflict with Land Use Plans, Policies, or Regulations adopted by Other Agencies (Standard of Significance 2)

**Impact 3.1.2** Implementation of the LUTE would not lead to inconsistency with other land use plans, ordinances, and regulations adopted by other agencies that address physical effects to the environment. This impact is considered **less than significant**.

This subsection includes a discussion of potential conflicts between the Draft LUTE and the applicable planning documents described in the Existing Setting subsection. Please note that planning documents pertaining to specific technical topics (e.g., air quality, transportation and

circulation, and climate change [Climate Action Plan]) are addressed in those topical sections of this Draft EIR.

Plan Bay Area

As noted above, Plan Bay Area is a long-range integrated transportation and land-use/housing strategy through 2040 for the San Francisco Bay Area. It includes the region's Sustainable Communities Strategy and the 2040 Regional Transportation Plan. The Draft LUTE land use mix and policy provisions specifically promote mixed-use development near transit facilities, improvement in all forms of transportation (pedestrian, bicycle, and transit), and requires connectivity of land uses to reduce vehicle travel. These provisions are consistent with Plan Bay Area and would help implement its vision.

San Francisco Bay Plan

Any individual development projects that could occur in the city in San Francisco Bay shoreline areas under the jurisdiction of the BCDC would be subject to the BCDC's review and approval process.

The Draft LUTE would support key Bay Plan objectives of preserving open space adjacent to San Francisco Bay, protecting the water quality of the bay, and increasing public access to the bay and associated shoreline. All lands in the Planning Area under the City's jurisdiction adjacent to San Francisco Bay would remain designated as parks or open space and thus would be protected from extensive development and remain accessible to the public. This land use pattern would also be consistent with the recent amendments to the Bay Plan designed to respond to expected sea level rise. In addition, the following Draft LUTE policies and actions would protect San Francisco Bay and would ensure future planning considers sea level rise, in accordance with Bay Plan policies. The reader is referred to Section 3.13, Greenhouse Gases and Climate Change, for a further discussion of potential sea level rise impacts to the city.

Policy 10: Participate in federal, state, and regional programs and processes in order to protect the natural and human environment in Sunnyvale and the region.

Action 1: Protect and preserve the diked wetland areas in the baylands to preserve or enhance flood protection.

Action 2: Coordinate with regional agencies such as Bay Conservation and Development Commission regarding new and changing land uses proposed along the San Francisco Bay.

Policy 11: Prepare for risks and hazards related to climate change prior to their occurrence.

Action 4: Analyze and disclose possible impacts of climate change on development projects or plan areas, with an emphasis on sea level rise.

Action 5: Integrate climate change adaptation into future updates of the Zoning Code, Building Code, General Plan, and other related documents.

Action 9: Support regional efforts such as those of the Bay Conservation and Development Commission and the Joint Policy Committee to analyze and prepare for the impacts of climate change in the Bay Area.

Policy 74: Engage in regional efforts to enhance and protect land uses near streams and to respond to sea level rise and climate change.

With implementation of these policies and actions, the Draft LUTE would not conflict with the Bay Plan.

Regional Airport System Planning Analysis

The Regional Airport System Planning Analysis indicates that Moffett Federal Airfield is not needed to serve the region's long-term air passenger demand, but its future aviation potential should be protected until future aviation demand studies are conducted. The Draft LUTE would not compromise this aviation potential, as no changes are directly proposed for the airfield. In addition, the following policies and actions would protect Moffett Federal Airfield from incompatible land uses and encourage collaboration with the City on issues of mutual interest:

Policy 8: Actively participate in discussions and decisions regarding transportation between regions including regional airport and regional rail planning to ensure benefit to the community.

Action 1: Comprehensively review any proposed aviation services at Moffett Federal Airfield that could increase aviation activity or noise exposure.

Action 2: Encourage appropriate uses at Moffett Federal Airfield that best support the community's desires in Sunnyvale.

Action 3: Pursue annexation of that portion of Moffett Federal Airfield within Sunnyvale's sphere of influence in order to strengthen the city's authority over future use.

Action 4: Monitor and participate in regional airport planning decision-making processes with agencies such as the Metropolitan Transportation Commission and the Regional Airport Planning Commission.

Action 5: Monitor and participate in efforts by the Santa Clara County Airport Land Use Commission to regulate land uses in the vicinity of Moffett Federal Airfield.

With implementation of these policies and actions, the Draft LUTE would not conflict with the Regional Airport System Planning Analysis.

Area Plans

Existing area plans in Sunnyvale are described above in the Regulatory Framework subsection. In general, the Draft LUTE includes policies that would encourage land use trends that are in the process of being implemented as part of already adopted area plans. These include policies that encourage increased mixed-use development in the Lakeside and Downtown specific plans. Several policies and related actions in the Draft LUTE would require specific updates to existing area plans and integration of future planning. These policies and actions include the following:

Policy 97: Prepare specific area plans and special zoning tools (including but not limited to specific plans, precise plans, design guidelines, specialized zoning, and sense of

place plans) to guide change in areas of the planning area that need special attention.

Policy 98: Support the following adopted specialized plans and zoning tools, and update them as needed to keep up with evolving values and new challenges in the community: Downtown Specific Plan, Lakeside Specific Plan, Arques Campus Specific Plan, Lawrence/101 Site Specific Plan, Precise Plan for El Camino Real, Moffett Park Specific Plan, Peery Park Specific Plan, Lawrence Station Area Plan. *(See Figure 3, Area Plans)*

Policy 99: Use special area plans to guide land use and development in areas that support alternative travel modes, Village Centers, economic development, and a better jobs/housing ratio.

Action 1: Maintain the sense of place plans that provide more focused policies and development standards to guide future land use and transportation decisions.

Action 2: Prepare a special area plan for each of the Village Centers to provide focused land use, transportation, and design standards, policies, and guidelines.

Policy 100: Use specialized zoning districts and other zoning tools to address issues in the community and update as needed to keep up with evolving values and new challenges in the community.

Policy 101: Use the Industrial-to-Residential (ITR) combining district to help meet the community's housing needs for all ages and economic sectors and balance its use with maintaining a healthy economy and employment base. ITR zoning allows industrial/commercial/office uses to continue as conforming uses while an area transitions to residential uses. ITR areas include Tasman Crossing, East Sunnyvale, Futures 4a, Futures 4b, and Futures 6a.

Action 1: Update the Zoning Code to indicate that once a site zoned ITR has transitioned to residential use (or other use only allowed in a residential zoning district), it cannot be returned to industrial use.

Action 2: During the transition from industrial to residential uses, anticipate and monitor compatibility issues between residential and industrial uses (e.g., noise, odors, hazardous materials).

Action 3: Incorporate "sense of place" requirements for new ITR areas in order to enhance the residential feeling of new neighborhoods by requiring pedestrian, bicycle, and streetscape enhancements that reflect the unique character of each new neighborhood.

Action 4: Rezone transitioned neighborhoods from ITR to appropriate residential zoning after 75% of the land area has been redeveloped with residential use.

Action 5: Consider sense of place or pedestrian circulation plans to address access in ITR neighborhoods.

Policy 102: Industrial uses in the ITR generally should not intensify beyond the base floor area ratio of 35% allowed in the zoning district (including any incentives to allow higher intensity development).

With implementation of these policies and actions, the Draft LUTE would not conflict with the City's area plans.

Therefore, no conflict with a land use plan adopted by another agency for the purpose of reducing potential environmental impacts would occur, and this impact would be **less than significant**.

Mitigation Measures

None required.

### Conflict with City Land Use Plans (Standard of Significance 2)

**Impact 3.1.3** The Draft LUTE contains provisions that ensure it would not conflict with the Sunnyvale General Plan and Zoning Code. This impact is **less than significant**.

State planning law requires that the elements of a general plan must be internally consistent. Changes in land use that could occur with implementation of the policies and actions in the Draft LUTE would be concentrated in areas of the city that are located along transportation corridors and near transit nodes, contain underutilized land, and are best able to accommodate growth.

Changes to land use designations in the existing General Plan that would be implemented as part of the Draft LUTE are designed to focus development, increase commercial intensities in close proximity to residential uses, allow a mix of uses, and increase economic development in Sunnyvale, and the designation changes would generally not conflict with established uses and current adopted land use plans.

Urban growth that would occur in Sunnyvale as a result of the Draft LUTE would be generally consistent with the Focused Future strategy identified by ABAG and Plan Bay Area, in that growth would be focused in areas that are already urbanized, are located in close proximity to transit, and can accommodate additional residential and employee populations without adversely affecting sensitive natural resources. The development of dense residential and mixed-use districts in close proximity to transit nodes represents an environmentally preferred method for accommodating a growing population and reducing sprawl

The City's Zoning Code establishes land use regulations that implement the General Plan land use designations. Numerous policies in the LUTE would require updates to the Zoning Code to maintain consistency with the LUTE and enable the land use patterns envisioned in the Draft LUTE. The governing action is Policy 100 (listed under Impact 3.1.2, above), which would require the use of specialized zoning districts and other zoning tools to address issues in the community and updates as needed to keep up with evolving values and new challenges in the community.

The Draft LUTE contains the following policies and actions that would include additional development guidelines and standards that are expected to be incorporated into the Zoning Code:

Policy 54: Preserve and enhance the character of Sunnyvale's residential neighborhoods by promoting land use patterns and transportation opportunities that support a neighborhood concept as a place to live, work, shop, entertain, and enjoy public services, open space and community near one's home and without significant travel.

Action 1: Enhance existing residential neighborhoods by retaining and creating Village Centers with safe and convenient pedestrian and bicycle access.

Action 4: Require amenities in new development and Village Centers that serve the needs of residents.

Policy 55: Require new development, renovation, and redevelopment to be compatible and well-integrated with existing residential neighborhoods.

Action 1: Utilize adopted City design guidelines to achieve compatible and complementary architecture and scale for new development, renovation, and redevelopment.

Action 2: Consider land use transitions, such as blended or mixed-use zoning and graduated densities, in areas to be defined around Village Centers.

Action 3: Where an opportunity arises, consider integrating or co-locating a Village Center with a neighborhood park or open space.

Policy 56: Improve and preserve the character and cohesiveness of existing residential neighborhoods.

Action 1: Support neighborhood associations throughout Sunnyvale to facilitate community building and neighborhood identity and to encourage participation in land use and transportation decisions.

Action 2: Explore developing design standards and guidelines, similar to the Eichler Design Guidelines, to preserve the defining character of existing distinctive neighborhoods.

Action 3: Use land use and transportation policies, guidelines, regulations and engineering specifications to respect community and neighborhood identities and values for quality and design.

Action 4: Establish standards and promote and support programs that result in the maintenance and rehabilitation of existing housing and residential neighborhoods.

Action 5: Develop special area plans and neighborhood preservation programs to guide change in neighborhoods that need special attention.

Action 6: Look for opportunities to reclaim unneeded and underperforming paved areas (public and private) that could be converted to neighborhood enhancing features such as additional tree coverage, gathering areas, pocket parks, or community gardens.

Policy 57: Limit the intrusion of incompatible uses and inappropriate development in and near residential neighborhoods but allow transition areas at the edges of neighborhoods.

Action 1: Where appropriate, use higher density residential and higher-intensity uses as buffers between neighborhood commercial centers and transportation and rail corridors.

Action 2: Require appropriate noise attenuation, visual screening, landscape buffers, or setbacks between residential areas and dissimilar land uses.

Action 3: While respecting the character of existing residential neighborhoods, consider interspersing duets, paired homes, and similar housing that are designed to appear as one dwelling within new single-family subdivisions to introduce greater housing choices.

Policy 59: Allow compatible and supporting uses such as group homes, places of assembly, community centers, recreational centers, and child care centers in residential neighborhoods (including single-family neighborhoods) subject to review and consideration of operations, traffic, parking, and architecture.

The policies and actions listed above address consistency with the land use conditions of the City and Planning Area. Following updates to the Zoning Code directed by the Draft LUTE and implementation of other related policies in the Draft LUTE, the proposed project would not conflict with the Zoning Code. This impact would be **less than significant**.

Mitigation Measures

None required.

### Conflict with a Habitat Conservation Plan or Natural Community Conservation Plan (Standard of Significance 4)

**Impact 3.1.4** No habitat conservation plan or natural community conservation plan has been adopted for land in Sunnyvale. Therefore, there would be **no impact**.

The Santa Clara Valley Habitat Plan was approved and adopted in 2013. The plan encompasses all of unincorporated Santa Clara County, the Santa Clara Valley Water District, and the Santa Clara Valley Transportation Authority, as well as the cities of Gilroy, Morgan Hill, and San Jose. However, Sunnyvale is not in the planning area for the habitat plan. Therefore, there would be **no impact** related to conflict with a habitat conservation plan or natural community conservation plan.

Mitigation Measures

None required.

## 3.1.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

### CUMULATIVE SETTING

Land use impacts are typically isolated to a jurisdiction, except where land uses may interact or conflict with those in adjacent jurisdictions. When evaluating cumulative impacts, CEQA allows the use of either a list of past, present, and probable future projects, including projects outside the control of the lead agency; or a summary of projections in an adopted planning document. This cumulative analysis uses adopted general plans in cities around Sunnyvale (Mountain View, Cupertino, Santa Clara, Los Altos, and San Jose), Santa Clara County, and the regional population and employment projections developed by the Association of Bay Area Governments (ABAG).

Expected population and employment growth in the region would result in further urbanization of land uses at the regional level. ABAG and MTC, as part of the Plan Bay Area Sustainable Communities Strategy, have identified alternative growth strategies for the region to accommodate this growth. One such strategy calls for population and employment growth to be directed to urban areas, in close proximity to regional transportation nodes and job centers. Under this "Focused Future" approach to accommodating growth, growth is also redistributed to areas with high concentrations of jobs and transit. Increased growth is projected for downtown San Jose and at Santa Clara Valley Transportation Authority (VTA) and Caltrain stations in the cities of Palo Alto, Mountain View, Santa Clara, Sunnyvale, and Milpitas.

### CUMULATIVE IMPACTS AND MITIGATION MEASURES

**Cumulative Land Use Impacts**

**Impact 3.1.5** Implementation of the Draft LUTE would not contribute to cumulative land use impacts associated with the division of an established community or conflicts with land use plans and regulations that provide environmental protection. This impact would be **less than cumulatively considerable**.

Expected population and employment growth in the region would result in land use changes at the regional level. However, urban growth that would occur in Sunnyvale as a result of the Draft LUTE would be generally consistent with the Focused Future strategy identified by ABAG and Plan Bay Area, in that growth would be focused in areas that are already urbanized, are located in close proximity to transit, and can accommodate additional residential and employee populations without adversely affecting sensitive natural resources. The development of dense residential and mixed-use districts in close proximity to transit nodes represents an environmentally preferred method for accommodating a growing population and reducing sprawl. Furthermore, the Draft LUTE would increase the density of Sunnyvale within its city limits and would encourage transit-oriented development. The Draft LUTE would not result in the division of any communities in cities adjacent to Sunnyvale, and as shown in the Draft LUTE policies listed below, the City would participate in coordinated land use and transportation planning in the region.

The Draft LUTE contains the following policies and actions that include specific, enforceable requirements and/or restrictions and corresponding performance standards to directly address regional land use issues.

Policy 1: Participate in coordinated land use and transportation planning in the region.

Action 1: Actively monitor and participate in intergovernmental activities with federal, state and regional agencies related to regional and sub-regional land use and transportation planning in order to advance the City's policies.

Action 2: Actively monitor and participate in Plan Bay Area, with the Association of Bay Area Governments Metropolitan Transportation Commission, and other region-wide planning activities.

Action 3: Actively monitor and participate in activities of non-government organizations that influence regional land use and transportation planning such as Silicon Valley Leadership Group, Sustainable Silicon Valley, and Bay Area Economic Forum. Consider more standardized land use policies in the regions, such as parking standards, to promote equity between cities.

Policy 2: Minimize regional sprawl by endorsing strategically placed development density in Sunnyvale and by utilizing a regional approach to providing and preserving open space for the broader community.

Policy 4: Coordinate with adjacent cities on local land use and transportation planning.

Action 1: Monitor significant land use and transportation decisions pending in adjacent and nearby cities to ensure that Sunnyvale's interests are represented.

Policy 5: Recognize and plan so that neighborhood villages may cross borders into adjacent cities.

Action 1: Utilize Best Practices for Inter-Jurisdictional Coordination and Communication on Significant Projects or most updated Council policy when notifying adjacent cities of projects in Sunnyvale.

Action 2: Provide timely responses advocating Sunnyvale's interests when notified of a project in an adjacent or nearby city.

Action 3: Work with adjacent cities to eliminate barriers and facilitate ways to get across barriers to travel such as discontinuous streets, trails, bike lanes, sidewalks and paths.

Action 4: Partner with cities in the region to prevent and eliminate barriers by using the Santa Clara Valley Transportation Authority Bicycle Standards.

Policy 6: Land use planning in Sunnyvale and the regional transportation system should be integrated.

Action 1: Promote shorter commute trips and ease congestion by advocating that all communities provide housing and employment opportunities.

Action 2: Support regional efforts which promote higher densities near major transit and travel facilities.

As identified under Impacts 3.1.1 through 3.1.4 above, the Draft LUTE would not conflict with any applicable land use plans, policies, or regulations adopted to reduce environmental impacts and would not divide any established communities. The Draft LUTE would not add to any existing physical divisions of communities. The policies and actions in the Draft LUTE would complement the general plans of surrounding jurisdictions by promoting a regional approach to land use and transportation planning in the city and improving regional connections. Thus, the Draft LUTE would result in a **less than cumulatively considerable** contribution to regional land use impacts.

Mitigation Measures

None required.

## REFERENCES

BCDC (San Francisco Bay Conservation and Development Commission). 2012. *San Francisco Bay Plan.* Accessed October 2012. http://www.bcdc.ca.gov/laws_plans/plans/sfbay_plan.

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# 3.2 Population/Housing/Employment

This section analyzes the socioeconomic conditions in Sunnyvale, including population characteristics, housing, and employment opportunities. Multiple data sources from different years were used for this analysis in order to present existing population trends and to develop reasonable housing and employment projections.

A summary of the conclusions related to potential population, housing, and employment impacts is provided below.

| Impact Number | Impact Topic | Impact Significance |
|---|---|---|
| 3.2.1 | Substantial Increase in Population, Housing, and Jobs | Less than significant |
| 3.2.2 | Displacement of a Substantial Number of People or Housing | Less than significant |
| 3.2.3 | Cumulative Population and Housing Increases | Less than cumulatively considerable |
| 3.2.4 | Cumulative Displacement of People or Housing | Less than cumulatively considerable |

## 3.2.1 EXISTING SETTING

### DEMOGRAPHICS

#### Population Trends

Sunnyvale is the second largest city in Santa Clara County, behind only San Jose, which comprises over half the county's population. Sunnyvale's population grew steadily from 1970 to 2000, increasing between 10 and 12 percent each decade. Since 2000, however, population growth in Sunnyvale has slowed, due in part to the economic downturn between 2008 and 2010. In 2010, the city's population was 140,450 (7 percent more than in 2000). **Table 3.2-1** presents recent population growth trends in Sunnyvale and compares this growth to Santa Clara County as a whole. The California Department of Finance estimates the county's 2015 population at 1,889,638 and the city's at 148,028.

**TABLE 3.2-1**
**LOCAL AND COUNTYWIDE GROWTH TRENDS**

| Jurisdiction | 1990 | 2000 | 2010 | Percentage Change | |
|---|---|---|---|---|---|
| | | | | 1990–2000 | 2000–2010 |
| Sunnyvale | 117,229 | 131,760 | 141,000 | 12% | 7.0% |
| Santa Clara County | 1,497,577 | 1,682,585 | 1,781,642 | 12% | 5.9% |

*Sources: Santa Clara County 2012; Sunnyvale 2010; ABAG 2012*

#### Household Trends and Demographics

All neighborhoods in the city experienced declines in average household size between 1970 and 1990. Household size increased between 2000 and 2010. Sunnyvale had an average household size of 2.54 persons in 2010 (US Census Bureau 2012). This household size is smaller than the county average of 2.92 persons due to Sunnyvale's higher incidence of single-person households and lower proportion of family households. **Table 3.2-2** shows the average household size in Sunnyvale in the years 1990, 2000, and 2010. The California Department of Finance estimates Sunnyvale's average household size in 2015 was 2.67 persons.

**TABLE 3.2-2**
**CITY OF SUNNYVALE HOUSEHOLD SIZE**

| Year | Household Size |
|---|---|
| 1990 | 2.42 |
| 2000 | 2.49 |
| 2010 | 2.54 |

*Source: Sunnyvale 2010; US Census Bureau 2012*

Families comprise the majority of households in Sunnyvale (62 percent), including families with children (28 percent) and those without children (34 percent). Sunnyvale has a high proportion of single-person households (27 percent) in contrast to the county (21 percent).

As depicted in **Table 3.2-3**, the number of housing units in Sunnyvale increased from 48,592 units in 1990 to 55,400 units in 2010. The rate of housing growth decreased from 7.5 percent between 1990 and 2000 to 5.4 percent between 2000 and 2010. The California Department of Finance estimates that the number of housing units in Sunnyvale in 2015 was 57,561.

**TABLE 3.2-3**
**CITY OF SUNNYVALE HOUSING UNITS**

| Year | Households | Percentage Change |
|---|---|---|
| 1990 | 48,592 | — |
| 2000 | 52,539 | 7.5% |
| 2010 | 55,400 | 5.4% |

*Source: Sunnyvale 2009; US Census Bureau 2012*

### Household Income

The median household income in Sunnyvale was estimated at $104,681 in 2014, slightly higher than the median household income in the county overall, which was $97,532 that year. (U.S. Census Bureau, American Community Survey, 2014).

### Tenure

Housing tenure refers to whether a housing unit is owned, rented, or vacant. The homeownership rate in Sunnyvale changed from 48 percent in 2000 to 45 percent in 2012. This rate of homeownership is lower than that of the county as a whole (57 percent) and the state (55 percent) (Sunnyvale 2014). An increase in the number of renter-occupied housing units occurred, with 70,337 renters in 2010 compared to 63,968 renters in 2000 (US Census Bureau 2012). This increase is composed of both additional multi-family rental units to the housing stock, as well as existing homeowners opting to rent out their condominiums or single-family homes.

### Housing Unit Vacancy

In 2013, 4.3 percent of all housing units in Sunnyvale were vacant (Sunnyvale 2014). In 2015, the California Department of Finance estimated that 4.2 percent of housing units in Sunnyvale were vacant.

### Employment

The City estimates that there were 82,000 jobs in Sunnyvale in 2014. The California Employment Development Department estimates a 5.8 percent unemployment rate in Sunnyvale in 2013, compared to a countywide unemployment rate of 6.8 percent and a statewide rate of 8.0 percent (Sunnyvale 2014).

**Table 3.2-4** presents information on the occupations of Sunnyvale residents. Residents employed in managerial, professional, and related occupations (58 percent) accounted for the largest share of employed residents, followed by those employed in sales and office occupations (19.9 percent) (US Census Bureau 2012).

**TABLE 3.2-4**
**EMPLOYMENT BY INDUSTRY – SUNNYVALE**

| Employer | Year 2010 |
|---|---|
| Management, business, science, and arts occupations | 58.0% |
| Sales and office occupations | 19.9% |
| Service occupations | 11.0% |
| Production, transportation, and material moving occupations | 6.0% |
| Natural resources, construction, and maintenance occupations | 5.2% |

*Source: Census 2012*

### Jobs/Housing Balance

The jobs/housing balance is defined as the ratio of the number of jobs to the number of housing units in a given area. The jobs/housing ratio in Sunnyvale in 2014 was 1.44. Although the term "jobs/housing balance" is still often used, the more relevant measure is the ratio of jobs to the number of employed residents (because some households have no workers, while others have multiple workers). Jobs and housing are considered to be balanced when there are an equal number of employed residents and jobs in a given area, with a ratio of approximately 1.0. In 2010, ABAG estimates indicated that Sunnyvale had a balanced jobs-to-employed residents ratio at 1.0, similar to the countywide ratio of 1.1. However, the high jobs-to-employed residents ratio in neighboring cities (2.9 in Palo Alto, 1.9 in Santa Clara, and 1.8 in Los Gatos) can also impact the demand for housing in Sunnyvale. Over the next three decades, ABAG's 2013 projections indicated that Sunnyvale's jobs-to-employed residents ratio will remain fairly stable. However, although the ratio may be 1:1, the majority of city residents work outside of the city, and the majority of local workers commute in; however most of this commuting appears to be within the county (Sunnyvale 2014).

## 3.2.2 REGULATORY FRAMEWORK

STATE

### Housing Element Law – Article 10.6 of the Government Code (Sections 65580–65589.8)

The California legislature has declared the attainment of affordable housing and a suitable living environment for every Californian to be of vital importance. Attaining the state's housing goals requires efforts from all sectors, including the private sector and all levels of government. Each

local government has power to facilitate the improvement and development of housing for all economic segments of the community, while accounting for economic, environmental, and fiscal factors, as well as community goals and regional housing needs. The tool by which local governments attempt to achieve these goals is the general plan housing element. The housing element identifies and analyzes existing and projected housing needs and presents goals, policies, quantified objectives, and programs to address those needs. The housing element also provides implementation measures for these programs. Each jurisdiction in the state must update its housing element at least every eight years in accordance with housing element law. The City of Sunnyvale's General Plan Housing Element is described under the Local subheading below.

### REGIONAL

#### Regional Housing Needs Plan

A Regional Housing Needs Plan (RHNP) is required under California Government Code Section 65584 to enable regions to address housing issues and meet housing needs based on future growth projections for the area. The State of California determines the number of total housing units needed for each region. ABAG allocates housing needs among cities and counties in the nine-county ABAG region for each jurisdiction to use in drafting its housing element. The allocation comes after projection modeling based on current general plan policies, land use designations, and zoning. The allocations are based on "smart growth" assumptions in the modeling and aim to shift development patterns from historical trends (suburban sprawl) toward a better jobs/housing balance, increased preservation of open space, and development of mixed use, transit-accessible areas. The regional housing need allocations are based on analysis of the available housing stock and vacancy rate in each community, any existing unmet needs for housing; the projected growth in the number of households (population growth and household formation rate); the local and regional distribution of income; and the need for housing generated by local job growth.

In 2013, ABAG identified Sunnyvale's fair share of regional housing need for the 2015-2023 planning period consisted of 1,640 units affordable to very low-income households, 906 units affordable to low-income households, 932 units affordable to moderate-income households, and 1,974 units affordable to above moderate-income households, for a total of 5,452 units (Sunnyvale 2014).

### LOCAL

#### City of Sunnyvale General Plan Housing Element

The Housing Element was adopted in December 2014 and serves as Sunnyvale's primary policy document regarding the development, rehabilitation, and preservation of housing for all economic segments of the population within its jurisdiction for the 2015–2023 planning period. Accordingly, the Housing Element identifies and analyzes the existing and projected housing needs of Sunnyvale and lists goals, policies, and programs for the preservation, improvement, and development of housing. The Housing Element also identifies sites for housing development that are adequate to accommodate Sunnyvale's allocation of the regional housing need. The goals, policies, and programs are classified in six categories: provision of new housing, housing conservation and maintenance, removal of governmental constraints, provision of adequate housing sites, equal housing opportunities and special needs, and neighborhood quality.

### 3.2.3 IMPACTS AND MITIGATION MEASURES

#### STANDARDS OF SIGNIFICANCE

According to California Environmental Quality Act (CEQA) Guidelines Section 15131(a), economic or social effects of a project are not treated as significant effects on the environment. If the proposed project were to cause physical changes as a result of economic or social changes, the physical effects (for example, the destruction of habitat resulting from housing construction to accommodate increased population) could be considered significant. This analysis evaluates the Draft LUTE's impacts on population and housing based on the standards of significance identified in State CEQA Guidelines Appendix G. A population and housing impact is considered significant if implementation of the project would:

1) 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).

2) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.

3) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

#### METHODOLOGY

The demographic projections in the Draft LUTE for population, households, and jobs in Sunnyvale by 2035 based on the proposed land use plan are shown in **Table 3.2-5**. The City of Sunnyvale projects a 2035 population of up to 174,500. The City projects that up to 72,100 housing units can be accommodated under the draft LUTE by 2035. The City estimates that there were 82,000 jobs in 2014 and projects that there will be up to 124,410 jobs in the City by 2035.

**TABLE 3.2-5**
**DEMOGRAPHIC COMPARISON – 2014 TO 2035**

| | Existing Conditions (2014) | Horizon 2035 LUTE | Net Increase |
|---|---|---|---|
| Population | 147,055 | 174,500 | 27,455 |
| Housing Units | 57,000 | 72,100 | 15,100 |
| Industrial/Office/Commercial (million square feet) | 47.3 | 59.8 | 12.5 |
| Jobs | 82,000 | 124,410 | 42,410 |
| Jobs-to-Housing Units Ratio | 1.44 | 1.73 | |

The impact analysis below utilizes Draft LUTE policies and actions to determine whether implementation of the Draft LUTE would result in significant population, housing, and employment growth compared to existing conditions. Population growth and job growth due to regional market dynamics can occur whether or not any new structures are built (e.g., without any City actions), through residential overcrowding and more intensive use of existing workplaces. These types of growth are virtually impossible for cities to control due to state and federal limitations on cities' ability to impose occupancy limits on residences, for example. The

individual analyses identify and describe how specific policies and actions as well as other City regulations and standards provide enforceable requirements and/or performance standards that avoid or minimize significant impacts caused by the Draft LUTE.

The physical environmental effects resulting from population and job growth are addressed in other technical sections of this Draft EIR.

## PROJECT IMPACTS AND MITIGATION MEASURES

### Substantial Increase in Population, Housing, and Jobs (Standard of Significance 1)

**Impact 3.2.1** New development resulting from implementation of the Draft LUTE would accommodate residential and employment growth anticipated by the year 2035 and any additional growth capacity beyond the year 2035. This impact is considered **less than significant**.

A projection of residential and nonresidential (retail, commercial, office, industrial, and other) uses and jobs in Sunnyvale for the year 2035 was determined based on the proposed land uses in the Draft LUTE. A comparison of year 2035 demographics and total growth potential under the LUTE is provided in **Table 3.2-5**. Potential growth under the Draft LUTE would be similar to growth that ABAG projects for 2030 (174,700). The physical environmental effects of that growth (e.g., traffic, air quality) are addressed throughout this Draft EIR and mitigated where appropriate. In addition, the Draft LUTE does not require the city to grow to this size.

Implementation of Draft LUTE land use designations, policies, and actions would directly induce a population increase in Sunnyvale of up to 27,445, from its current (2014) population of 147,055 to up to 174,500 persons by 2035. The development of new housing units throughout Sunnyvale would be supported and promoted by the Draft LUTE policies and actions listed below, such as Policy 60, which encourages the development of a variety of housing types, including more traditional forms of housing (single-family detached, townhouses/condominiums, garden apartments, and other multi-family housing), as well as alternative housing types (co-housing, single-room occupancy units, live-work spaces, transitional housing, senior housing, assisted living facilities, and other types). Other policies, such as Policy 63 and Policy 101, promote new higher-density residential zoning districts, primarily in Village Centers, and the conversion of industrial to residential zoning in areas in which it is appropriate to transition industrial/commercial/office uses to residential. While this growth could increase the Planning Area's existing population, it is highly likely that much of this growth would occur under existing conditions (i.e., the current LUTE), and further through over-crowding of existing housing, if the additional increment of housing added by the Draft LUTE were not built. This growth would be contained within the current boundaries of the Planning Area, does not include any greenfield development, and can be accommodated with existing and planned public services, and thus is not considered substantial. The environmental effects of this growth are disclosed in this Draft EIR.

Implementation of the Draft LUTE would also increase the amount of commercial and service uses, and indirect population growth could be induced by the development of such land uses. An increase of up to approximately 42,410 jobs is projected to occur by 2035 under the Draft LUTE. This increased workforce reflects a potential 52 percent increase in jobs by 2035. The increase in jobs could cause people to move to Sunnyvale or surrounding communities. However, many of the new jobs would likely be occupied by those already residing in the City or the surrounding regional area, and while this could increase the number of people commuting to work in Sunnyvale, the increase in jobs is not likely to result in a substantial number of people moving into the city beyond the number that would move into the 15,000 new housing units.

The anticipated physical environmental effect of this jobs/housing ratio would be associated with commuter traffic, which has been factored in the traffic analysis (see Section 3.4, Transportation and Circulation), air quality analysis (see Section 3.5, Air Quality), and traffic noise analysis (se Section 3.6, Noise).

The following Draft LUTE policies and actions address population, housing, and employment:

Policy 6: Land use planning in Sunnyvale and the regional transportation system should be integrated.

Action 1: Promote shorter commute trips and ease congestion by advocating that all communities provide housing and employment opportunities.

Action 2: Support regional efforts which promote higher densities near major transit and travel facilities.

Policy 56: Improve and preserve the character and cohesiveness of existing residential neighborhoods.

Action 4: Establish standards and promote and support programs that result in the maintenance and rehabilitation of existing housing and residential neighborhoods.

Policy 57: Limit the intrusion of incompatible uses and inappropriate development in and near residential neighborhoods but allow transition areas at the edges of neighborhoods.

Action 1: Where appropriate, use higher density residential and higher-intensity uses as buffers between neighborhood commercial centers and transportation and rail corridors.

Action 3: While respecting the character of existing residential neighborhoods, consider interspersing duets, paired homes, and similar housing that are designed to appear as one dwelling within new single-family subdivisions to introduce greater housing choice.

Policy 60: In addition to more traditional forms of housing (single-family detached, townhouses, garden apartments, and shared corridor multi-family housing), support alternative housing types including co-housing, single room occupancy units, live-work spaces, transitional housing, senior housing, assisted living, and other types that may become necessary and appropriate to serve a changing population.

Policy 61: Determine appropriate residential density for a site by evaluating the site planning opportunities and proximity of services (such as transportation, open space, jobs, and supporting commercial and public uses).

Policy 62: Encourage the development of housing options in the City with the goal that the majority of housing is owner-occupied.

Policy 63: Promote new mixed-use development and allow higher residential density zoning districts (medium and higher) primarily in Village Centers, El Camino Real Nodes and future Industrial-to-Residential areas.

Policy 77: Participate in regional efforts to respond to transportation and housing problems caused by economic growth in order to improve the quality of life and create a better environment for businesses to flourish.

Action 1: Support land use policies to achieve a healthy relationship between the creation of new jobs and housing.

Policy 80: Encourage the creation or installation of pilot programs for emerging industries in both private and public facilities.

Policy 81: Support a variety of land and building ownership forms, including business condominiums, planned developments and more traditional single owner developments.

Policy 82: Attract and retain a diversity of commercial enterprises and industrial uses to sustain and bolster the local economy and provide a range of job opportunities.

Action 1: Promote a variety of commercial, retail, and industrial uses, including neighborhood shopping, general business, office, clean technology, and industrial/research and development.

Action 2: Ensure that rezoning of industrial or commercial areas and sites will not significantly hurt the community's economic base.

Action 3: Encourage independent local businesses.

Action 4: Support a seamless development review process.

Action 5: Expand the One Stop Permit Center and reflect "time to market" needs of business.

Policy 83: Encourage land uses that generate revenue while preserving a balance with other community needs, such as housing.

Action 1: Monitor revenues generated by different economic sectors on an on-going basis.

Policy 84: Create a strong, identifiable Downtown that offers regional and citywide shopping opportunities and entertainment.

Policy 85: Maintain an adequate supply of land zoned for office, industrial, and retail development to meet projected needs.

Policy 86: Provide quality neighborhood, community, and regional retail centers/uses to meet the needs of residents.

Action 1: Track retail leakage to encourage businesses that meet missing retail needs.

Policy 87: Consider the importance of tax generation (retail, hotel auto, and business-to business uses) to support the fiscal health of the community and to fund municipal services.

Policy 88: Identify valuable physical characteristics and business aspects, and protect the uniqueness and integrity of all business areas and districts.

Policy 93: Support a regional commercial district in Downtown Sunnyvale.

Policy 94: Promote continuous reinvestment in shopping centers through maintenance, revitalization, and redevelopment.

Policy 96: Maintain areas of Class B and C buildings to support all types of businesses and provide a complete community.

Policy 99: Use special area plans to guide land use and development in areas that support alternative travel modes, Village Centers, economic development, and a better jobs/housing ratio.

Action 1: Maintain the sense of place plans that provide more focused policies and development standards to guide future land use and transportation decisions.

Action 2: Prepare a special area plan for each of the Village Centers to provide focused land use, transportation, and design standards, policies, and guidelines.

Policy 101: Use the Industrial-to-Residential (ITR) combining district to help meet the community's housing needs for all ages and economic sectors and balance its use with maintaining a healthy economy and employment base. ITR zoning allows industrial/commercial/office uses to continue as conforming uses while an area transitions to residential uses. ITR areas include Tasman Crossing, East Sunnyvale, Futures 4a, Futures 4b, and Futures 6a.

Action 1: Update the Zoning Code to indicate that once a site zoned ITR has transitioned to residential use (or other use only allowed in a residential zoning district), it cannot be returned to industrial use.

Action 2: During the transition from industrial to residential uses, anticipate and monitor compatibility issues between residential and industrial uses (e.g., noise, odors, hazardous materials).

Action 3: Incorporate "sense of place" requirements for new ITR areas in order to enhance the residential feeling of new neighborhoods by requiring pedestrian, bicycle, and streetscape enhancements that reflect the unique character of each new neighborhood.

Action 4: Rezone transitioned neighborhoods from ITR to appropriate residential zoning after 75% of the land area has been redeveloped with residential use.

Action 5: Consider sense of place or pedestrian circulation plans to address access in ITR neighborhoods.

Policy 102: Industrial uses in the ITR generally should not intensify beyond the base floor area ratio of 35% allowed in the zoning district (including any incentives to allow higher intensity development).

Policy 103: Balance the need for additional residential uses with industrial uses needed for a healthy economy.

Action 1: Require any future study to change an area from industrial to residential to include a full evaluation of the economic and fiscal impacts of converting an industrial area to residential uses, including the potential impacts on community facilities, municipal services and schools.

Policy 104: Ensure that development projects provide appropriate improvements or resources to meet the city's future infrastructure and facility needs, and provide development incentives that result in community benefits and enhance the quality of life for residents and workers.

Action 1: Update development impact fees periodically to provide fair-share funding for transportation, utilities, parks, and other public improvements and to address community needs such as affordable housing.

Action 2: Establish zoning incentives, density bonuses, or other land use tools where higher development potential may be allowed based on contributions toward desired community benefits.

Action 3: Include a discussion of community benefits in area plans and specific plans that defines the City's priorities and outlines an implementation program.

Improvement and expansion of utilities and services associated with aging infrastructure and new developments would occur under the Draft LUTE. Because new development would occur in areas identified for potential new growth and within Sunnyvale's city limits, the development of new utility and transportation infrastructure would not indirectly induce unanticipated population growth. Therefore, implementation of the Draft LUTE would not substantially and indirectly induce population growth that is not already anticipated in ABAG regional growth protections. The impact would be **less than significant**.

Mitigation Measures

None required.

### Displacement of a Substantial Number of People or Housing (Standards of Significance 2 and 3)

**Impact 3.2.2** Subsequent land use activities associated with implementation of the Draft LUTE would not result in the displacement of substantial numbers of people or housing. This impact is **less than significant.**

The intent of the Draft LUTE is to accommodate anticipated growth through a compact urban form that seeks to make efficient use of existing infrastructure and public services, thus minimizing the need for new or significantly expanded infrastructure that could be the impetus for the removal of housing units and/or businesses. While implementation of the Draft LUTE does not directly result in any new construction, the Draft LUTE would change land use designations in

some areas not currently designated for growth, and at other key locations in Sunnyvale. The main purpose of the LUTE is to allow the orderly development of adequate housing, nonresidential facilities, and services, as well as transportation infrastructure, and to implement sustainable growth planning and policies for a growing population.

Because most of Sunnyvale has been developed with urban uses, the Draft LUTE focuses on redeveloping existing properties. It is not expected that residential uses would convert to nonresidential uses. However, a diversity of housing types would be supported under the Draft LUTE per Policy 60 (listed above in discussion of Impact 3.2.1). The proposed land use changes anticipated as part of the Draft LUTE support development, at increased densities and intensities in selected areas, of mixed uses, affordable housing, and transit-oriented development (e.g., clustering of homes, businesses and offices near transit stations). Introducing new land use designations that would allow a broad and flexible mix of land uses would support both residential and commercial growth, and would provide a wider range of housing choices to complement Sunnyvale's existing range of allowable residential densities.

Therefore, implementation of the Draft LUTE would not displace substantial numbers of people or housing units, and would not necessitate the construction of replacement housing elsewhere. No demolition or substantial change in land use designations that would result in the displacement of large numbers of residents is proposed in the Draft LUTE. Impacts associated with implementation of the Draft LUTE relative to displacement of a substantial number of people or housing are considered **less than significant**.

Mitigation Measures

None required.

### 3.2.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

#### CUMULATIVE SETTING

When evaluating cumulative impacts, CEQA allows the use of either a list of past, present, and probable future projects, including projects outside the control of the lead agency, or a summary of projections in an adopted planning document. This cumulative analysis uses growth in cities in Santa Clara County and the regional population and employment projections developed by the Association of Bay Area Governments, as this cumulative setting reflects demographic conditions addressed by the LUTE.

Expected population and employment growth throughout the county would result in further intensification of land uses across the region. ABAG projects that the population of the county will grow from 1,781,642 residents in 2010 to 2,423,500 residents by 2040. During that period, the number of jobs is expected to grow from 906,270 in 2010 to 1,229,520 in 2040. ABAG, in its Plan Bay Area Sustainable Communities Strategy, has identified alternative growth strategies for the region to accommodate this growth. One such strategy calls for population and employment growth to be directed to urban areas in close proximity to regional transportation nodes and job centers. Under this "Focused Future" approach to accommodating growth, residential growth is also redistributed to areas with high concentrations of jobs and/or transit. Increased growth is projected for downtown San Jose and at Santa Clara Valley Transportation Authority (VTA) and Caltrain stations in Palo Alto, Mountain View, Santa Clara, Sunnyvale, and Milpitas.

The cumulative impact analysis herein focuses on whether the Draft LUTE's contribution to projected regional population growth would result in a cumulatively considerable environmental impact. The impact would be cumulatively considerable if, when considered with other existing, approved, proposed, and reasonably foreseeable development in the cumulative setting, it would contribute to substantial regional population growth.

## CUMULATIVE IMPACTS AND MITIGATION MEASURES

### Cumulative Population and Housing Increases

**Impact 3.2.3** Subsequent land use activities associated with implementation of the Draft LUTE, in addition to 2035 buildout in surrounding Santa Clara County cities, could result in a cumulative increase in population and housing growth in Sunnyvale as well as in the surrounding region, along with associated environmental impacts. This impact would be **less than cumulatively considerable**.

As discussed above, ABAG projects that growth in the county population will increase from 1,781,642 in 2010 to 2,423,500 by 2040, an annual growth rate of 4 percent. Employment in the county is projected to increase from 906,270 jobs in 2010 to 1,229,520 jobs in 2040. This anticipated growth is expected to substantially increase demand for housing in the region, thereby constituting a significant cumulative impact. However, because of a limited supply of undeveloped land in the county, and policies that promote housing growth in already developed areas, much of the anticipated demand for housing is expected to be met through development in urbanized areas, mainly within incorporated cities such as Sunnyvale, and especially in areas in close proximity to transit hubs and employment centers. New housing in such areas is considered an environmentally preferred strategy for accommodating projected regional growth.

The Draft LUTE policies and actions listed above would encourage the development of new housing along transit routes, near employment centers, and in already urbanized locations in Sunnyvale that can accommodate growth. Therefore, the Draft LUTE would not result in a cumulatively considerable contribution to the expected regional increase in housing demand, but would in fact provide the means to accommodate Sunnyvale's fair share of anticipated regional growth.

Because growth would be focused in already urbanized areas, some displacement of existing housing and people is possible. However, adverse impacts associated with displacement would be minimized by an overall increase in the region's housing stock (including the supply of affordable housing) and planning policies (Draft LUTE Policies 56 and 57, listed above) that relate to the protection of established residential neighborhoods. Therefore, displacement would occur only under limited circumstances. The LUTE would have a **less than cumulatively considerable** contribution to such an impact.

#### Mitigation Measures

None required.

### Cumulative Displacement of People or Housing

**Impact 3.2.4** Subsequent land use activities associated with implementation of the Draft LUTE would not result in cumulative displacement of substantial numbers of people or housing. This impact is **less than cumulatively considerable.**

As noted in Impact 3.2.2, the Draft LUTE would not result in the displacement of a substantial number people or housing in Sunnyvale. The Draft LUTE likewise does not involve any provisions that would displace a substantial amount of housing or people at a regional level. Therefore, the proposed project's contribution to displacement of people or housing is **less than cumulatively considerable**.

Mitigation Measures

None required.

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# 3.3 Hazards and Human Health

This section provides information on safety hazards in Sunnyvale, analyzes the potential for the Draft LUTE to create hazards to public health or the environment related to hazardous materials, substances, or waste, and identifies other potential hazards that may impact public safety. Appropriate mitigation measures are identified to reduce, lessen, or eliminate the impacts of the Draft LUTE.

A summary of the impact conclusions for hazards and human health is provided below.

| Impact Number | Impact Topic | Impact Significance |
|---|---|---|
| 3.3.1 | Transportation, Use, and Disposal of Hazardous Materials | Less than significant |
| 3.3.2 | Accidental Release and Exposure to Hazardous Materials | Less than significant |
| 3.3.3 | Release and Exposure to Hazardous Materials in the Vicinity of a School Site | Less than significant |
| 3.3.4 | Public and Private Airport Hazards | Less than significant |
| 3.3.5 | Emergency Response and Evacuation Plans | Less than significant |
| 3.3.6 | Cumulative Hazards and Human Health | Less than cumulatively considerable |

## 3.3.1 EXISTING SETTING

### HAZARDOUS MATERIALS AND WASTE DEFINED

Under Title 22 of the California Code of Regulations (CCR), the term *hazardous substance* refers to both hazardous materials and hazardous wastes, and both are classified according to four properties: toxicity, ignitability, corrosiveness, and reactivity (CCR Title 22, Chapter 11, Article 3). A hazardous material is a substance or combination of substances that may cause or significantly contribute to an increase in serious, irreversible, or incapacitating illness or may pose a substantial presence or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. Hazardous materials can be toxic, corrosive, flammable, explosive, reactive, an irritant, or a strong sensitizer and include certain infectious agents, radiological materials, oxides, oil, used oil, petroleum products, and industrial solid waste substances. They are used in almost every manufacturing operation and by retailers, service industries, and homeowners. Hazardous material incidents may occur as the result of natural disasters, human error, and/or accident.

Public health is potentially at risk whenever hazardous materials are or will be used. It is necessary to differentiate between the hazard of these materials and the acceptability of the risk they pose to human health and the environment. A hazard is any situation that has the potential to cause damage to human health and the environment. The risk to health and public safety is determined by the probability of exposure, in addition to the inherent toxicity of a material.

Factors that can influence the health effects when human beings are exposed to hazardous materials include the dose the person is exposed to, the frequency of exposure, the duration of exposure, the exposure pathway (route by which a chemical enters a person's body), and the individual's unique biological susceptibility.

Hazardous wastes are hazardous substances that no longer have practical use, such as materials that have been discarded, discharged, spilled, or contaminated or are being stored until they can be disposed of properly (CCR Title 22, Chapter 11, Article 2, Section 66261.10). Soil that is excavated from a site containing hazardous materials is a hazardous waste if it exceeds specific CCR Title 22 criteria. While hazardous substances are regulated by multiple agencies, as described in the Regulatory Framework subsection below, cleanup requirements of hazardous wastes are determined on a case-by-case basis according to the agency with lead jurisdiction over the project.

### HAZARDOUS MATERIALS USE IN SUNNYVALE

For decades, Sunnyvale has been home to many innovative high tech companies. New and emerging technology companies (e.g., solar cell companies and LED manufacturers), whose presence contributes to a thriving and diverse business community, require the use of a large variety of hazardous materials, including highly toxic compressed gases. The highest hazard facilities, those with larger quantities of hazardous materials or materials having greater toxicity, are located in the industrial area in the northern part of the city. As of 2015, more than 800 businesses in Sunnyvale store or use hazardous materials in quantities requiring a permit.

### CONTAMINATED SITES

The results of queries of federal and state agency databases that contain information on sites with known or potential contamination are presented below.

#### Federal Lists

National Priorities List (Superfund)

Also known as Superfund, the National Priorities List (NPL) database is a subset of the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) and identifies facilities for priority cleanup. The source of this database is the US Environmental Protection Agency (EPA). To appear on the NPL, sites must have met or surpassed a predetermined hazard ranking system score, been chosen as a state's top priority site, pose a significant health or environmental threat, or be a site where the EPA has determined that remedial action is more cost effective than removal action. Six NPL facilities have been identified in Sunnyvale. Information on these NPL facilities has been supplemented by reviewing a current status update provided by the EPA's (2012b) website and discussed below in **Table 3.3-1**.

**TABLE 3.3-1**
**NPL FACILITIES IN SUNNYVALE**

| Map ID | Name/Address | Description |
|---|---|---|
| 1 | Moffett Federal Airfield | Moffett Federal Airfield is bounded on the south and east by Lockheed, to the west by the National Aeronautics and Space Administration Ames Research Center and the city of Mountain View, and on the north by San Francisco Bay. The site is presently an active Naval Air Station (DTSC 2015). In the past, various solvents and sludges were disposed on-site into ponds and landfills and onto the ground. The major contaminants in groundwater are volatile organic compounds (VOCs). To date, 30 hazardous waste sites have been identified at the Moffett Field, many undergoing active cleanup operations (EPA 2012b). |
| 2 | TRW Inc.<br>825 Stewart Avenue | TRW is a semiconductor/microprocessor manufacturer that has contributed to a commingled groundwater plume (along with Advanced Micro Devices) contaminated with VOCs (EDR 2012). Construction of all cleanup remedies is complete. The removal of tanks and contaminated soil has reduced the potential for exposure to contaminated materials at the site, while groundwater continues to be treated. The third Five-Year Review was completed in September 2009 and concluded that the remedy at the site is currently protective of human health and the environment. An enhanced anaerobic biodegradation process is currently being tested at the facility. In the short term, the institutional controls are preventing exposure to, and the ingestion of, contaminated groundwater (EPA 2012b). |
| 3 | Northrop Grumman Marine System (Westinghouse Electrical Corporation)<br>401 East Hendy Avenue | The 75-acre site was formerly used to manufacture electrical transformers. It is currently used to manufacture steam generators, marine propulsion systems, and missile launching systems for the Department of Defense. Groundwater contamination is believed to have resulted from a leaking polychlorinated biphenyls (PCBs) storage tank and from localized spills. Access to the site is restricted. The most recent Five-Year Review of the remedy at the site was completed in September 2011 and identified follow-up items that will need to be addressed in order to ensure the protectiveness of the remedy. The review noted that shallow surface soil contamination above the cleanup level remains in place at some areas on-site and will be addressed by removing or capping. Institutional controls have not yet been placed on the site to prevent access to contaminated soils or groundwater. Additionally, the review identified potential problems with the performance of the remedy. Progress toward achieving long-term groundwater restoration goals using extraction and treatment is limited, and future evaluations will characterize potential unaddressed source areas that may be contributing to upgradient groundwater contamination. The Five-Year Review identified a potential vapor intrusion pathway on-site to an employee-occupied building. A screening will be conducted to determine whether vapor intrusion is present at the facility. Due to the potential presence of vapor intrusion at the facility, a determination could not be made as to whether the facility is currently protective of human health and the environment (EPA 2012b). |

| Map ID | Name/Address | Description |
|---|---|---|
| 4 | Spansion LLC<br>915 Deguigne Drive | Spansion LLC (also identified as Advanced Micro Devices, Inc.) occupies 5.5 acres and manufactures semiconductor/microprocessor devices. Three acid neutralization underground storage tanks (USTs) were installed at the subject site. Additional USTs also contained waste organic solvents. In 1981, VOCs were detected in the groundwater. Two other NPL sites have contributed to the groundwater plume: Advanced Micro Devices, Inc. (901 Thompson Place) and TRW Microwave, Inc. The facility is currently undergoing groundwater treatment. The third Five-Year Review was completed in September 2009 and concluded that in the short term, the institutional controls are preventing exposure to and the ingestion of contaminated groundwater. However, for the remedy to be protective in the long term, the feasibility of alternative remedies or improvements to the existing system should be evaluated in order to ensure effective cleanup. A new environmental restriction covenant consistent with current California law should be recorded to ensure long-term protectiveness (EPA 2012b). |
| 5 | Advanced Micro Devices, Inc.<br>901 Thompson Place | Advanced Micro Devices manufactures electronic equipment, and the facility occupies about 6 acres. Monitoring wells on the site are contaminated with chloroform, 1,1-dichloroethylene, 1,1-dichloroethane, trichloroethylene, and tetrachloroethylene. Contamination is believed to have resulted from localized spills and leaking underground storage tanks and piping (EDR 2012). TRW has contributed to the contaminated groundwater plume and is participating in cleanup of this site. The removal of underground tanks, contaminated soil, and ongoing operation of the groundwater treatment system is helping to keep the contaminant levels within acceptable limits and is preventing the further spread of contaminants. The remedy at the facility is currently protective of human health and the environment. Institutional controls are in place to prevent exposure to contaminated groundwater (EPA 2012b). |
| 6 | Monolithic Memories Inc.<br>1165 E. Arques Avenue | Monolithic Memories, Inc. manufactures integrated circuits and occupies approximately 20 acres. Groundwater at the facility is impacted with xylenes, chloroform, and trichloroethylene as a result of leaking USTs. The facility is currently undergoing groundwater treatment (EDR 2012). The third Five-Year Review was completed in September 2009 and concluded that although the historical groundwater plume was reduced and contained, current information indicates that the selected remedy may not be able to restore the groundwater to its beneficial use as a potential drinking water supply. Institutional controls are preventing exposure to and the ingestion of contaminated groundwater. The feasibility of alternative remedies or improvements to the existing system need to be evaluated to ensure the long-term remedial objectives are achieved (EPA 2012b). |

## CERCLIS List

The EPA's Comprehensive Environmental Response, Compensation, and Liability Information System listings identify hazardous waste sites that require investigation and possible remedial action to mitigate potential negative impacts on human health or the environment. CERCLIS contains facilities which are either proposed for or on the NPL, and facilities which are in the screening and assessment phase for possible inclusion on the NPL. There are 20 CERCLIS facilities in Sunnyvale. Six of these facilities are described above in **Table 3.3-1**. Three facilities listed in the EDR database report are located outside the city. The remaining facilities include:

- Naval Industrial Reserve Ordin, 1111 Lockheed Way
- USAF Onizuka Air Force Base, 1080 Lockheed Way

- Xerox Corp Facility Bldg. 1, 415 Oakmead Parkway
- Philips Semiconductors, 811 E. Arques Avenue
- Ametek/Silicon Division, 999 E. Arques Avenue
- Western Precision Inc., 230 Commercial Street
- City of Sunnyvale, 221 Commercial Street
- ICore International, 180 N. Wolfe Road
- Proto Engineering, 183 Commercial Street
- Royal Auto Body & Towing, 150 N. Wolfe Road
- Signetics Corporation, 100 San Lucas Court

### CERCLIS-NFRAP List

Sites designated as No Further Remedial Action Planned (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the National Priorities List, or the contamination was not serious enough to require federal Superfund action or NPL consideration. The EDR database search identified 43 CERCLIS-NFRAP facilities in Sunnyvale.

### Resource Conservation and Recovery Act Corrective Action Sites List

The Resource Conservation and Recovery Act (RCRA) Corrective Action Sites list is maintained for sites that are undergoing "a corrective action." A corrective action order is issued when there has been a release of hazardous waste constituents into the environment from an RCRA facility. The database search identified 12 RCRA Corrective Action Sites in the city.

### RCRA Large Quantity Generators (RCRA-LQG) List

The RCRA-LQG includes facilities that generate over 1,000 kilograms (kg) of hazardous waste or over 1 kg of acutely hazardous waste per month. The City records identify 20 RCRA Large Quantity Generators in the city.

### RCRA Small Quantity Generators (RCRA-SQG) List

The RCRA-SQG includes facilities that generate between 100 kg and 1,000 kg of hazardous waste per month. The database search identified 335 RCRA Small Quantity Generators in Sunnyvale.

### RCRA Conditionally Exempt Small Quantity Generators (RCRA-CESQG) List

The RCRA-CESQG includes facilities that generate less than 100 kg of hazardous waste or less than 1 kg of acutely hazardous waste per month. The database search identified two RCRA Conditionally Exempt Small Quantity Generators facilities in the city.

US Engineering Controls (ENG) and US Institutional Controls (INST) List

The US ENG and US INST are facilities with engineering or institutional controls in place. Engineering controls encompass a variety of engineered and constructed physical barriers (e.g., soil capping, subsurface venting systems, mitigation barriers, fences) to contain and/or prevent exposure to contamination on a property. In contrast, institutional controls are administrative or legal instruments (e.g., deed restrictions/notices, easements, covenants, zoning) that impose restrictions on the use of contaminated property or resources. Institutional controls are also used to identify the presence of engineering controls and long-term stewardship requirements. Long-term stewardship refers to the activities necessary to ensure that engineering controls are maintained and that institutional controls continue in force. The database search identified seven US ENG facilities and three US INST facilities in Sunnyvale. The three US INST facilities were also listed on the US ENG listing.

**State Lists**

California Solid Waste Facilities/Landfill Site (SWF/LF) List

The SWF/LF database records typically contain an inventory of solid waste disposal facilities or landfills. The information is obtained from the Solid Waste Information System (SWIS) database of the California Department of Resources Recycling and Recovery (CalRecycle) (EDR 2012). Two SWF/LF facilities were identified in the city:

- Sunnyvale Materials Recovery and Transfer Station (SMaRT Station), 301 Carl Road – A large volume transfer/processing facility that accepts construction/demolition, industrial, and mixed municipal waste.

- City of Sunnyvale Landfill, North Side of Caribbean Drive – A solid waste disposal site; certified closed in 1994.

California Aboveground Storage Tank (AST) List

The AST database contains registered aboveground storage tanks. The data is collected from the State Water Resources Control Board's (SWRCB) Hazardous Substance Storage Container Database. The database search identified 33 aboveground storage tank facilities over 1,320 gallons in the city (EDR 2012).

California Deed (DEED) List

The California Department of Toxic Substances Control (DTSC) uses recorded deed land use restrictions to protect the public from unsafe exposures to hazardous substances and wastes. The database search identified one facility in Sunnyvale: Precision Media Corporation located at 1262 Lawrence Station Road.

California Dry Cleaners List

This list is a database of dry cleaner–related facilities that have EPA identification numbers. These are facilities with certain Standard Industrial Classification (SIC) codes. The database search identified 18 dry cleaner facilities in Sunnyvale.

California HAZNET List

The California HAZNET database is data extracted from the copies of hazardous waste manifests received each year by the DTSC. The database search identified 1,649 California HAZNET facilities in the city.

Cortese List

The State of California Hazardous Waste and Substances Site List (also known as the Cortese List) is a planning document used by state and local agencies and by private developers to comply with California Environmental Quality Act (CEQA) requirements in providing information about the location of hazardous materials sites. California Government Code Section 65962.5 requires the California Environmental Protection Agency to annually update the Cortese List. The DTSC is responsible for preparing a portion of the information that comprises the list. Other state and local government agencies are required to provide additional hazardous material release information that is part of the complete list. The database search identified 96 facilities in Sunnyvale (DTSC 2016; SWRCB 2016).

### UNDERGROUND STORAGE TANKS

Underground storage tanks, which primarily contain petroleum products such as gasoline and diesel, permitted by the City of Sunnyvale are located throughout the city.

### HAZARDOUS BUILDING MATERIALS

Many of the nonresidential buildings in Sunnyvale were constructed during the 1950s through 1970s. Some buildings may be older but have been renovated. Depending on the specific age of each building and whether the buildings have been renovated during the time they have been occupied, the buildings may include asbestos-containing materials or lead-based paints, and electrical components or fixtures in the buildings could contain polychlorinated biphenyls (PCB) because such materials were widely used prior to prohibitions on their use beginning in the early 1970s. Prior to restrictions on disposal of hazardous waste, sink traps and plumbing lines could contain hazardous materials such as mercury from broken thermometers.

Asbestos, a naturally occurring fibrous material, was used as a fireproofing and insulating agent in building construction before the EPA banned such uses in the 1970s. Because it was widely used prior to the discovery of its health effects, asbestos can be found in a variety of building materials and components, including sprayed-on acoustic ceiling materials, thermal insulation, walls and ceiling texture, floor tiles, and pipe insulation. Friable (easily crumbled) materials are particularly hazardous because inhalation of airborne fibers is the primary mode of asbestos entry into the body.

### NATURAL GAS PIPELINES

The Pacific Gas and Electric Company (PG&E) has several high-pressure natural gas transmission pipelines in Sunnyvale (PG&E 2015).

### RADON

Radon is a colorless, odorless, tasteless radioactive gas that is a natural decay product of uranium. Uranium and radon are present in varying amounts in rocks and soil, and radon is present in background concentrations in the atmosphere. The EPA has recommended an

"action" level for indoor radon concentrations at or exceeding 4 picocuries per liter (pCi/l) of air. The EPA uses three zone designations in order to reflect the average short-term radon measurement that can be expected in a building without the implementation of radon control methods. The radon zone designation of the highest potential is Zone 1. A review of the California Statewide Radon Survey database shows that of 150 tests, 20 had radon levels greater than 4.0 pCi/L. Sunnyvale is located in Zone 2, which by EPA standards is considered "moderate potential," with levels of radon greater than 2.0 pCi/L but less than 4.0 pCi/L (CDPH 2010; EPA 2008).

### HOUSEHOLD HAZARDOUS WASTE

Hazardous materials, used in many household products (e.g., drain cleaners, waste oil, cleaning fluids, insecticides, and car batteries), are often improperly disposed of as part of normal household trash. These hazardous materials could interact with other chemicals, which can create risks to people and can also result in soil and groundwater contamination. Typical examples of household hazardous waste include used paints and solvents, oil and antifreeze, cleaning products, pesticides and herbicides, and fluorescent light bulbs. The City's Environmental Services Solid Waste/Recycling Program offers opportunities for residents to dispose of household hazardous waste to ensure the materials are disposed of properly.

### AIRPORT OPERATIONS HAZARDS

Airport-related hazards are generally associated with aircraft accidents, particularly during takeoffs and landings. Other airport operation hazards include incompatible land uses, power transmission lines, wildlife hazards (e.g., bird strikes), and tall structures that penetrate the imaginary surfaces surrounding an airport.

Sunnyvale is in the landing pattern of Moffett Federal Airfield and when south winds blow, planes take off over heavily developed areas. Risk of future accidents exists even though the Navy's usage of Moffett Field as a Naval Air Station ended in 1994. The Moffett Federal Airfield Comprehensive Land Use Plan was adopted in 2012. This plan sets standards on reviewing land use around Moffett Federal Airfield.

### WILDLAND FIRES

A wildfire is an uncontrolled fire spreading through vegetative fuels, posing danger, and causing destruction to life and property. Wildfires can occur in undeveloped areas and spread to urban areas where structures and other human development are more concentrated. Because Sunnyvale is urban and because the City has a strong facilities inspection and fire education program, the incidence of wildland fire is low. Each year, inspections are completed at all commercial facilities, apartments, hotels, and schools, with an emphasis on prevention. Additionally, fire station–based education programs target schoolchildren, while the Crime Prevention Unit provides more advanced public education programs to businesses and neighborhoods (Sunnyvale 2011).

### EMERGENCY RESPONSE

By serving as a Certified Unified Program Agency (CUPA), the City's Department of Public Safety is able to conduct inspections of hazardous materials facilities and to review and certify risk management plans to prevent accidental releases of hazardous materials. The City also maintains a hazardous materials response team, which is specially trained and equipped to mitigate emergencies that result in hazardous materials spills, releases, and discharges. This team

is relied upon to maintain the safety of all citizens when confronted with an emergency involving hazardous materials. The City has also improved hazardous materials response by maintaining a Type II HazMat Response Unit.

Both the City and members of the community have responsibility for preparing for emergencies. The City has established an emergency management program to coordinate emergency planning for neighborhoods, schools, and businesses. When City resources are exhausted and a local emergency has been declared, outside assistance can be requested through an established network of local, operational area, regional, state, and federal mutual aid.

## 3.3.2 REGULATORY FRAMEWORK

### FEDERAL

#### Environmental Protection Agency

The US Environmental Protection Agency (EPA) provides leadership in the nation's environmental science, research, education, and assessment efforts, with the mission of protecting human health and the environment. The EPA works to develop and enforce regulations that implement environmental laws enacted by Congress. The EPA is responsible for researching and setting national standards for a variety of environmental programs and delegates to states and tribes the responsibility for issuing permits and for monitoring and enforcing compliance.

The agency also performs environmental research, sponsors voluntary partnerships and programs, provides direct support through grants to state environmental programs, and advances educational efforts regarding environmental issues. The EPA develops and enforces regulations that span many environmental categories, including hazardous materials. Specific regulations include those regarding asbestos, brownfields, toxic substances, underground storage tanks, and Superfund sites, as discussed below.

#### Clean Water Act (33 USC Section 1251 et seq.)

The federal Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Under the act, the EPA implements pollution control programs such as setting wastewater standards for industry and setting water quality standards for all contaminants in surface waters (EPA 2012a).

Under the CWA, it is unlawful to discharge any pollutant from a point source into navigable waters, unless a permit is obtained. Industrial, municipal, and other facilities must obtain permits through the EPA's National Pollutant Discharge Elimination System (NPDES) permit program if their discharges go directly to surface waters. In California, the EPA has authorized the State to administer the NPDES permit program.

#### Clean Air Act (42 USC Section 7401 et seq.)

Administered by the EPA, the federal Clean Air Act (CAA) regulates hazardous air pollutants from stationary and mobile sources via national ambient air quality standards (NAAQS). Clean Air Act Section 112 requires issuance of technology-based standards for major sources and certain area sources.

Major sources are defined as a stationary source or group of stationary sources that emit or have the potential to emit 10 tons per year or more of a hazardous air pollutant or 25 tons per year or more of a combination of hazardous air pollutants. An area source is any stationary source that is not a major source. For major sources, Section 112 requires that the EPA establish emission standards which require the maximum degree of reduction in emissions of hazardous air pollutants. These emission standards are commonly referred to as maximum achievable control technology, or MACT standards (EPA 2012a).

Resource Conservation and Recovery Act (42 USC Section 6901 et seq.)

The Resource Conservation and Recovery Act (RCRA) gives the EPA the authority to control hazardous waste from "cradle to grave," including the generation, transportation, treatment, storage, and disposal of hazardous waste. The RCRA also sets forth a framework for the management of nonhazardous solid wastes.

The federal Hazardous and Solid Waste Amendments are the 1984 amendments to the RCRA that focus on waste minimization and phasing out land disposal of hazardous waste as well as corrective action for releases. Some of the other mandates of this law include increased enforcement authority for the EPA, more stringent hazardous waste management standards, and a comprehensive underground storage tank program (EPA 2012a).

Comprehensive Environmental Response, Compensation, and Liability Act (42 USC Section 9601 et seq.)

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) provides a federal "superfund" to clean uncontrolled or abandoned hazardous waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Through this act, the EPA identifies parties responsible for any release and ensures their participation in the cleanup.

The EPA is authorized to implement CERCLA in all 50 states and in US territories, though Superfund site identification, monitoring, and response activities are coordinated through state environmental protection or waste management agencies. The Superfund Amendments and Reauthorization Act of 1986 reauthorized CERCLA to continue cleanup activities around the country and included several site-specific amendments, definition clarifications, and technical requirements (EPA 2012a).

Occupational and Safety Health Act (29 USC Section 651 et seq.)

The Occupational and Safety Health Act is intended to ensure worker and workplace safety by requiring that employers provide their workers a place of employment free from recognized hazards to safety and health, such as exposure to toxic chemicals, excessive noise levels, mechanical dangers, heat or cold stress, or unsanitary conditions. The Occupational Safety and Health Administration (OSHA) is a division of the US Department of Labor that oversees the administration of the act and enforces standards in all 50 states.

Toxic Substances Control Act (15 USC Section 2601 et seq.)

The Toxic Substances Control Act (TSCA) provides the EPA with authority to require reporting, record-keeping, and testing requirements, and restrictions relating to chemical substances and/or mixtures. The TSCA addresses the production, importation, use, and disposal of specific

chemicals, including polychlorinated biphenyls (PCBs), asbestos, radon, and lead-based paint (EPA 2012a).

Various sections of the TSCA provide authority to:

- Require, under Section 5, pre-manufacture notification for "new chemical substances" before manufacture.
- Require, under Section 4, testing of chemicals by manufacturers, importers, and processors where risks or exposures of concern are found.
- Issue Significant New Use Rules, under Section 5, when it identifies a "significant new use" that could result in exposures to, or releases of, a substance of concern.
- Maintain the TSCA Inventory, under Section 8, which contains more than 83,000 chemicals. As new chemicals are commercially manufactured or imported, they are placed on the list.
- Require those importing or exporting chemicals, under Sections 12(b) and 13, to comply with certification reporting and/or other requirements.
- Require, under Section 8, reporting and recordkeeping by persons who manufacture, import, process, and/or distribute chemical substances in commerce.
- Require, under Section 8(e), that any person who manufactures (including imports), processes, or distributes in commerce a chemical substance or mixture and who obtains information which reasonably supports the conclusion that such substance or mixture presents a substantial risk of injury to health or the environment to immediately inform the EPA, except where the EPA has been adequately informed of such information.

### US Department of Transportation

Federal Hazardous Materials Transportation Law and Hazardous Materials Regulations (49 USC Section 5101 et seq.)

The federal hazardous materials (hazmat) transportation law is the basic statute regulating hazardous materials transportation in the United States. Section 5101 of the federal hazmat law states that the purpose of the law is to protect against the risks to life, property, and the environment that are inherent in the transportation of hazardous material in intrastate, interstate, and foreign commerce.

The Hazardous Materials Regulations are administered by the Pipeline and Hazardous Material Safety Administration (PHMSA) and implement the federal hazmat law. The Hazardous Materials Regulations govern the transportation of hazardous materials via highway, rail, vessel, and air by addressing hazardous materials classification, packaging, hazard communication, emergency response information, and training. They also issue procedural regulations, including provisions on registration and public sector training and planning grants (49 CFR Parts 105, 106, 107, and 110). The PHMSA issues the Hazardous Materials Regulations (PHMSA 2012).

The Federal Motor Carrier Safety Administration (FMCSA) issues regulations concerning highway routing of hazardous materials, hazardous materials endorsements for a commercial driver's

license, highway hazardous material safety permits, and financial responsibility requirements for motor carriers of hazardous materials.

### Federal Aviation Regulations

Development near airports and heliports can pose a potential hazard to people and property on the ground, as well as create obstructions and other hazards to flight. The Federal Aviation Regulations (FAR) provide criteria for evaluating the potential effects of obstructions on the safe and efficient use of navigable airspace within approximately 1 mile of a heliport, approximately 2 to 3 miles of airport runways, and approximately 9.5 miles from the end of high traffic runways that have a precision instrument approach. According to the obstruction criteria provided in FAR Part 77, the Federal Aviation Administration (FAA) requires notification of any proposed construction or alteration projects of:

- More than 200 feet in height above ground level.
- Greater height than an imaginary surface extending outward 100 feet and upward 1 foot for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of a public-use or military airport with at least one runway more than 3,200 feet in actual length.
- Greater height than an imaginary surface extending outward 50 feet and upward 1 foot for a horizontal distance of 10,000 feet from the nearest point of the nearest runway of a public-use or military airport with its longest runway no more than 3,200 feet in actual length.
- Greater height than an imaginary surface extending outward 25 feet and upward 1 foot for a horizontal distance of 5,000 feet from the nearest point of the nearest landing and takeoff area of a public-use heliport.

Other airspace protection concerns identified by the FAA include avoiding land uses in the airport vicinity that would create hazards to flight such as electrical interference, lighting, glare, smoke, and bird strikes. Under the California State Aeronautics Act, local governments have the authority to protect airspace as defined by the criteria provided in FAR Part 77.

The Santa Clara County Airport Land Use Commission (ALUC) has adopted a Comprehensive Land Use Plan (CLUP) for areas surrounding Santa Clara County public-use airports. The plan incorporates the airspace protection criteria provided in FAR Part 77.

Moffett Federal Airfield is a federally owned airport located mostly in unincorporated Santa Clara County adjacent to and northwest of Sunnyvale. A portion of the Airfield is located within Sunnyvale's sphere of influence. The airfield has a 9,202-foot-long runway with a precision instrument approach. The airfield was formerly operated by the military from 1933 to 1994 and is currently operated by the National Aeronautics and Space Administration (NASA). Moffett Federal Airfield is not under ALUC jurisdiction; however, a Draft CLUP has been prepared to provide the Airport Land Use Commission with a foundation to develop compatible land use policies around the airfield.

NASA is required to adhere to the height restrictions of FAR Part 77. The FAA requires notification of proposed construction or alteration projects that exceed the FAR Part 77 criteria at least 30 days prior to beginning construction (FAA Form 7460-1). Following notification of proposed construction or alteration, the FAA may conduct an aeronautical study to determine if proposed

structures and construction equipment would create an airspace hazard. The FAA commonly requires proposed structures and construction equipment affecting navigable airspace to be marked and/or lighted for increased visibility.

## STATE

### California Environmental Protection Agency

The California Environmental Protection Agency (CalEPA) was created in 1991 by Governor's Executive Order. The six boards, departments, and offices were placed under the CalEPA "umbrella" to create a cabinet-level voice for the protection of human health and the environment and to ensure the coordinated deployment of state resources. CalEPA's mission is to restore, protect, and enhance the environment to ensure public health, environmental quality, and economic vitality (CalEPA 2012).

#### Unified Program

The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of the following six environmental and emergency response programs (CalEPA 2012):

- The Hazardous Waste Generator (HWG) program and Hazardous Waste Onsite Treatment activities
- The Aboveground Storage Tank (AST) program Spill Prevention Control and Countermeasure Plan requirements
- The Underground Storage Tank (UST) program
- The Hazardous Materials Release Response Plans and Inventory (HMRRP) program
- California Accidental Release Prevention (CalARP) program
- The Hazardous Materials Management Plans and the Hazardous Materials Inventory Statement (HMMP/HMIS) requirements

The Secretary of CalEPA is directly responsible for coordinating the administration of the Unified Program. The Unified Program requires all counties to apply to the CalEPA Secretary for the certification of a local unified program agency. Qualified cities are also permitted to apply for certification.

The state agencies responsible for these programs set the standards, while local governments implement the standards. CalEPA oversees implementation of the Unified Program as a whole, and the local Certified Unified Program Agency (CUPA) is required to consolidate, coordinate, and make consistent the administrative requirements, permits, fee structures, and inspection and enforcement activities for these six program elements. Most CUPAs have been established as a function of a local environmental health or fire department. The Sunnyvale Department of Public Safety is the CUPA for the City.

### Assembly Bill 2286

The State of California recognized and responded to the need for increased sharing of hazardous materials information by passing Assembly Bill 2286, which requires all businesses handling regulated quantities of hazardous material to electronically report inventories and site maps to local jurisdictions, and requires jurisdictions (including the City of Sunnyvale) to report hazardous materials inventories and compliance inspection data to the State.

## LOCAL

### City of Sunnyvale General Plan

The Safety and Noise chapter of the General Plan contains the following policy that is relevant to the analysis of hazardous materials impacts of the Draft LUTE:

- Policy SN-1.1 - This policy directs that land use decisions be based on an awareness of the hazards and potential hazards for the specific parcel of land.

- Policy SN-1.5 – Promote a living and working environment safe from exposure to hazardous materials.

### City of Sunnyvale Municipal Code

Sunnyvale Municipal Code Title 16.52 contains hazardous material regulations adopted to safeguard life and property arising from the storage, handling, and use of hazardous substances, materials, and devices and from conditions hazardous to life or property in the use or occupancy of buildings or structures. The Municipal Code requires permits for certain hazardous activities and operations, and requires inspections to determine whether such activities or operations can be conducted in a manner that complies with the state's hazardous materials regulation standards.

### City of Sunnyvale Department of Public Safety

The City's Department of Public Safety conducts inspections of hazardous materials facilities and to review and certify risk management plans to prevent accidental releases of hazardous materials. The City also maintains a hazardous materials response team, which is specially trained and equipped to mitigate emergencies that result in hazardous materials spills, releases, and discharges.

### Hazard Mitigation and Emergency Plans

Sunnyvale's 2011 Local Hazard Mitigation Plan focuses on nine hazards likely to occur in the Bay Area. This plan is an annex to the Association of Bay Area Governments regional Hazard Mitigation Plan. The nine hazards comprise five earthquake-related hazards—faulting, shaking, landslides, liquefaction, and tsunamis—and four weather-related hazards—flooding, landslides, wildfires, and drought. The Local Hazard Mitigation Plan continues to be examined and analyzed for future needed changes that may develop in the area of recovery.

In the event of a fire, geologic, or other hazardous occurrence, the City's Emergency Plan provides comprehensive, detailed instructions and procedures regarding the responsibilities of City personnel and coordination with other agencies to ensure the safety of Sunnyvale citizens. US Highway 101 and Central Expressway are major evacuation routes for the city.

## 3.3.3 IMPACTS AND MITIGATION MEASURES

### STANDARDS OF SIGNIFICANCE

This analysis evaluates the Draft LUTE's impacts from hazards to human health and hazardous materials based on the standards identified in State CEQA Guidelines Appendix G. The City has determined that a hazards and hazardous materials impact is considered significant if implementation of the project would:

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

2) 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.

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

4) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment.

5) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area.

6) For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area.

7) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

8) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

### METHODOLOGY

The following qualitative impact analysis is based on a review of hazardous materials and waste databases maintained by local, state, and federal agencies, information and proposed land use assumptions in the Draft LUTE, and applicable laws and regulations.

### Impacts Not Evaluated in Detail

No Fire Hazard Severity Zones or state responsibility areas or Very High Fire Hazard Severity Zones or local responsibility areas are located in or adjacent to Sunnyvale (Cal Fire 2012). Given that the city is urbanized and not adjacent to large areas of open space or agricultural lands that are subject to wildland fire hazards, no impacts associated with exposure to wildland fire would occur. Standard of significance 8 above is not further evaluated in this EIR.

## IMPACTS AND MITIGATION MEASURES

### Transportation, Use, and Disposal of Hazardous Materials (Standard of Significance 1)

**Impact 3.3.1** Implementation of the Draft LUTE would provide for existing and future land uses that would involve the transportation, storage, use, and disposal of hazardous materials in the city. Such activities would continue to be regulated in order to protect public health. This impact is considered **less than significant.**

New development or redevelopment that involves construction, demolition, and landscaping activities could result in the transport, storage, use, and disposal of hazardous materials such as gasoline, demolition materials, asphalt, lubricants, solvents, pesticides, and herbicides. The transport, storage, use, and disposal of these materials could pose a potential hazard to the public and the environment. Implementation of the Draft LUTE would also provide for existing and future land uses that routinely store, use, and transport hazardous materials, including industrial uses and certain commercial uses (e.g., water and wastewater treatment plant operations, swimming pool facilities, gas stations, dry cleaners). It could also result in locating new residential uses near industrial and research and development (R&D) facilities. The Draft LUTE would provide for increased residential and nonresidential development in the city, which could also increase public exposure to hazardous materials transported via trucks on surrounding highways and roadways. Although Draft LUTE policies provide for additional nonresidential growth, hazardous materials use would not be expected to expand appreciably because the types of new businesses that would be expected would not be major manufacturing or industrial facilities, as has occurred historically, but rather primarily green technology and office/R&D uses.

The transport, storage, use, and storage of hazardous materials in land use activities associated with the Draft LUTE would be required to comply with all applicable local, state, and federal regulations during construction and operation. Facilities that use hazardous materials are required to obtain permits and comply with appropriate regulatory agency standards designed to avoid hazardous materials releases. The City's Department of Public Safety is the CUPA for Sunnyvale and is responsible for consolidating, coordinating, and making consistent the administrative requirements, permits, inspections, and enforcement activities of state standards regarding the transportation, storage, use, and disposal of hazardous materials in the city, as discussed in the Regulatory Framework subsection above.

The following Draft LUTE policies and actions provide a framework for encouraging nonresidential growth in which hazardous materials could be used while ensuring land use compatibility between new residential and nonresidential uses and public safety in a mixed-use setting:

Policy 78: Encourage businesses to emphasize resource efficiency and environmental responsibility and to minimize pollution and waste in their daily operations.

Policy 95: Require high design standards for office, industrial, and research and development buildings in all business districts.

Action 3: Carefully review the impacts, such as noise, odors, and facility operations, of commercial, office, and industrial uses and development adjacent to residential areas.

Policy 101: Use the Industrial-to-Residential (ITR) combining district to help meet the community's housing needs for all ages and economic sectors and balance its use with maintaining a healthy economy and employment base. ITR zoning allows industrial/commercial/office uses to continue as conforming uses while an area transitions to residential uses. ITR areas include Tasman Crossing, East Sunnyvale, Futures 4a, Futures 4b, and Futures 6a.

Action 2: During the transition from industrial to residential uses, anticipate and monitor compatibility issues between residential and industrial uses (e.g., noise, odors, and hazardous materials). Identify appropriate lead departments and monitoring strategies for each compatibility issue.

Implementation of the Draft LUTE policies listed above and continued adherence to all federal, state, and local regulations regarding the transport, storage, use, and disposal of hazardous materials, as regulated by the CUPA and federal and state agencies, would result in a **less than significant** impact.

Mitigation Measures

None required.

**Accidental Release and Exposure to Hazardous Materials (Standards of Significance 2 and 4)**

**Impact 3.3.2** Implementation of the Draft LUTE could result in upset and accident conditions involving the release of hazardous materials into the environment. Such activities would continue to be regulated in order to protect public health. This impact is considered **less than significant.**

Hazardous Materials Use

Implementation of Draft LUTE policies and actions would provide for land uses that would involve the transportation, storage, use, and disposal of hazardous materials. These activities could result in the release of hazardous materials into the environment and exposure of the public to hazardous materials as a result of inadvertent releases or accidents.

As described under Impact 3.3.1, the transport, storage, and use of hazardous materials by developers, contractors, business owners, and others must occur in compliance with local, state, and federal regulations. Facilities that store or use hazardous materials are required to obtain permits and comply with appropriate regulatory agency standards designed to avoid hazardous material releases. Special regulations apply to operations that may result in hazardous emissions or use large quantities of regulated materials to ensure accidental release scenarios are considered and measures included in project design and operation to reduce the risk of accidents. In addition, transportation of hazardous materials into and within the Planning Area is highly regulated to reduce the potential for transportation accidents involving hazardous materials. Continued adherence to all federal, state, and local regulations regarding hazardous materials use would result in a **less than significant** impact.

Environmental Contamination and Hazardous Building Materials

Numerous hazardous material sites in the Planning Area are known to handle and store hazardous materials or are associated with a hazardous material–related release. The public could be exposed to hazardous materials if new development or redevelopment were to be

located on a site where historic uses have resulted in hazardous materials contamination of soil or groundwater due to discharges that may not have been regulated prior to the enactment of stringent regulations in place today, or through illegal waste disposal activities. In addition, buildings and/or sites could contain electrical transformers containing PCBs and persistent residual chemicals, including pesticides, herbicides, and fertilizers. In addition, redevelopment activities associated with the Draft LUTE could result in exposure to hazardous materials by disturbing and thus releasing asbestos and/or lead during demolition and remodeling activities. All of these conditions have the potential to pose a risk to human health through accidental or inadvertent releases if the activities are not properly managed.

Prior to approving any project at a site that is known to have contamination from historic uses or at a site where the potential exists based on historic or current uses but has not yet been evaluated, the City must ensure the project is consistent with General Plan Safety and Noise Chapter Policy SN-1.1. This policy directs that land use decisions be based on an awareness of the hazards and potential hazards for the specific parcel of land. In addition, under Policy SN-1.5, the City intends to promote a living and working environment safe from exposure to hazardous materials.

Separately and independently of the CEQA process, federal and state laws and regulations require that measures be implemented to reduce human exposure to hazardous materials. For known or potential contaminated sites or older buildings that may contain hazardous building materials, prior to issuing a grading or building permit, the City would require an assessment of potential hazards. If the development project could pose a human health or environmental risk, the City would require that such hazards be managed appropriately. This could include but would not be limited to such actions as removal of the contaminants (remediation), site controls to reduce exposure (e.g., capping soils, installation of soil vapor barriers), or administrative mechanisms (deed restrictions). In the case of environmental contamination, depending on the type and level of contamination, regulatory oversight would be performed by Santa Clara County, the DTSC, or the San Francisco Bay Regional Water Quality Control Board.

Remediation activities, such as excavation of contaminated media or treatment systems, could involve activities that could result in the release of hazardous materials through dust or other emissions or extraction of contaminated groundwater, to name a few. Remediation projects are required to be implemented in accordance with established hazardous materials and waste laws and regulations. Moreover, the benefits of remediation generally outweigh the risks associated with the cleanup activities.

With implementation of regulatory mechanisms in place that address hazardous materials contamination and conformance with existing General Plan policies, impacts would be **less than significant.**

Mitigation Measures

None required.

### Release and Exposure to Hazardous Materials in the Vicinity of a School Site (Standard of Significance 3)

**Impact 3.3.3** Implementation of the Draft LUTE could lead to schools being located in the vicinity of land uses involving the use, transport, disposal, or release of hazardous materials. Such activities would continue to be regulated in order to protect public health, while new school facility siting would be regulated

by health and safety requirements under the California Code of Regulations (Education Code). This impact would be **less than significant**.

Implementation of the Draft LUTE could result in the need for expansion of existing facilities or additional schools in the city (see Section 4.0, Public Services, for more information). The siting of schools in the vicinity of land uses involving the use, transport, disposal, or release of hazardous materials creates the potential for health impacts to children, who are especially sensitive receptors in regard to exposure to hazardous substances or pollution exposures. However, Draft LUTE Policy 101, listed under Impact 3.3.1 above, would ensure land use compatibility is considered relative to siting new sensitive land uses, such as schools, in proximity to locations where hazardous materials are used.

Further, the California Department of Education (CDE) establishes standards for school sites pursuant to Education Code Section 17251 and adopts school site regulations, which are contained in the California Code of Regulations, Title 5, commencing with Section 14001. The regulations define certain health and safety requirements for school site selection, including a potential school site's proximity to airports, high-voltage power transmission lines, railroads, and major roadways. School siting regulations also restrict the presence of toxic and hazardous substances and hazardous facilities and hazardous air emissions within one-quarter mile of a proposed school site.

In addition, as required by Education Code Section 17213, the written findings of the environmental impact report or negative declaration prepared for a proposed school site must include a statement verifying that the site is not currently or formerly a hazardous, acutely hazardous substance release, or solid waste disposal site or, if so, that the wastes have been removed. Also, the written findings must state that the site does not contain pipelines which carry hazardous wastes or substances other than a natural gas supply line to that school or neighborhood.

If hazardous air emissions are identified, the written findings must state that the health risks do not and will not constitute an actual or potential danger of public health of students or staff. If corrective measures of chronic or accidental hazardous air emissions are required under an existing order by another jurisdiction, the governing board is required to make a finding that the emissions have been mitigated prior to occupancy of the school.

In addition, the DTSC's School Property Evaluation and Cleanup Division is responsible for assessing, investigating, and cleaning up proposed school sites. The division ensures that proposed school sites are free of contamination or, if the properties were previously contaminated, that they have been cleaned up to a level that protects the students and staff who will occupy the new school. All proposed school sites that will receive state funding for acquisition or construction are required to go through a rigorous environmental review and cleanup process under the DTSC's oversight (DTSC 2012).

Because any future siting of schools would be at the discretion of school districts and would be required to comply with state statutory and regulatory requirements addressing safety from hazards, including hazardous materials, impacts associated with siting schools in the vicinity of such hazards are anticipated to be **less than significant**.

Mitigation Measures

None required.

### Public and Private Airport Hazards (Standards of Significance 5 and 6)

**Impact 3.3.4** Implementation of the Draft LUTE could result in a safety hazard for people residing or working in the vicinity of public and private airports in the city. This impact is considered **less than significant**.

The Santa Clara County Airport Land Use Commission (ALUC) has adopted a Comprehensive Land Use Plan (CLUP) for areas surrounding Santa Clara County public-use airports. Sunnyvale is not located in any protected airspace zones defined by the ALUC and has no heliports listed by the Federal Aviation Administration (ALUC 1992).

As described in the Existing Setting subsection above, airport operation hazards can result from aircraft accidents and/or incompatible land uses, power transmission lines, wildlife hazards (e.g., bird strikes), and tall structures that penetrate the imaginary surfaces surrounding an airport. Sunnyvale lies in the landing pattern of Moffett Federal Airfield and when south winds blow, planes take off over heavily developed areas. The Draft LUTE identifies the area to the immediate east of Moffett Federal Airfield as an area expected to experience major improvements and redevelopment. Future residents and employees in these areas could be exposed to airport hazards associated with the airfield.

Moffett Federal Airfield is the only airport that could potentially be affected by development in Sunnyvale. Any construction equipment or new structures that exceed the height restrictions of FAR Part 77 or land use policies from Moffett Federal Airfield's Comprehensive Land Use Plan, if adopted by the ALUC, could affect navigable airspace associated with the airport. Compliance with FAA notification requirements (including preparation of an aeronautical study by the FAA, specified in FAR Part 77, described above, for new development or redevelopment that exceed the height limits) would minimize the potential for development to create a significant hazard to navigable airspace.

The Draft LUTE also contains several policies and actions that would assist in reducing airport hazards. The Draft LUTE land use designations (see **Figure 2.0-4**) are consistent with the CLUP. The following list identifies policies and actions that include specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact.

Policy 8: Actively participate in discussions and decisions regarding transportation between regions, including regional airport and regional rail planning, to ensure benefit to the community.

Action 1: Comprehensively review any proposed aviation services at Moffett Federal Airfield that could increase aviation activity or noise exposure.

Action 4: Monitor and participate in regional airport planning decision making processes with agencies such as the Metropolitan Transportation Commission and the Regional Airport Planning Commission.

Action 5: Monitor and participate in efforts by the Santa Clara County Airport Land Use Commission to regulate land uses in the vicinity of Moffett Federal Airfield.

Adherence to FAA regulations and ALUC requirements, as well as implementation of the Draft LUTE policies and actions listed above, would reduce airport safety hazards to a **less than significant** level**.**

Mitigation Measures

None required.

**Emergency Response and Evacuation Plans (Standard of Significance 7)**

**Impact 3.3.5** Implementation of the Draft LUTE would not interfere with adopted emergency response and evacuation plans in the city. This impact is considered **less than significant**.

The City of Sunnyvale Emergency Plan specifies actions for the coordination of operations, management, and resources during emergencies. The Draft LUTE would not alter the city's overall land use patterns or land use designations to such an extent that they would conflict with this plan.

However, an efficient circulation system is vital for the evacuation of residents and the mobility of fire suppression, emergency response, and law enforcement vehicles during an emergency. Implementation of the Draft LUTE would allow for an increased number of people in the city who would require evacuation in case of an emergency. However, the proposed roadway system in the Draft LUTE would improve city roadway conditions from existing conditions, allowing better emergency vehicle access to residences as well as evacuation routes for area residents. Therefore, impacts are considered **less than significant**.

Mitigation Measures

None required.

## 3.3.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

### CUMULATIVE SETTING

The cumulative setting for hazards and human health risks associated with the Draft LUTE includes Sunnyvale as well as the surrounding areas in Santa Clara County. Most hazardous material, human health, and safety impacts as described in CEQA Appendix G are generally site-specific and not cumulative by nature, as impacts generally vary by land use, site characteristics, and site history.

### CUMULATIVE IMPACTS AND MITIGATION MEASURES

**Cumulative Hazards and Human Health**

**Impact 3.3.6** Potential development under the Draft LUTE, along with increased urban development in Santa Clara County, would not result in cumulative hazards impacts. This impact would be **less than cumulatively considerable**.

Potential exposure or generation of hazardous conditions in Sunnyvale is site-specific rather than associated with the combination of other hazards in the region resulting in a significant effect. Implementation of policies identified under Impact 3.3.4 would address cumulative airport hazards. This impact is considered **less than cumulatively considerable**.

Mitigation Measures

None required.

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# 3.4 Transportation and Circulation

This section evaluates traffic impacts of the Draft LUTE on intersections, freeway facilities, bicycle, pedestrian, and transit facilities, and design hazards and evaluates these impacts under cumulative (year 2035). It also discloses the Draft LUTE's potential vehicle miles traveled (VMT) characteristics. A traffic impact analysis (TIA) was prepared for the Draft LUTE by Hexagon Transportation Consultants (2016) and is included in **Appendix C** in this EIR. This section summarizes the analysis provided in the TIA. The reader is referred to **Appendix C** for detailed analysis of the Draft LUTE's transportation impacts.

The City received comments in response to the Notice of Preparation (NOP) from the California Department of Transportation (Caltrans), the City of Cupertino, and the Santa Clara Valley Transportation Authority (VTA) concerning the scope of the analysis, such as intersections and freeway facilities that should be studied, and the need for mitigation, along with impacts on transit operations and bicycle facilities. These comments were considered during the preparation of the traffic impact analysis.

A summary of impact conclusions is provided below.

| Impact Number | Impact Topic | Impact Significance |
|---|---|---|
| 3.4.1 | Transit Facilities | Less than significant |
| 3.4.2 | Transit Travel Times | Significant and unavoidable |
| 3.4.3 | Bicycle Facilities | Less than significant |
| 3.4.4 | Pedestrian Facilities | Less than significant |
| 3.4.5 | Design Hazards | Less than significant |
| 3.4.6 | Emergency Access | Less than significant |
| 3.4.7 | Traffic Operational Impacts | Significant and unavoidable |

## 3.4.1 EXISTING SETTING

The circulation system serving Sunnyvale consists of roadways, bicycle and pedestrian facilities, a public transit system, and railroad facilities. Two freeways provide regional access to the area, along with major roadways, which are described below.

### EXISTING VEHICLE MILES TRAVELED

Vehicle miles traveled (VMT) is a metric used to measure a project's greenhouse gas emissions from mobile sources, the effectiveness of the multimodal transportation networks (e.g., transit, pedestrian, and bicycle), and the diversity of land uses in an area. As further described below under the subheading Senate Bill 743, VMT is expected to be utilized in updates to the CEQA Guidelines regarding how traffic impact analysis is conducted in environmental documents. Note that transportation impact criteria related to VMT has not yet been established, and it is anticipated that the revised CEQA guidelines will undergo further changes. Existing daily VMT for Sunnyvale is 2,142,494 miles and 10.62 miles per capita, while Santa Clara County has total VMT of 31,466,492 miles and 11.22 miles per capita (Table 17 of the TIA in **Appendix C**).

For the purpose of looking at additional characteristics of trip making, daily VMT by trip orientation and VMT per capita were analyzed. VMT is a metric that is used in noise, air quality, and greenhouse gas emissions analyses because it provides an indication of the usage level of the automobile and truck transportation system within the city. A greater number of vehicle miles

traveled generally means more noise and more air pollution. Daily vehicle miles traveled refers to daily trips multiplied by the trip distances. Trips were defined as all trips that begin and/or end in the Planning Area (referred to as the LUTE Area in the TIA in **Appendix C**):

- Internal-External: trips that begin within and end outside of the Planning Area
- External-Internal: trips that begin outside of and end within the Planning Area
- Internal-Internal: trips that begin and end within the Planning Area

For the purpose of the TIA, trips with both trip ends within the study area were counted as one trip, while trips with only one trip end in the study area were counted as half a trip. This is standard practice, because, for trips with an origin or destination outside of the study area, half of the "responsibility" for the trip lies outside the study area for air quality and greenhouse gas (GHG) analyses. Daily VMT data for all existing, current General Plan, and 2035 Draft LUTE scenarios were calculated using outputs from the Sunnyvale Travel Demand Forecasting Model (STFM).

## EXISTING ROADWAY NETWORK

### Freeways

*US Highway 101 (US 101)* is an eight-lane freeway (three mixed-flow lanes and one high-occupancy vehicle [HOV] lane in each direction) in the vicinity of the city. US 101 extends northward through San Francisco and southward through Gilroy. Access to and from the Planning Area is via freeway interchanges at Mathilda Avenue, Fair Oaks Avenue, and Lawrence Expressway.

*State Route (SR) 237* is a four- to six-lane freeway in the vicinity of the Planning Area that extends west to El Camino Real (SR 82) and east to Interstate 880 in Milpitas. East of Mathilda Avenue, SR 237 has two mixed-flow lanes and one HOV lane in each direction. West of Mathilda Avenue, SR 237 has two mixed-flow lanes in each direction. SR 237 provides access to the Planning Area via interchanges at Middlefield Road, Maude Avenue, Mathilda Avenue, Fair Oaks Avenue, and Lawrence Expressway.

*Interstate 280 (I-280)* is an eight-lane freeway (three mixed-flow lanes and one HOV lane in each direction) in the vicinity of Sunnyvale. I-280 provides regional freeway access between the cities of San Francisco and San Jose. Planning Area access to/from I-280 is via interchanges with De Anza Boulevard, Wolfe Road, Stevens Creek Boulevard, and Lawrence Expressway.

*State Route (SR 85)* is a north–south freeway that begins at US 101 east of Shoreline Boulevard, extends south toward San Jose, and terminates at US 101 south of the Silicon Valley Boulevard/Bernal Road interchange. In the Planning Area, SR 85 is six lanes wide (two mixed-flow lanes and one HOV lane in each direction). Sunnyvale access to/from SR 85 is via interchanges with El Camino Real, Fremont Avenue, and Homestead Road.

### Major Roadways

Major roadways within or near the Planning Area include Lawrence Expressway, Fair Oaks Avenue, Wolfe Road, Mathilda Avenue, Sunnyvale-Saratoga Road, Mary Avenue, Caribbean Avenue, Java Drive, Tasman Drive, Duane Avenue, Maude Avenue, Arques Avenue, Central Expressway, Kifer Road, Evelyn Avenue, Reed Avenue/Monroe Street, El Camino Real, Remington Drive, Fremont Avenue, and Homestead Road. These roadways are described below.

*Lawrence Expressway* is an eight-lane expressway with a raised median running north–south. It begins at Saratoga Avenue in the south, crosses Sunnyvale, extends northward, and transitions into Caribbean Drive. Lawrence Expressway connects with US 101 and SR 237 via full-access freeway interchanges.

*Fair Oaks Avenue* is a four- to six-lane north–south arterial. Fair Oaks Avenue begins at Java Drive north of SR 237 and extends southward, transitioning into Remington Drive at its junction with El Camino Real. Fair Oaks Avenue has a full-access freeway interchange with US 101 and a partial-access interchange with SR 237. North of US 101, Fair Oaks Avenue has a raised center median. North of Tasman Drive, light rail runs in the center median of Fair Oaks Avenue.

*Wolfe Road* is a four- to six-lane north–south arterial that begins north at N. Fair Oaks Avenue and extends south into Cupertino, ending at Stevens Creek Boulevard (its transition point into Miller Avenue). Wolfe Road has a raised center median and has a full-access interchange with I-280 in Cupertino.

*Mathilda Avenue* is a six- to eight-lane arterial running north–south. Mathilda Avenue begins at Caribbean Drive in the north, extends southward, and transitions into Sunnyvale-Saratoga Road. Freeway interchanges are located at US 101 and SR 237.

*Sunnyvale-Saratoga Road* is a six-lane divided major arterial south of Mathilda Avenue. North of Mathilda Avenue, Sunnyvale Avenue continues as a two- to four-lane undivided minor arterial with a shared two-way center left turn lane.

*Mary Avenue* is a four- to six-lane roadway extending north–south from Almanor Avenue in the north to Homestead Road in the south. Mary Avenue is classified as an arterial south of Central Expressway and as a collector north of Central Expressway. Mary Avenue has an at-grade intersection with Central Expressway.

*Caribbean Avenue* is a six-lane divided arterial that runs east–west along the northern edge of the Moffett Park area. Caribbean Avenue begins west at its transition from Mathilda Avenue and extends east toward its transition to Lawrence Expressway at the SR 237 interchange.

*Java Drive* is a four-lane divided arterial that runs east–west in the Moffett Park area. Java Drive begins west at its transition from Lockheed Martin Way at the intersection with Mathilda Avenue and extends east toward its transition to Fair Oaks Avenue at the SR 237 interchange. The VTA light rail runs in the center median along the entirety of Java Drive.

*Tasman Drive* is a two- to four-lane divided collector that runs east–west from Morse Avenue to its transition toward Great Mall Parkway at the I-880 interchange in Milpitas. The VTA light rail runs in the center median along the entirety of Tasman Drive east of the Fair Oaks/Tasman intersection.

*Duane Avenue* is a two- to four-lane collector that begins west of Mathilda Avenue and extends east toward Lawrence Expressway, at which point it transitions into Oakmead Parkway continuing eastward.

*Maude Avenue* is a two- to four-lane collector that runs east–west and begins at Wolfe Road in the east and ends at Logue Avenue. Maude Avenue is part of a split diamond freeway interchange with SR 237.

*Arques Avenue* is a two- to four-lane arterial that begins west at its terminus west of Stowell Avenue, extends east past San Tomas Expressway, and transitions into Scott Boulevard. Arques Avenue connects with Central Expressway via a westbound on-ramp and an eastbound off-ramp.

*Central Expressway* is a four- to six-lane expressway running east–west. In Sunnyvale, Central Expressway has two eastbound lanes and two westbound lanes. It begins in the east at Trimble Road in San Jose, crosses Sunnyvale, extends westward, and transitions into Alma Street in Palo Alto. In Sunnyvale, Central Expressway connects to Lawrence Expressway, Wolfe Road, Arques Avenue, and Mathilda Avenue via interchanges and has an at-grade intersection with Mary Avenue. Central Expressway has right-in-right-out access points along its length in Sunnyvale.

*Kifer Road* is a four-lane collector that begins west at Fair Oaks Avenue and extends east toward Bowers Avenue. Kifer Road has a center two-way left turn median along the entirety of the roadway.

*Evelyn Avenue* is a two- to four-lane arterial that begins west of Castro Street in Mountain View and extends east to its terminus at Reed Avenue in Sunnyvale. In the study area, Evelyn Avenue has a center two-way left turn median that extends along the entirety of the roadway. Evelyn Avenue is grade-separated at its intersection with Mathilda Avenue; there is no access to northbound Mathilda Avenue from eastbound Evelyn Avenue.

*Reed Avenue/Monroe Street* is a two- to four-lane collector that begins west at Fair Oaks Avenue as Reed Avenue and extends southeast toward its terminus at Tisch Way in San Jose. Reed Avenue is in Sunnyvale and transitions to Monroe Street in Santa Clara at its intersection with Lawrence Expressway (the Sunnyvale-Santa Clara city boundary). A center two-way left turn lane runs along the entirety of the roadway.

*El Camino Real (SR 82)* is a six-lane divided arterial in Sunnyvale. El Camino Real extends from Mission Street in Colma to The Alameda in Santa Clara. El Camino Real provides access to SR 85 via an interchange.

*Remington Drive* is a two- to four-lane roadway in Sunnyvale. It begins in the east at the terminus of Fair Oaks Avenue at the El Camino Real intersection and extends west to its terminus west of Bernardo Avenue. Between Sunnyvale-Saratoga Road and El Camino Real, Remington Drive is classified as an arterial and has two lanes in each direction. West of Sunnyvale-Saratoga Road, Remington Drive is classified as a collector and has one lane in each direction. A center two-way left turn median runs along the entirety of Remington Drive.

*Fremont Avenue* is a two- to six-lane divided arterial that begins west at Foothill Expressway in Los Altos and extends east toward its terminus at El Camino Real. Fremont Avenue is six lanes wide between Hollenbeck Avenue and Bernardo Avenue and is four lanes wide elsewhere in Sunnyvale. Fremont Avenue provides access to SR 85 via an interchange.

*Homestead Road* is a two- to four-lane arterial that begins east at Lafayette Street in Santa Clara and extends west toward its terminus at Foothill Expressway. Homestead Road is four lanes wide with a center left turn median along its entirety in Sunnyvale.

### Planned Lawrence Expressway Grade Separation

In 2003, the Santa Clara County Expressway Study recommended the grade separation of Lawrence Expressway at the Reed Avenue/Monroe Street, Kifer Road, and Arques Street intersections. In the summer of 2013, in a follow-up study, the Lawrence Expressway Grade

Separation Concept Study was initiated to consider a range of alternatives for design of the grade separation at the intersections. Three alternative concepts were studied. In the recommended concept, Lawrence Expressway would be depressed under the three study intersections as well as Central Expressway and the Caltrain tracks. Grade-separated interchanges at each of the three intersections would include median ramps from the expressway up to the cross streets with signalized intersections.

Initial studies indicate that in the long term, grade separation of Lawrence Expressway will provide opportunities to reduce traffic congestion, improve east–west connectivity in the Planning Area, and improve access to the Lawrence Caltrain Station for all vehicles, bicyclists, and pedestrians.

### TRAFFIC OPERATIONS

Traffic operations are traditionally measured using a qualitative measure called level of service (LOS). LOS is a general measure of traffic operating conditions whereby a letter, from A (the best) to F (the worst), is assigned. These levels of service represent the perspective of drivers and are an indication of the comfort and convenience associated with driving, as well as speed, travel time, traffic interruptions, and freedom to maneuver. The TIA (**Appendix C**) provides the LOS definitions for intersections in Table 2 and for freeway facilities in Table 3. The operations for intersections and freeway segments evaluated are described in further detail below.

#### Intersections

Ninety-eight intersections were evaluated. Eight of the study intersections are in Mountain View, four are in Cupertino, 15 are in Santa Clara, and one is in San Jose. Twenty-seven of the study intersections are Congestion Management Plan (CMP) intersections. The study intersections were selected to include locations where the Draft LUTE is expected to generate 10 or more peak-hour trips per lane. The locations of the intersections are shown in **Figure 3.4-1**. The intersections are listed in Table 5 of the TIA in **Appendix C** along with existing intersection level of service.

Existing traffic volumes were based on traffic counts conducted between 2014 and 2015, the 2014 CMP TRAFFIC database, and Santa Clara County records for the expressways. The latest counts available at the De Anza Boulevard and I-280 ramp intersections, the Wolfe Road and I-280 ramp intersections, and the Lawrence Expressway ramps and El Camino Real intersection were dated 2011. This set of counts was extrapolated to the year 2015 based on growth at nearby intersections. The existing lane configurations and AM and PM peak-hour intersection volumes are shown in **Figures 3.4-2a** through **3.4-2e**.

Intersection levels of service were evaluated against the respective jurisdictional standards. The results of the intersection level of service analysis under existing conditions are summarized in Table 5 and graphically shown on Figure 7 of the TIA in **Appendix C**. The results of the analysis show that most of the study intersections currently operate at acceptable levels during both the AM and PM peak hours, with the following exceptions:

- Lawrence Expressway & Arques Avenue (#16) (CMP facility) – PM peak hour (LOS F)
- Lawrence Expressway & Kifer Road (#17) – AM and PM peak hour (LOS F)
- Lawrence Expressway & Reed Avenue (#18) (CMP facility) – AM and PM peak hours (LOS F)
- Lawrence Expressway & Benton Street (#84) (Santa Clara and CMP facility) – AM peak hour (LOS F)

- Lawrence Expressway & Homestead Road (#85) (Santa Clara and CMP facility) – AM and PM peak hours (LOS F)

- Lawrence Expressway & I-280 Southbound Ramp (#90) (Cupertino and CMP facility) – AM peak hour (LOS E)

The intersection levels of service calculation sheets are included in **Appendix C**. The intersections on Mathilda Avenue at the SR 237 ramps are closely spaced with multiple turning movements that operate as a single coordinated signal system. These intersections experience operational issues beyond what is reflected in the typical Highway Capacity Manual (HCM) level of service calculations. To supplement the HCM analysis, a microsimulation analysis was conducted using Synchro/Sim Traffic software to provide a more accurate assessment of the Mathilda Avenue corridor's operational issues. The simulation shows that the intersections along Mathilda Avenue are currently operating at an acceptable LOS E, which matches the field observations that Hexagon conducted during the AM and PM peak hours at these intersections.

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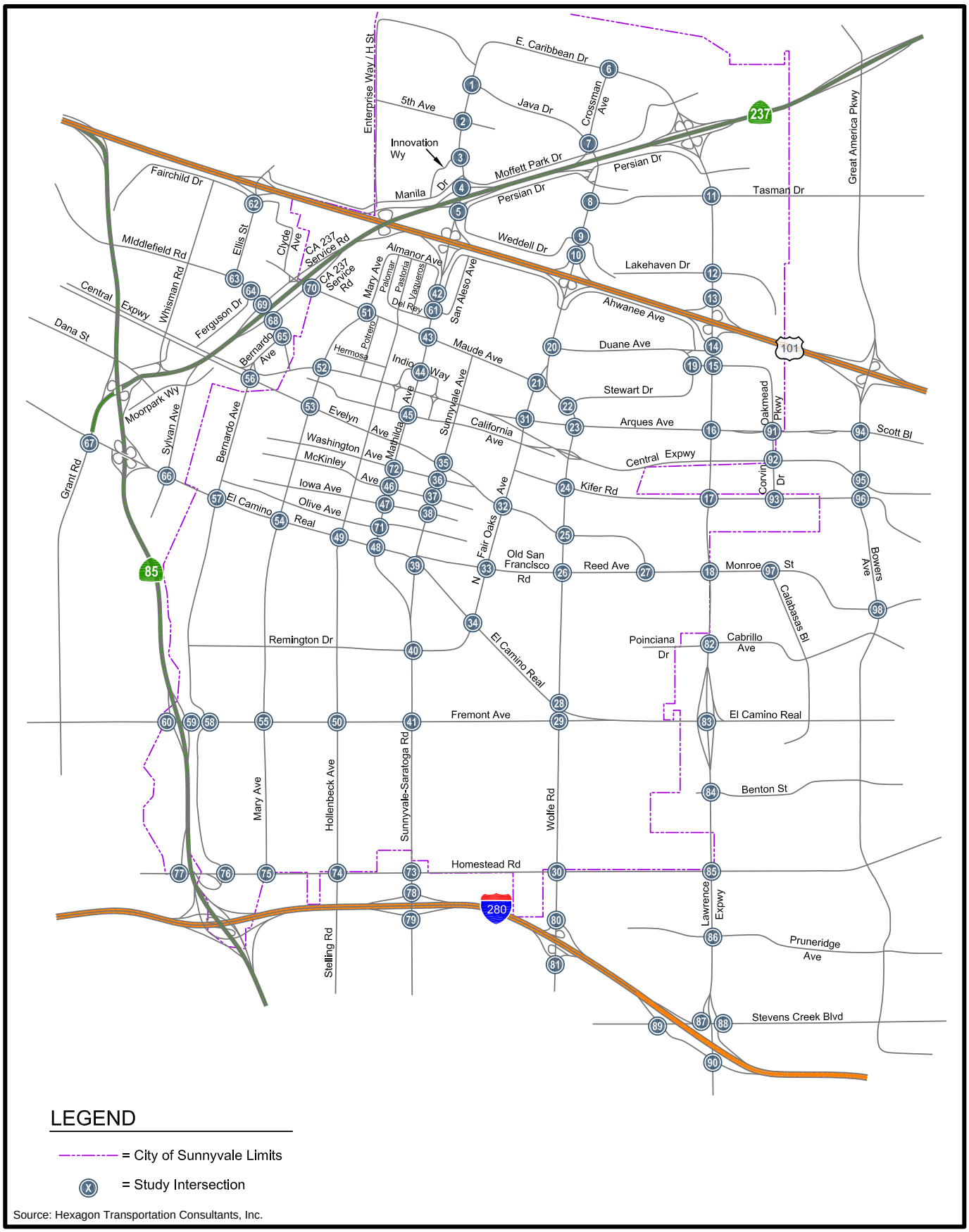


## LEGEND

= City of Sunnyvale Limits

= Study Intersection

Source: Hexagon Transportation Consultants, Inc.

Not To Scale

**FIGURE 3.4-1**

Study Intersections

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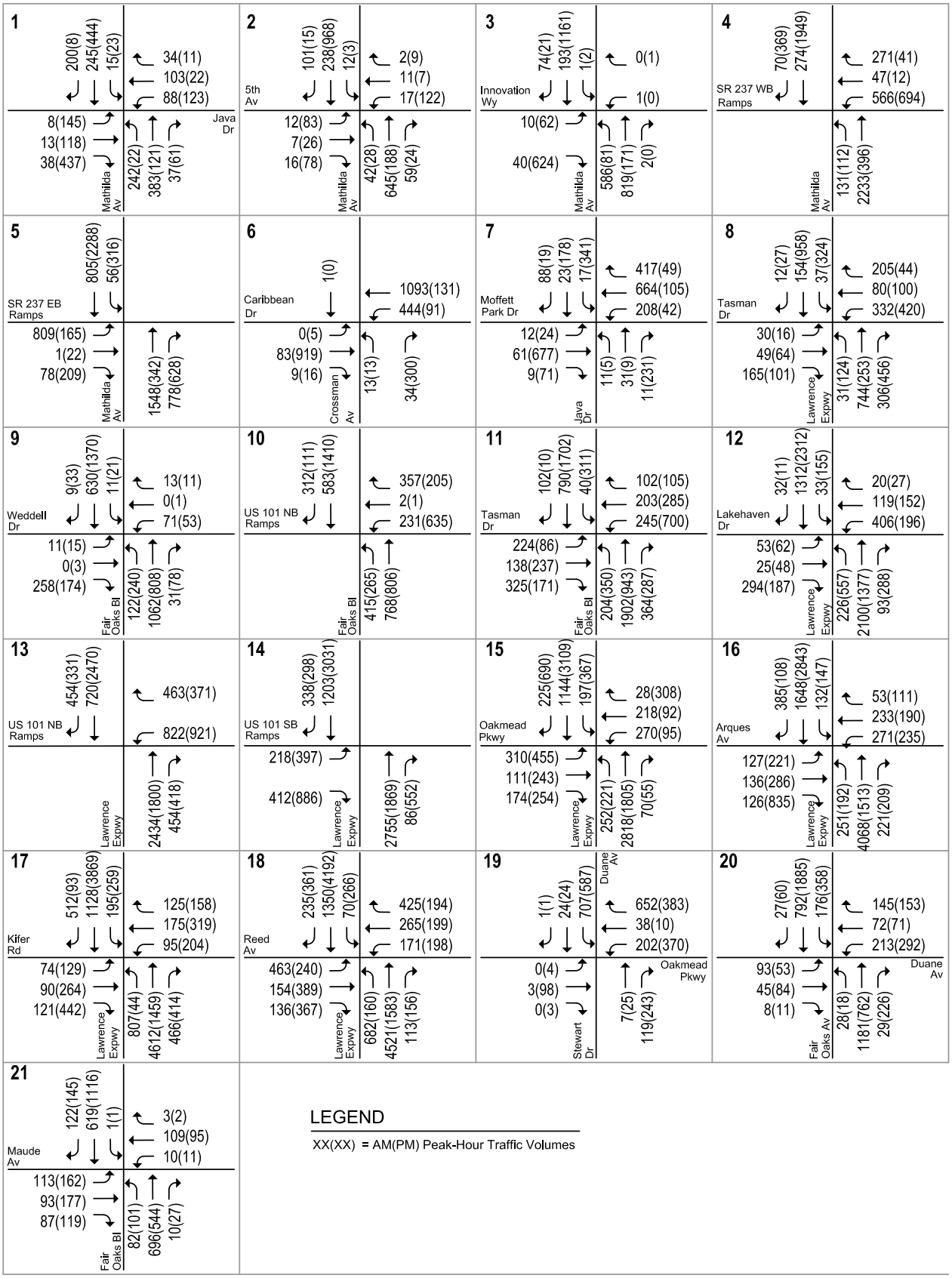


Source: Hexagon Transportation Consultants, Inc.

Not To Scale

**FIGURE 3.4-2A**

Existing Intersection Peak Hour Traffic Volumes

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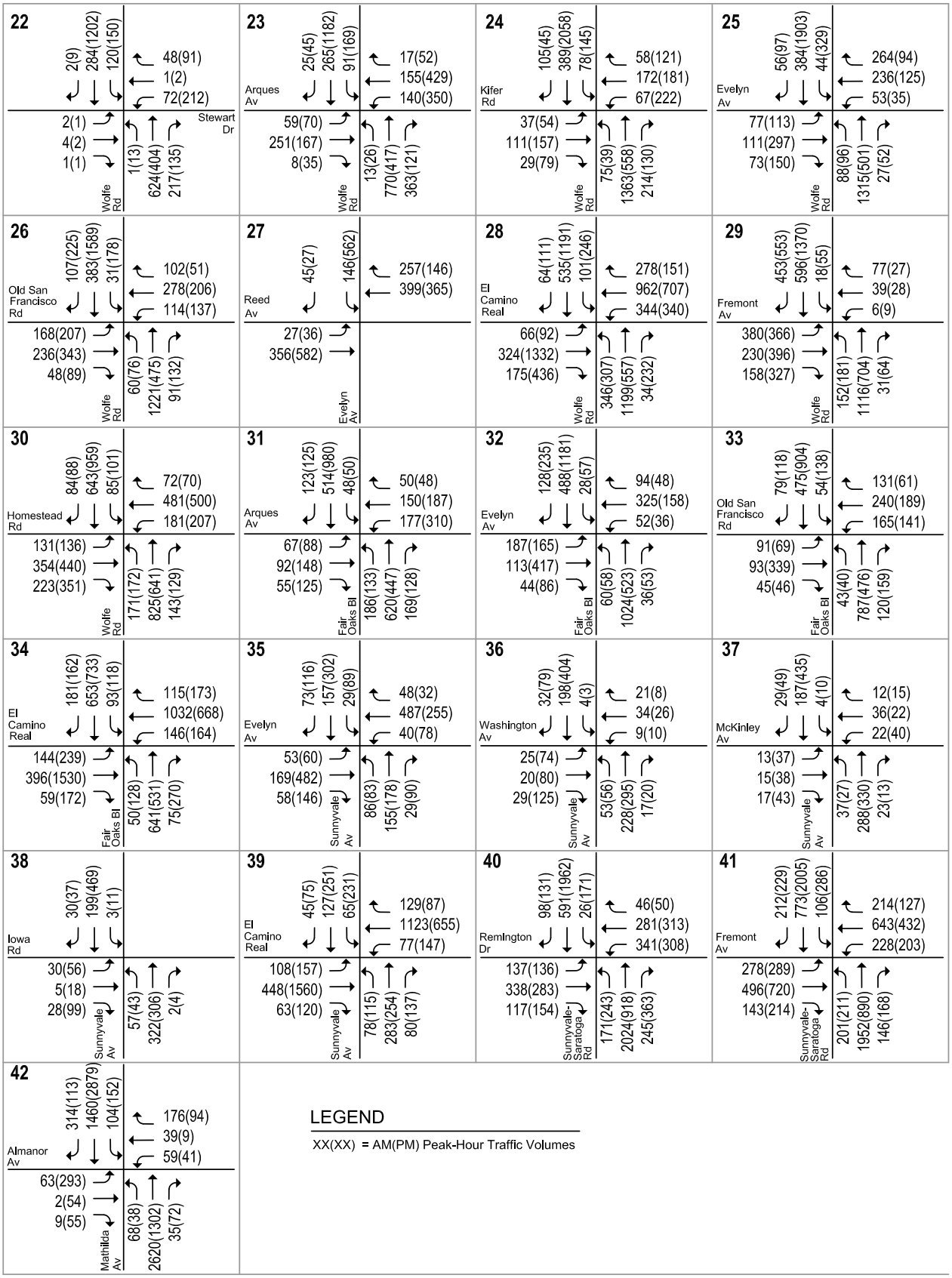


Source: Hexagon Transportation Consultants, Inc.

Not To Scale

**FIGURE 3.4-2B**

Existing Intersection Peak Hour Traffic Volumes

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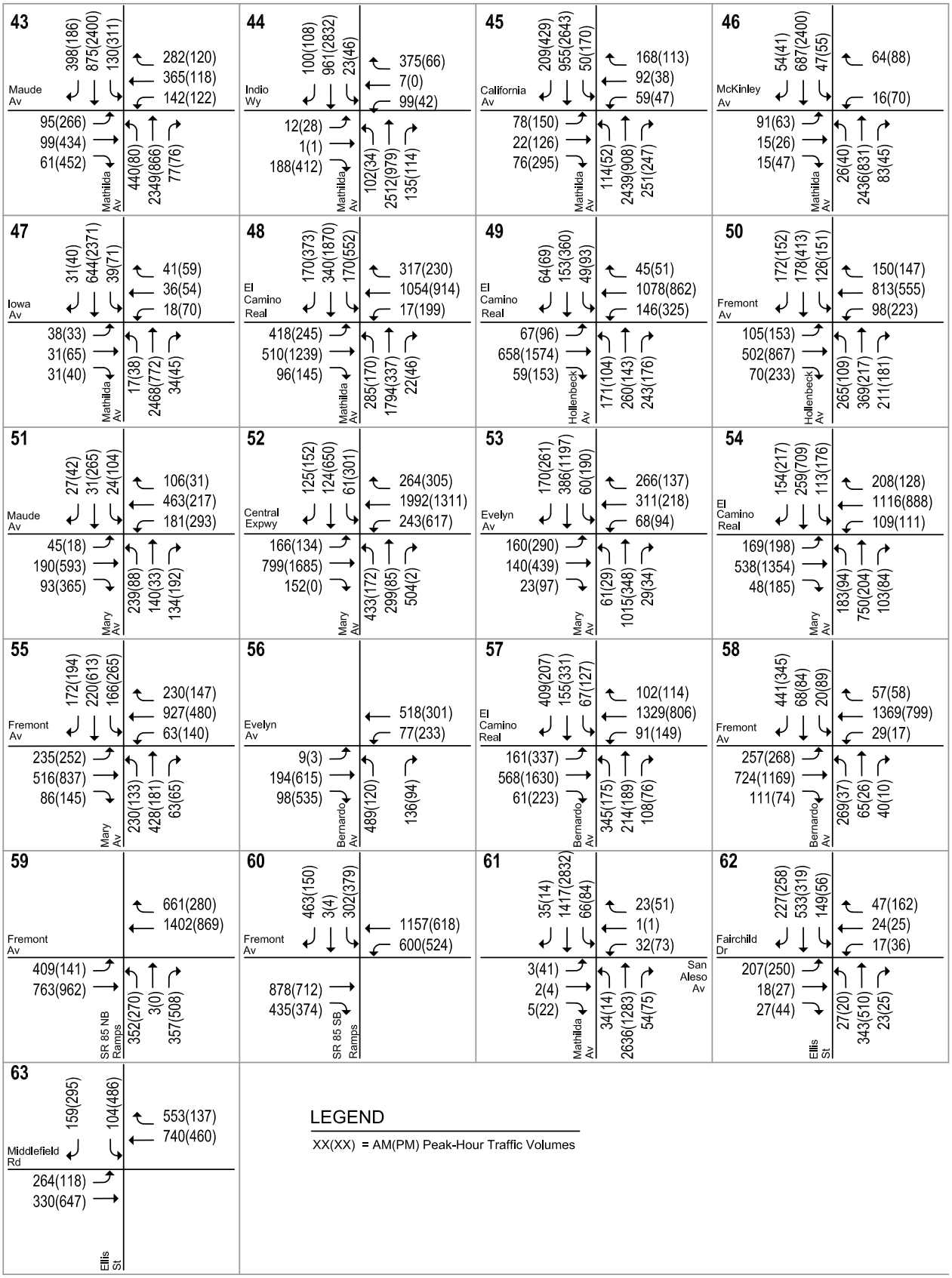


Source: Hexagon Transportation Consultants, Inc.

Not To Scale

**FIGURE 3.4-2C**

Existing Intersection Peak Hour Traffic Volumes

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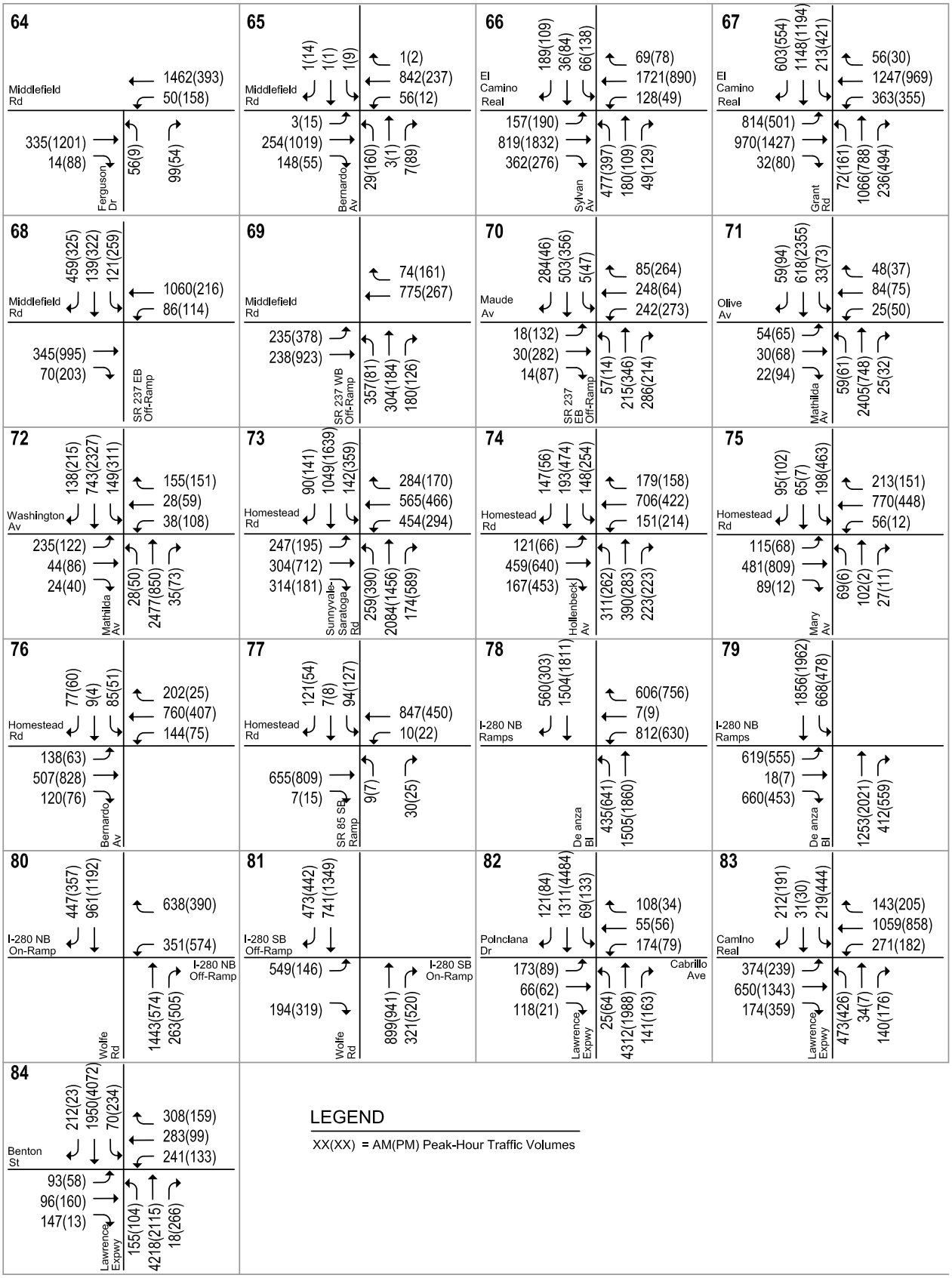


Source: Hexagon Transportation Consultants, Inc.

Not To Scale

**FIGURE 3.4-2D**

Existing Intersection Peak Hour Traffic Volumes

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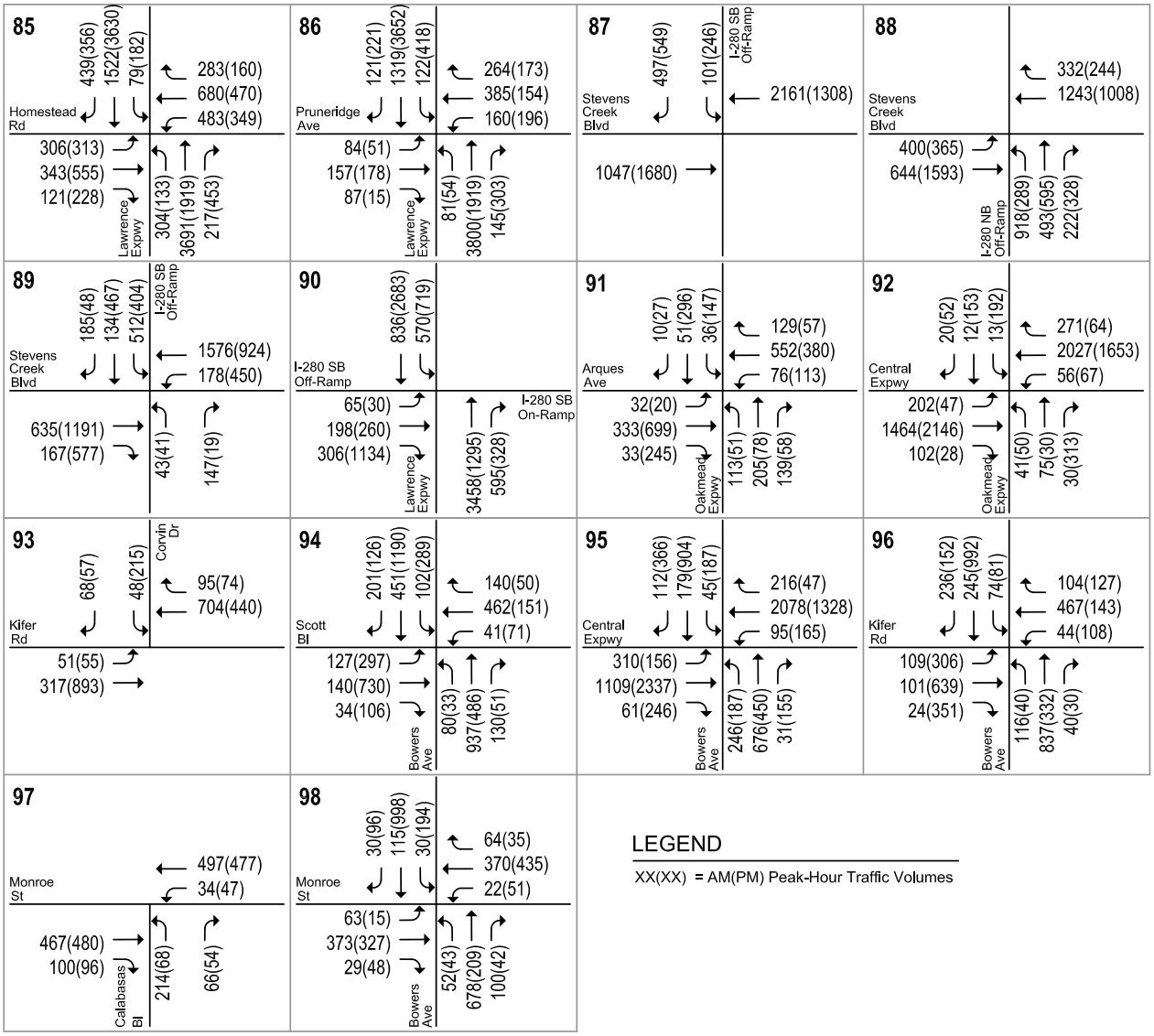


Source: Hexagon Transportation Consultants, Inc.

Not To Scale

**FIGURE 3.4-2E**

Existing Intersection Peak Hour Traffic Volumes

Michael Baker INTERNATIONAL

### Freeways

Existing weekday AM and PM peak-hour traffic volumes on the study freeway segments were obtained from the 2014 CMP Annual Monitoring Report for segments in Santa Clara County, the Level of Service and Performance Measure Monitoring Report for segments in San Mateo County, and the 2014 LOS Monitoring Report for segments in Alameda County. The existing freeway levels of service during the weekday AM and PM peak hours of traffic are summarized on **Figures 3.4-3** and **3.4-4**. The mixed-flow lanes on the following directional study freeway segments currently operate at LOS F during either the AM or PM peak hour.

Santa Clara County

- US 101, northbound from Silver Creek Valley Road to Mathilda Avenue, and from Moffett Boulevard to SR 85 – AM peak hour
- US 101, northbound from SR 85 to Embarcadero Road – AM and PM peak hours
- US 101, southbound from Embarcadero Road to Rengstorff Avenue, from Shoreline Boulevard to SR 237, and from Fair Oaks Avenue to Oakland Road – PM peak hour
- SR 237, westbound from I-880 to Zanker Road – AM peak hour
- SR 237, westbound from Fair Oaks Avenue to Mathilda Avenue, and from Maude Avenue to SR 85 – PM peak hour
- SR 237, eastbound from US 101 to Zanker Road, and from McCarthy Road to I-880 – PM peak hour
- SR 85, northbound from Cottle Road to Winchester Boulevard, and from De Anza Boulevard to El Camino Real – AM peak hour
- SR 85, southbound from US 101 to Fremont Avenue, from Stevens Creek Boulevard to Saratoga Avenue, and from SR 17 to Union Avenue – PM peak hour
- SR 87, northbound from I-280 to US 101 – AM peak hour
- I-280, northbound from I-280 to SR 17, and from Winchester Boulevard to Foothill Expressway – AM peak hour
- I-280, northbound from SR 17 to Winchester Boulevard – AM and PM peak hours
- I-280, southbound from Page Mill Road to Magdalena Avenue, and from SR 85 to 10th Street – PM peak hour
- I-880, northbound from I-280 to Stevens Creek Boulevard – AM peak hour
- I-880, northbound from Stevens Creek Boulevard to Bascom Avenue, and from The Alameda to First Street – AM and PM peak hours
- I-880, northbound from Bascom Avenue to The Alameda, and from SR 237 to Dixon Landing Road – PM peak hour
- I-880, southbound from Brokaw Road to Coleman Avenue – AM and PM peak hours
- I-880, southbound from Coleman Avenue to Stevens Creek Boulevard – PM peak hour

San Mateo County

- US 101, between Embarcadero Road and SR 92 – AM and PM peak hours
- I-280, between Alpine Road and SR 84 – AM and PM peak hours

Alameda County

- I-880, northbound from Dixon Landing Road to Mission Boulevard, and from Alvarado-Niles Road to Tennyson Road – PM peak hour
- I-880, southbound from SR 92 to Stevenson Boulevard – AM peak hour

The HOV lanes on the following directional study freeway segments currently operate at LOS F during either the AM or PM peak hour (see **Figures 3.4-5** and **3.4-6**).

Santa Clara County

- US 101, northbound from Silver Creek Valley Road to Hellyer Avenue, from Tully Road to Trimble Road, and from Great America Parkway to Lawrence Expressway – AM peak hour
- US 101, southbound from Embarcadero Road to Oregon Expressway, from Fair Oaks Avenue to San Tomas Expressway, and from SR 87 to Oakland Road – PM peak hour
- SR 237, westbound from I-880 to McCarthy Road – AM peak hour
- SR 85, northbound from Blossom Hill Road to Camden Avenue, from Union Avenue to Winchester Boulevard, and from De Anza Boulevard to El Camino Real – AM peak hour
- SR 85, southbound from SR 237 to El Camino Real, and from I-280 to Stevens Creek Boulevard – PM peak hour
- SR 87, northbound from Julian Street to Coleman Avenue – AM peak hour
- I-280, northbound from Leigh Avenue to Winchester Boulevard, and from Saratoga Road to Lawrence Expressway – AM peak hour
- I-280, southbound from Winchester Boulevard to Leigh Avenue – PM peak hour
- I-880, northbound from SR 237 to Dixon Landing Road – PM peak hour
- I-880, southbound from Dixon Landing Road to SR 237 – AM peak hour
- I-880, southbound from Brokaw Road to US 101 – AM and PM peak hours
- I-880, southbound from Montague Expressway to Brokaw Road – PM peak hour

San Mateo County

- US 101, between Embarcadero Road and Whipple Avenue – AM and PM peak hours

Alameda County

- I-880, northbound from Dixon Landing Road to Mission Boulevard, from Decoto Road to Fremont Boulevard, and from Alvarado-Niles Road to Tennyson Road – PM peak hour

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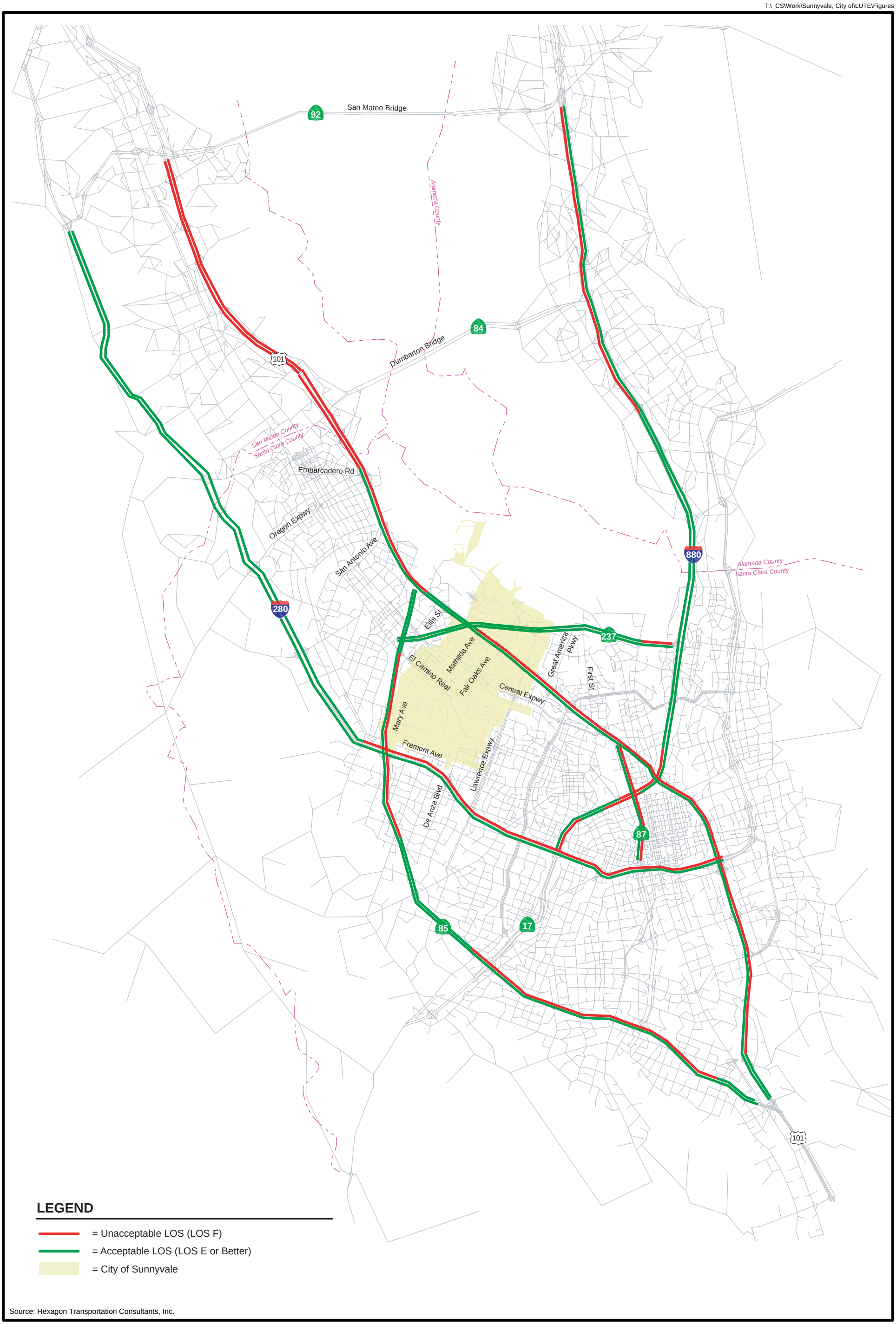


Source: Hexagon Transportation Consultants, Inc.

Not To Scale

**FIGURE 3.4-3**

Existing Freeway Mixed Flow Lanes Level of Service AM Peak Hour

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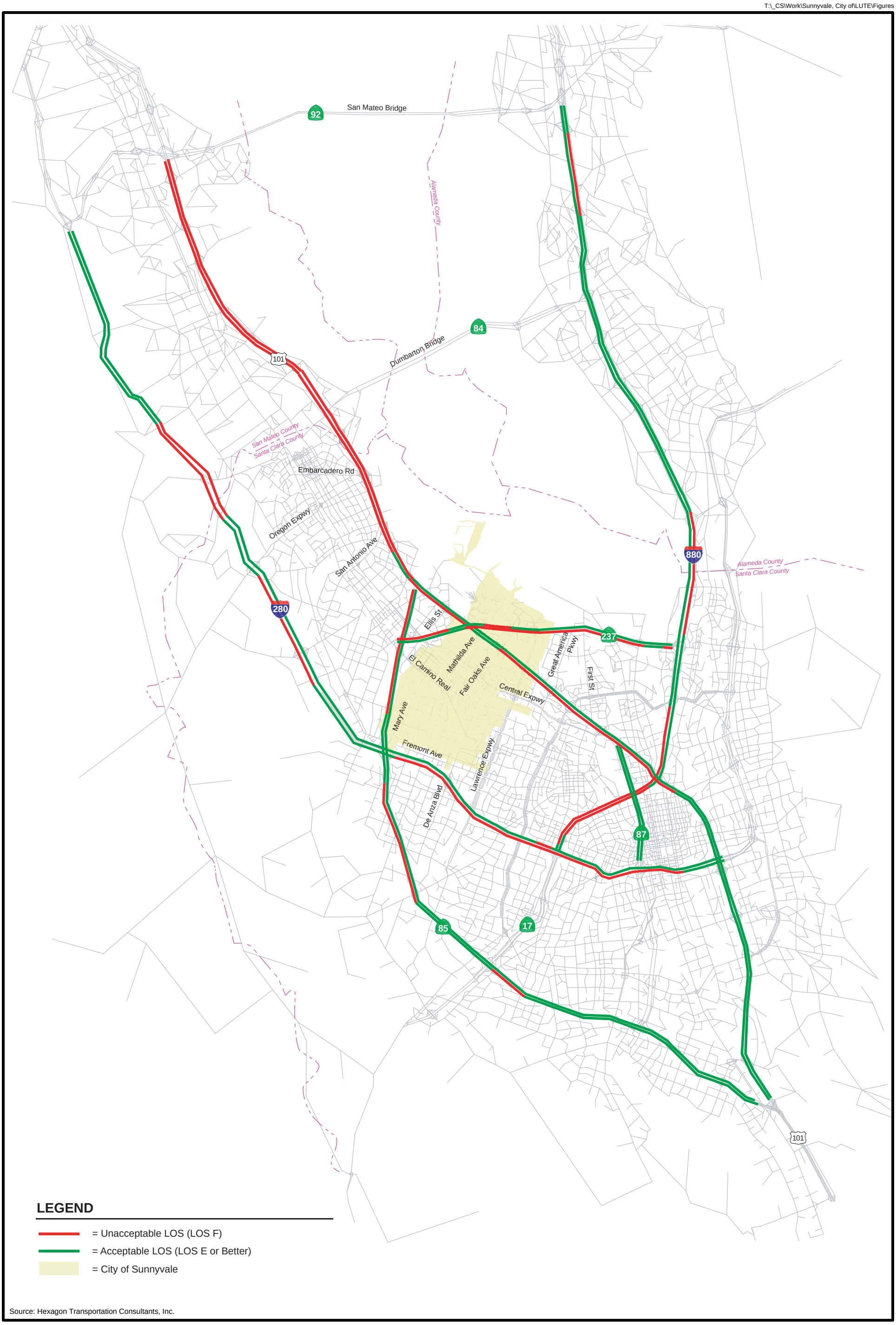


Source: Hexagon Transportation Consultants, Inc.

Not To Scale

**FIGURE 3.4-4**

Existing Freeway Mixed Flow Lanes Level of Service PM Peak Hour

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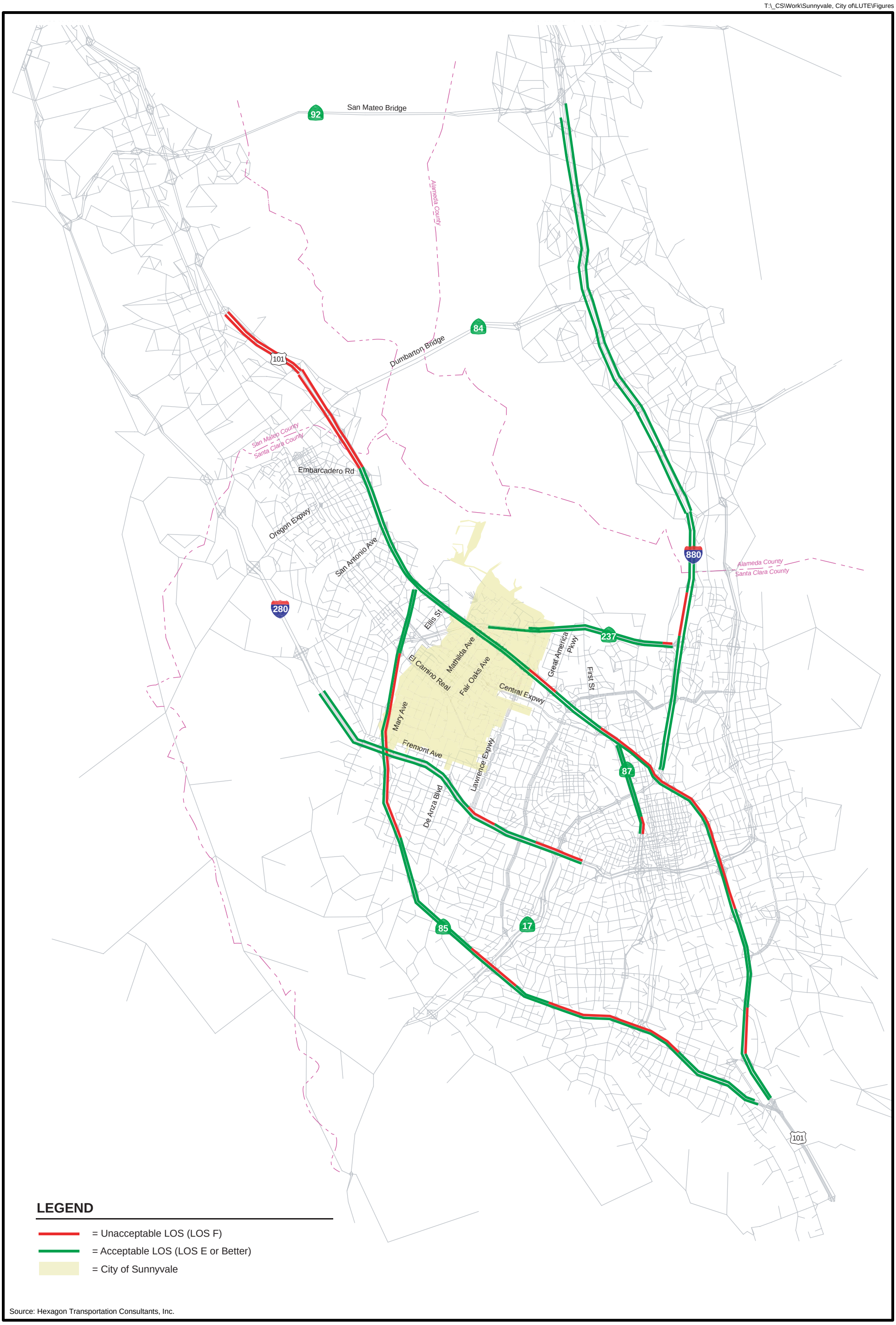


Source: Hexagon Transportation Consultants, Inc.

Not To Scale

**FIGURE 3.4-5**

Existing Freeway HOV Lanes Level of Service AM Peak Hour

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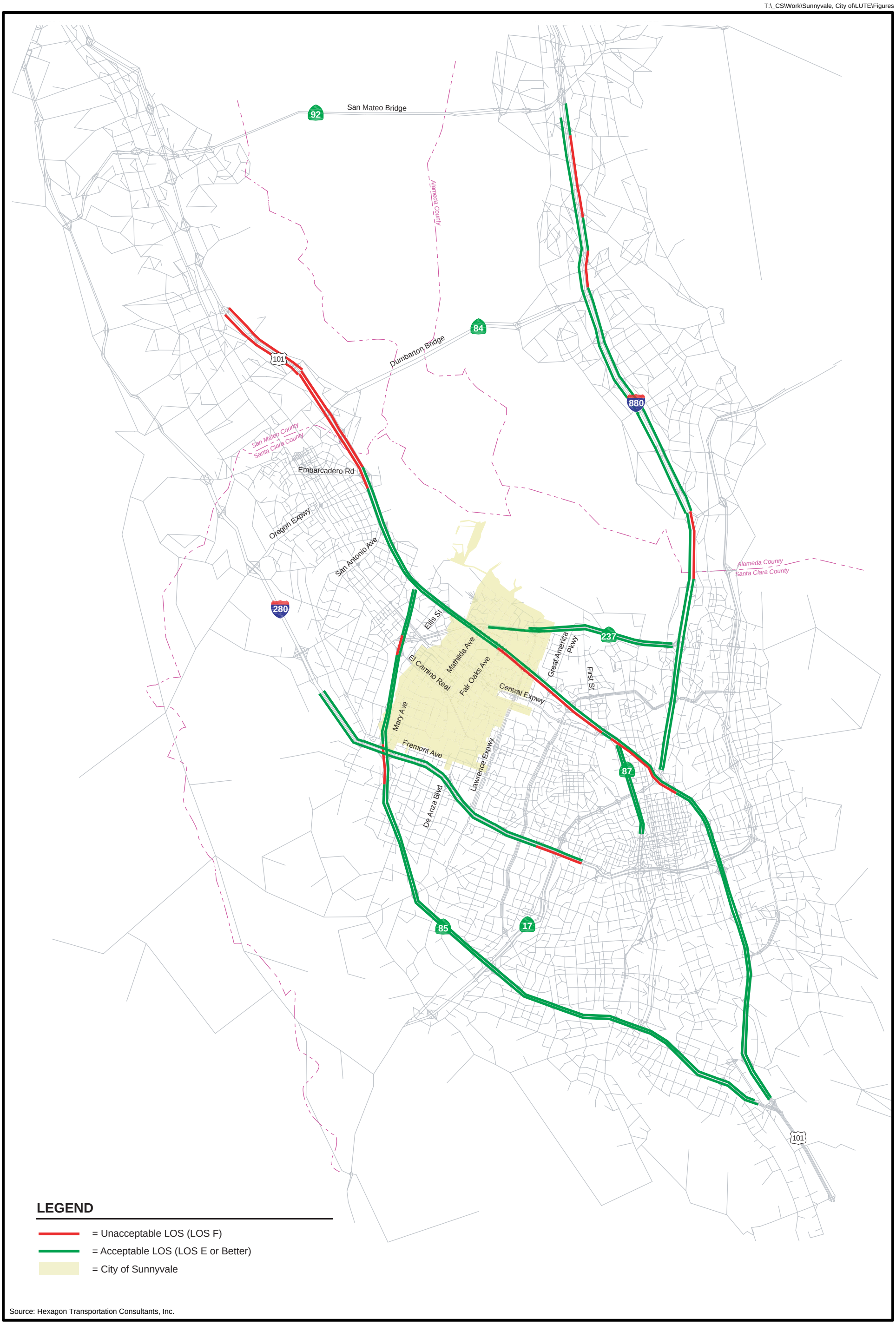


Source: Hexagon Transportation Consultants, Inc.

Not To Scale

**FIGURE 3.4-6**

Existing Freeway HOV Lanes Level of Service PM Peak Hour

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### Existing Freeway Ramp Capacity Analysis

This analysis consisted of a volume-to-capacity ratio evaluation of 32 freeway ramps at the interchanges of SR 237/Lawrence Expressway, SR 237/Mathilda Avenue, SR 237/Maude Avenue, SR 237/Middlefield Road, US 101/Lawrence Expressway, US 101/Fair Oaks Avenue, and US 101/Mathilda Avenue. The ramp capacities were obtained from the Highway Capacity Manual 2000, which considers both the free-flow speed and the number of lanes on the study ramps. It is assumed that the US 101 northbound on-ramps and the SR 237 westbound on-ramps, where applicable, are metered during the AM peak hour, and the US 101 southbound on-ramps and the SR 237 eastbound on-ramps, where applicable, are metered during the PM peak hour. It is assumed that the metered ramps each have a capacity of 900 vehicles per hour. The peak-hour freeway ramp volumes were obtained from Caltrans. Existing peak hour ramp volumes were obtained through personal communication with Caltrans staff on August 11, 2015. Table 6 of the TIA in **Appendix C** shows the peak-hour ramp volumes.

The ramp analysis showed that all freeway ramps currently have sufficient capacity to serve the existing traffic volumes. All study ramps have a volume-to-capacity (V/C) ratio that is below 1.0, which means that the existing traffic demand is lower than the ramp capacity.

## TRAFFIC CONDITIONS UNDER CURRENT GENERAL PLAN TRAFFIC VOLUMES

The following summarizes traffic conditions that would occur under the current Sunnyvale General Plan and current LUTE traffic volumes (i.e., the existing Land Use and Transportation Element). The current General Plan scenario assumes the adopted City of Sunnyvale General Plan, regional growth, and the Apple Campus 2 project in Cupertino. The Sunnyvale Travel Demand Forecasting Model (STFM) for year 2035 (buildout) was used to forecast the current General Plan traffic volumes.

### Vehicle Miles Traveled

Year 2035 VMT for Sunnyvale under the current General Plan is projected to be 2,804,752 miles and 12.30 miles per capita.

### Traffic Volumes and Roadway Network

The 2035 forecasts of intersection turning movements, freeway traffic, ramp volumes, vehicle miles traveled, and ramp volumes were completed using the STFM, which is a mathematical representation of travel in the nine counties in the San Francisco Bay Area and is calibrated to represent travel in Sunnyvale. The model uses socioeconomic data, such as the number of jobs and households, for different geographic areas (transportation analysis zones) to predict the travel from place to place in the future. The model is adjusted (validated) using current socioeconomic data to predict current traffic volumes. Model forecasts are compared to actual counts in order to make the adjustments. There are 172 transportation analysis zones in the model to represent Sunnyvale.

The 2035 socioeconomic data is generated by the Association of Bay Area Governments (ABAG) and refined by VTA. For the current General Plan and 2035 Draft LUTE model forecasts, socioeconomic data was supplied by the Sunnyvale Planning Department. Table 7 of the TIA in **Appendix C** shows the model inputs for the entire Bay Area separated by county. Table 8 of the TIA in **Appendix C** shows the model inputs for Sunnyvale, Santa Clara, Mountain View, and Cupertino.

The STFM includes improvements to the roadway network as part of the Valley Transportation Plan (VTP) and the Sunnyvale Transportation Impact Fee (TIF). Significant roadway improvements that are funded or planned to be funded within or near the Planning Area are listed below.

- Construct auxiliary lanes on eastbound SR 237 between Mathilda Avenue and Fair Oaks Avenue.
- Extend express lanes on SR 237 to SR 85.
- Construct auxiliary lanes on southbound US 101 between Lawrence Expressway and Great America Parkway, and between Ellis Street and SR 237.
- Construct auxiliary lanes on southbound SR 85 between SR 237 and El Camino Real.
- Reconstruct the US 101/Mathilda and SR 237/Mathilda interchanges.
- Widen the ramp from northbound SR 85 to eastbound SR 237 to two lanes. Construct an auxiliary lane on eastbound SR 237 from SR 85 to Middlefield Road.
- Construct a loop on-ramp from westbound Middlefield Road to westbound SR 237. Eliminate the intersection at Middlefield Road and westbound SR 237 off-ramp, and realign the off-ramp to the intersection on Middlefield Road at Ferguson Drive.
- Extend Mary Avenue north over the SR 237/US 101 interchange via a flyover and connect with Enterprise Way.
- Construct grade separations on Lawrence Expressway at the intersections with Reed Avenue/Monroe Street, Kifer Road, and Arques Avenue.
- Construct auxiliary lane on southbound Lawrence Expressway between the SR 237 loop ramps.
- Construct auxiliary lanes on Central Expressway between Mary Avenue and Lawrence Expressway.
- Widen Central Expressway between Lawrence Expressway and San Tomas Expressway to six lanes.

The forecast intersection turning movement volumes were adjusted based on existing volumes to generate the current General Plan traffic volumes, which are shown in Figure 12 of the TIA in **Appendix C**.

### Intersection Lane Configurations Under Current General Plan Conditions

The following intersection improvements were assumed under the current General Plan (GP) conditions.

- Intersections on Lawrence Expressway at Reed Avenue/Monroe Street, Kifer Road, and Arques Avenue are planned for grade separations. The lane configurations at these three intersections under current GP conditions assume the proposed concept detailed in the Lawrence Expressway Grade Separation Concept Study Final Report, published on

September 30, 2014 (shown on Figure 13 of the TIA in **Appendix C**). These interchanges are planned to be funded.

- As identified in the Valley Transportation Plan 2040, the intersection at the SR 237 westbound off-ramp and Middlefield Road is planned to be eliminated. The SR 237 westbound off-ramp would instead be realigned to the intersection at Ferguson Drive and Middlefield Road.

- As identified in the Valley Transportation Plan 2040, Central Expressway is planned to be widened to six lanes between Lawrence Expressway and San Tomas Expressway. The eastbound and westbound legs at the intersections on Central Expressway at Oakmead Parkway and at Bowers Avenue would be widened to three through lanes from the existing two through lanes.

- As documented in the 3333 Scott Boulevard Office Development Draft Supplemental EIR, published in April 2015, the 3333 Scott Boulevard project would construct a second eastbound left turn lane at the intersection of Bowers Avenue and Scott Boulevard. This intersection improvement is assumed under the current GP conditions.

- As documented in the Cupertino General Plan Amendment Draft EIR, published in June 2014, the City of Cupertino assumed that the Apple Campus 2 project would implement a number of intersection improvements. The following intersection improvements were assumed under the current GP conditions:

    - Wolfe Road & I-280 Northbound Ramp: The I-280 northbound off-ramp would be widened to a total of two left turn and two right turn lanes.

    - I-280 Southbound Ramp & Stevens Creek Boulevard: The eastbound leg would be widened to include an exclusive right turn lane.

    - De Anza Boulevard & Homestead Road: The southbound leg would be widened to include a dedicated right turn lane.

    - Lawrence Expressway Northbound Ramp & Stevens Creek Boulevard: The northbound leg would be widened to a total of two left turn lanes, one shared left-through lane, one shared through-right lane, and one exclusive right turn lane.

    - Lawrence Expressway & I-280 Southbound Ramp: The eastbound leg would be widened to include a total of one shared left-through lane, one through lane, and one exclusive right turn lane.

Lane configurations at all other study intersections under current GP conditions are assumed to be the same as under existing conditions.

### Intersection Levels of Service Under Current GP Conditions

Table 9 of the TIA in **Appendix C** summarizes intersection levels of service under current General Plan traffic volumes. The level of service results show that the following intersections would operate at an unacceptable level of service:

- Lawrence Expressway & Tasman Drive (#11) (CMP facility) – PM peak hour (LOS F)

- Lawrence Expressway & Lakehaven Drive (#12) – PM peak hour (LOS F)
- Lawrence Expressway & Oakmead Parkway (#15) – AM and PM peak hours (LOS F)
- Lawrence Expressway & Arques Avenue (#16) (CMP facility) – PM peak hour (LOS F)
- Lawrence Expressway & Kifer Road (#17) – AM peak hour (LOS F)
- Duane/Stewart & Duane Avenue (#19) – AM peak hour (LOS F)
- Wolfe Road & Kifer Road (#24) – PM peak hour (LOS F)
- Wolfe Road & Fremont Avenue (#29) – AM and PM peak hours (LOS F)
- Fair Oaks Avenue & Arques Avenue (#31) – AM and PM peak hours (LOS E+ & LOS F, respectively)
- Fair Oaks Avenue & El Camino Real (#34) (CMP facility) – PM peak hour (LOS F)
- Sunnyvale-Saratoga Road & Remington Drive (#40) (CMP facility) – PM peak hour (LOS F)
- Mary Avenue & Maude Avenue (#51) – PM peak hour (LOS E+)
- Mary Avenue & Central Expressway (#52) (CMP facility) – AM and PM peak hours (LOS F)
- Mary Avenue & Fremont Avenue (#55) – AM and PM peak hours (LOS F)
- SR 85 Northbound Ramp & Fremont Avenue (#59) – AM peak hour (LOS E+)
- SR 85 Southbound Ramp & Fremont Avenue (#60) – AM and PM peak hours (LOS E- & LOS F, respectively)
- Ellis Street & Middlefield Road (#63) (Mountain View facility) – PM peak hour (LOS F)
- Grant Road & El Camino Real (#67) (Mountain View and CMP facility) – AM peak hour (LOS F)
- Lawrence Expressway & Cabrillo Avenue (#82) (Santa Clara and CMP facility) – AM and PM peak hours (LOS F)
- Lawrence Expressway & Benton Street (#84) (Santa Clara and CMP facility) – AM and PM peak hours (LOS F)
- Lawrence Expressway & Homestead Road (#85) (Santa Clara and CMP facility) – AM and PM peak hours (LOS F)
- Lawrence Expressway & Pruneridge Avenue (#86) (Santa Clara and CMP facility) – AM peak hour (LOS F)
- Lawrence Expressway & I-280 Southbound Ramp (#90) (San Jose and CMP facility) – AM and PM peak hours (LOS F and LOS E+, respectively)

- Oakmead Parkway & Central Expressway (#92) (Santa Clara and CMP facility) – PM peak hour (LOS F)
- Bowers Avenue & Central Expressway (#95) (Santa Clara and CMP facility) – AM and PM peak hours (LOS F)
- Bowers Avenue & Kifer Road (#96) (Santa Clara facility) – PM peak hour (LOS F)
- Bowers Avenue & Monroe Street (#98) (Santa Clara facility) – PM peak hour (LOS F)

The unacceptable levels of services at these intersections are due to a combination of growth in both Sunnyvale and the region. In Sunnyvale, regional traffic contributes up to 50 percent of total traffic on regional roadways such as Lawrence Expressway, Sunnyvale-Saratoga Road, and El Camino Real.

The intersections on Mathilda Avenue at the SR 237 ramps are proposed to be reconstructed under the current GP conditions. At the time of this writing (2016), the proposed intersection configurations have not been finalized. Therefore, it is assumed that the intersections at the Mathilda Avenue/SR 237 interchange will operate at an acceptable LOS D under the current General Plan conditions.

### EXISTING PEDESTRIAN AND BICYCLE FACILITIES

Bike lanes provide a striped lane for one-way bike travel on a street or highway and are designed for the exclusive use of cyclists, with certain exceptions. For instance, right-turning vehicles must merge into the lane before turning, and pedestrians can use the bike lane when there is no adjacent sidewalk. A bicycle route may be identified on a local residential or collector street where the travel lane is wide enough and the traffic volume is low enough to allow both cyclists and motor vehicles.

According to the City of Sunnyvale 2006 Bicycle Plan, Sunnyvale has a total of 79 miles of bike lanes, mostly on arterial roadways. Since publication of the bicycle plan, there has been little change to the bike lanes. New bike lanes are present along Mathilda Avenue and Maude Avenue fronting the development at the northwest quadrant of the Mathilda/Maude intersection, as well as on El Camino Real between Fair Oaks Avenue and Sunnyvale Avenue. According to the bicycle plan, City-designated bike routes are on Mathilda Avenue north of Moffett Park Drive, on Lawrence Expressway, on Mary Avenue between Fremont Avenue and Maude Avenue, on Wolfe Road between Reed Avenue and El Camino Real, on Maude Avenue between Mathilda Avenue and Fair Oaks Avenue, and on Central Expressway.

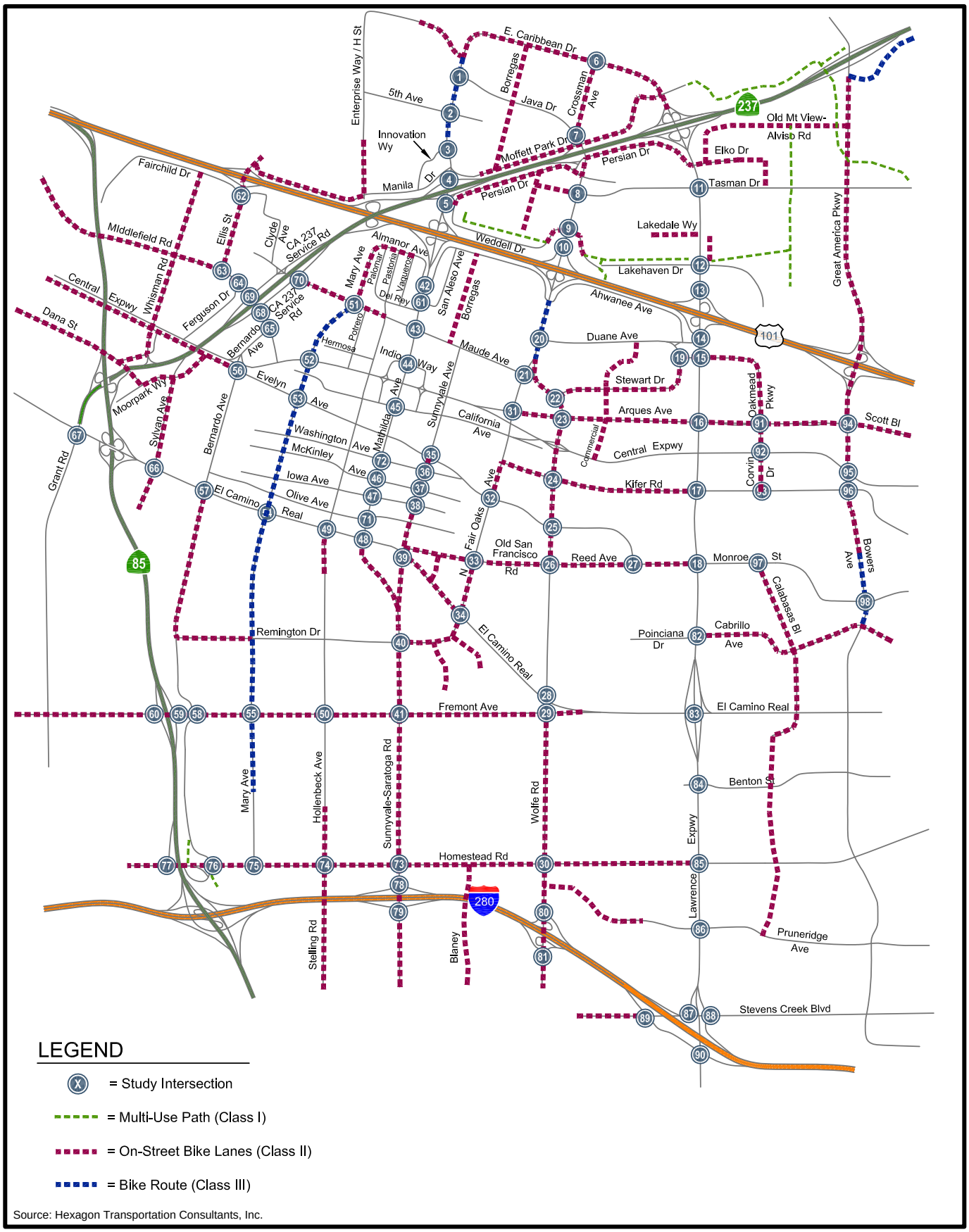
Sunnyvale has an extensive network of pedestrian facilities, including sidewalks, crosswalks, and pedestrian signals at signalized intersections. Most of the residential neighborhoods in the city include sidewalks. Gaps in sidewalks are identified in sections of industrial areas in the Peery Park, Moffett Park, and Lawrence Station areas.

The existing bicycle facilities in Sunnyvale are shown on **Figure 3.4-7**.

### EXISTING TRANSIT SERVICES

Existing transit services in Sunnyvale are offered by Caltrain and the Santa Clara Valley Transportation Authority (VTA). VTA bus routes are shown on **Figure 3.4-8**. As shown on **Figure 3.4-8**, two bus routes (Routes 22 and 32) provide service to various neighboring cities. These two routes run mainly east–west through Sunnyvale near the downtown area on El Camino Real and on Evelyn Avenue. Most of the remaining bus routes run generally in a north–south direction, connecting the neighborhoods south of El Camino Real with the employment areas in the northern part of Sunnyvale. Four bus routes (Routes 32, 53, 54, and 55) provide service to the Sunnyvale Transit Center.

T:_CS\Work\Sunnyvale, City of\LUTE\Figures



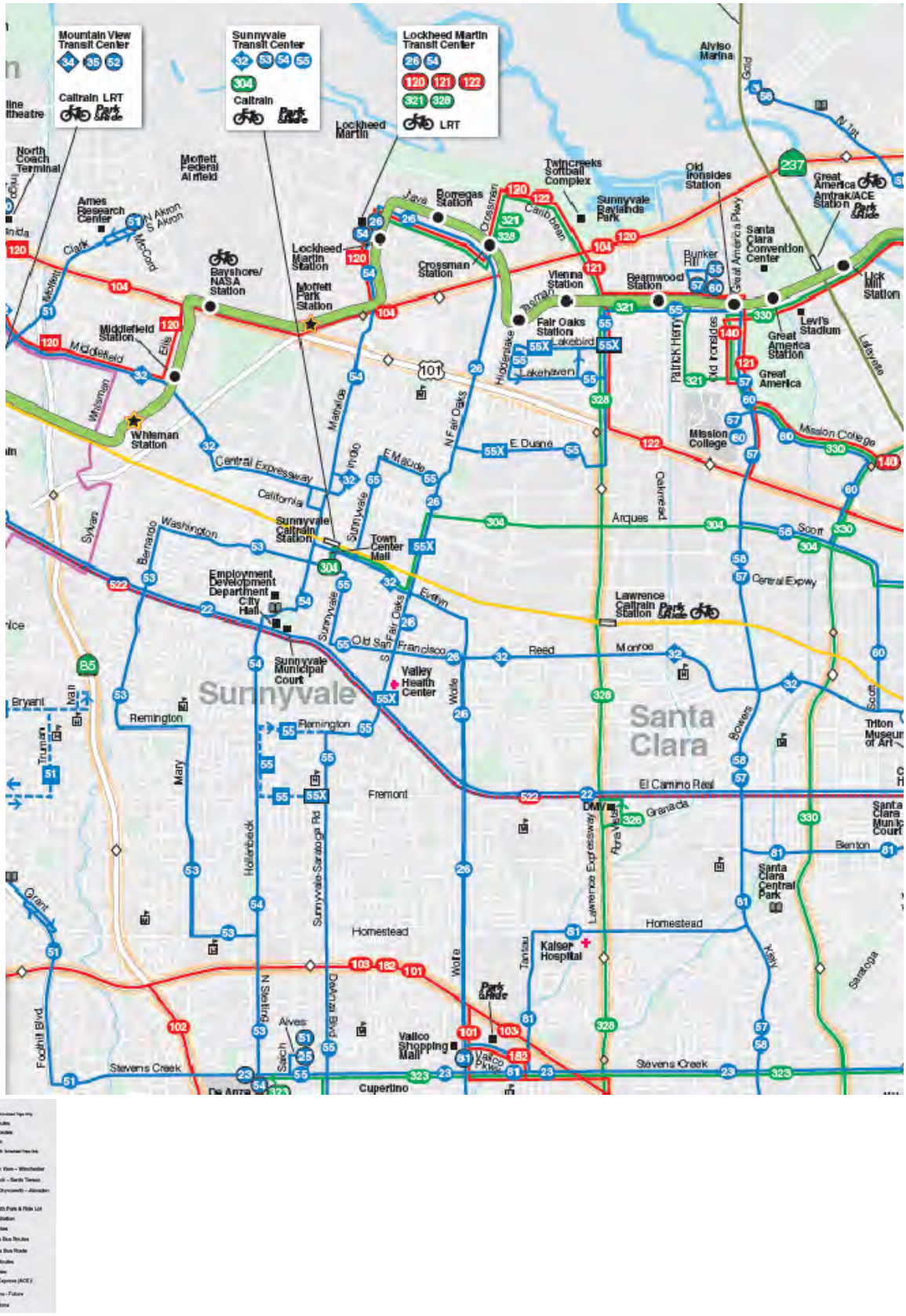

Source: Hexagon Transportation Consultants, Inc.

Not To Scale

**FIGURE 3.4-7**
Existing Bicycle Facilities

Michael Baker INTERNATIONAL

T:_CS\Work\Sunnyvale, City of\LUTE\Figures




Source: VTA

Not To Scale

**FIGURE 3.4-8**
Existing Transit Services

Michael Baker INTERNATIONAL

VTA also offers light rail service in Sunnyvale. Light rail route 902 provides service between downtown Mountain View and the Winchester station in Campbell with 15-minute headways during peak commute hours. In Sunnyvale, light rail serves the Moffett Park area north of US 101 along Tasman Drive, Fair Oaks Avenue, Java Drive, and Mathilda Avenue. The Lockheed Martin Light Rail Station also provides connections to two local bus routes, three express routes, and two limited-stop routes.

In general, the downtown area and the Moffett Park area north of SR 237 are well served by transit. The neighborhoods south of El Camino Real are adequately served by transit, with bus stops generally within half a mile of residents. Areas poorly served by transit include the light industrial area near the Lawrence Caltrain Station and the Peery Park area northwest of the Sunnyvale Caltrain Station.

### Caltrain

Caltrain offers commuter rail service between San Francisco and Gilroy. There are two Caltrain stations in Sunnyvale: the Lawrence Caltrain Station and the Sunnyvale Caltrain Station.

Service at the Lawrence Caltrain Station, located beneath the Lawrence Expressway overcrossing between Reed Avenue and Kifer Road, has approximately 20- to 30-minute headways during the weekday AM and PM commute hours and 60-minute headways midday, at night, and on weekends. The Lawrence Caltrain Station is served by only the local and limited trains. The baby bullet train does not stop at the Lawrence Station.

Service at the Sunnyvale Caltrain Station, located near the intersection of Frances Street and Evelyn Avenue, has approximately 20- to 30-minute headways during the weekday AM and PM commute hours and 60-minute headways midday, at night, and on weekends. The Sunnyvale Caltrain Station is served by all local, limited-stop, and baby bullet trains. Bus routes 32 and 54 stop at the Sunnyvale Transit Station.

The Mary/Moffett Caltrain Shuttle is a free public shuttle program funded by Google with financial support from the Bay Area Air Quality Management District and the Peninsula Corridor Joint Powers Board. This shuttle provides service between the Mountain View Caltrain Station and the Mary/Moffett area office buildings during commute hours. Shuttles depart from the Caltrain Station in the morning and travel northbound to the Mary/Moffett business area between 7 AM and 10 AM. During the afternoon commute period, the shuttles provide southbound service to take passengers to the Caltrain Station between 2:50 PM and 6:00 PM.

Three public Caltrain shuttles serve the Lawrence Caltrain Station:

- Duane Avenue: This shuttle runs between the Mountain View Caltrain Station and the Lawrence Caltrain Station during weekday commute hours. The shuttle leaves from either Caltrain Station in the morning and connects to businesses on Stewart Drive/Duane Avenue and Arques Avenue. Shuttle schedules are coordinated with Caltrain schedules.

- Bowers-Walsh: This shuttle runs between the Lawrence Caltrain Station and the Bowers/Walsh area office buildings during weekday commute periods. Shuttles are coordinated with Caltrain schedules, with six shuttles in the morning leaving the station between 6:45 AM and 9:30 AM, and six shuttles in the evening arriving at the station between 3:45 PM and 7:00 PM.

- Mission: This shuttle runs between the Lawrence Caltrain Station and Mission Area office buildings during weekday commute periods. Shuttles are coordinated with Caltrain schedules, with six shuttles in the morning leaving the station between 6:15 AM and 9:30 AM, and five shuttles in the evening arriving at the station between 3:30 PM and 6:30 PM.

**ACE Service**

The Altamont Commuter Express (ACE) Gray Shuttle (Route 822) serves Sunnyvale. ACE offers commuter rail service between Stockton, Tracy, Pleasanton, and San Jose during commute hours. This free shuttle, funded by the Bay Area Air Quality Management District, transports Sunnyvale passengers to and from the ACE Great America Station in Santa Clara. The Gray Shuttle runs on Arques Avenue, Wolfe Road, and Kifer Road, with four eastbound trips in the morning and four westbound trips in the afternoon/evening with headways averaging 60 minutes.

#### AVIATION

Moffett Federal Airfield is located within the City of Sunnyvale Sphere of Influence. Aviation uses of the airfield are limited to federal and federally hosted operations, including Google's initiative to pay for landing rights as a hosted operation. San Jose International Airport is located approximately 6 miles east of Sunnyvale, with commercial air carrier and air cargo services, as well as general aviation.

### 3.4.2 REGULATORY FRAMEWORK

The City of Sunnyvale has jurisdiction over all city streets and City-operated traffic signals. The neighboring cities of Mountain View, Cupertino, and Santa Clara have jurisdiction over local roadways within their respective jurisdictional boundaries. Caltrans has jurisdiction over state facilities, including US 101, I-280, SR 82 (El Camino Real), SR 85, and SR 237. Caltrans also has jurisdiction over on- and off-ramp intersections with local streets. The County of Santa Clara has jurisdiction over streets in unincorporated areas and all of the county expressways. Transit agencies operating within the city limits are VTA and Caltrain. Several regional, state, and federal agencies have jurisdiction over transportation planning and implementation of circulation improvements in Sunnyvale.

#### FEDERAL

**Americans with Disabilities Act of 1990**

Titles I, II, III, and V of the Americans with Disabilities Act have been codified in Title 42 of the United States Code, beginning at Section 12101. Title III prohibits discrimination on the basis of disability in places of public accommodation (businesses and nonprofit agencies that serve the public) and commercial facilities (other businesses). The regulation includes Appendix A to Part 36 (Standards for Accessible Design) establishing minimum standards for ensuring accessibility when designing and constructing a new facility or altering an existing facility.

Examples of key guidelines include detectable warnings for pedestrians entering traffic where there is no curb, a clear zone of 48 inches for the pedestrian travelway, and a vibration-free zone for pedestrians.

### Federal Highway Administration

The Federal Highway Administration (FHWA) is a major agency of the US Department of Transportation. In partnership with state and local agencies, the FHWA carries out federal highway programs to meet the nation's transportation needs. The FHWA administers and oversees federal highway programs to ensure that federal funds are used efficiently.

## STATE

### California Department of Transportation

Caltrans has authority over the state highway system, including freeways, interchanges, and arterial state routes. Caltrans approves the planning, design, and construction of improvements for all state-controlled facilities, including SR 82, SR 85, US 101, SR 237, and I-280, and the associated interchanges for these facilities. Caltrans requirements are described in its Guide for the Preparation of Traffic Impact Studies (2001), which covers the information needed for Caltrans to review the impacts on state highway facilities, including freeway segments.

### Statewide Transportation Improvement Program

The California Transportation Commission (CTC) administers transportation programming, the public decision-making process that sets priorities and funds projects envisioned in long-range transportation plans. It commits expected revenues over a multiyear period to transportation projects. The State Transportation Improvement Program (STIP) is a multiyear capital improvement program of transportation projects on and off the state highway system, funded with revenues from the State Highway Account and other funding sources.

### Complete Streets (Assembly Bill 1358)

Assembly Bill (AB) 1358, also known as the California Complete Streets Act of 2008, requires cities and counties to include complete streets policies in their general plans. These policies address the safe accommodation of all users, including bicyclists, pedestrians, motorists, public transit vehicles and riders, children, the elderly, and the disabled. These policies can apply to new streets as well as to the redesign of corridors such as El Camino Real in areas of planned change such as downtown Sunnyvale or the Lawrence Station.

### California Public Utilities Commission

The California Public Utilities Commission (CPUC) has jurisdiction over the safety of highway-rail crossings in California. The California Public Utilities Code requires CPUC approval for the construction or alteration of these crossings and grants the CPUC exclusive power on the design, alteration, and closure of such crossings in California.

### Senate Bill 743

Senate Bill (SB) 743 was signed into law on September 27, 2013. Among other things, SB 743 creates a process to change the way transportation impacts are analyzed under CEQA. SB 743 adds Chapter 2.7, Modernization of Transportation Analysis for Transit-Oriented Infill Projects, to Division 13 (Section 21099) of the Public Resources Code. SB 743 started a process that could change the way transportation impacts are analyzed under CEQA. These changes will shift agencies away from using auto delay, level of service, and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant traffic impacts in California. SB 743 includes

amendments that allow cities and counties to opt out of traditional level of service standards where congestion management programs are used and requires the state Office of Planning and Research (OPR) to update the CEQA Guidelines and establish "criteria for determining the significance of transportation impacts of projects within transit priority areas." As part of the new CEQA Guidelines, the new criteria "shall promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses."

The OPR released for public review the Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA on January 20, 2016. The public comment period ended on February 29, 2016. The revised proposal currently proposes the use of VMT as a metric for evaluating traffic impacts. Once the final draft of changes to the CEQA Guidelines is published, certification and adoption by the Secretary for Resources will be required before the amendments go into effect. Cities will then have two years to implement the new guidelines.

### REGIONAL

#### Metropolitan Transportation Commission

The Metropolitan Transportation Commission (MTC) is the Bay Area's regional transportation planning agency and federally designated metropolitan planning organization (MPO). MTC is responsible for preparing the Regional Transportation Plan (RTP), a comprehensive blueprint for the development of mass transit, highway, airport, seaport, railroad, bicycle, and pedestrian facilities. The RTP is a 20-year plan that is updated every three years to reflect new planning priorities and changing projections of future growth and travel demand. The long-range plan must be based on a realistic forecast of future revenues, and the transportation projects taken as a whole must help improve regional air quality. MTC also screens requests from local agencies for state and federal grants for transportation projects to determine compatibility with the RTP.

##### Plan Bay Area

Plan Bay Area is a long-range integrated transportation and land-use/housing strategy through 2040 for the San Francisco Bay Area. On July 18, 2013, the Association of Bay Area Governments (ABAG) Executive Board and MTC jointly approved the plan. The plan includes the region's Sustainable Communities Strategy and the 2040 RTP and represents the next iteration of a planning process that has been in place for decades.

Plan Bay Area marks the nine-county region's first long-range plan to meet the requirements of California's landmark Senate Bill 375, which calls on each of the state's 18 metropolitan areas to develop a Sustainable Communities Strategy to accommodate future population growth and reduce greenhouse gas emissions from cars and light trucks. Working in collaboration with cities and counties, the plan advances initiatives to expand housing and transportation choices, create healthier communities, and build a stronger regional economy.

#### Santa Clara Valley Transportation Authority

VTA serves two roles in Santa Clara County: as the primary transit operator and as the Congestion Management Agency. In its role as transit operator, VTA is responsible for the development, operation, and maintenance of the bus and light rail system in the county. VTA operates over 70 bus lines and three light rail lines, in addition to shuttle and paratransit service. VTA also provides transit service to major regional destinations and transfer centers in adjoining counties.

During the Valley Transportation Plan 2035 update, VTA published the Community Design & Transportation (CDT) Program, which provides design guidelines, planning tools, and policy guidance for coordinating transportation and land use in projects across the county. This report identifies future growth areas including Sunnyvale, the El Camino corridor, and the station areas adjacent to the light rail and Caltrain stations.

Congestion Management Program

As the County's Congestion Management Agency (CMA), VTA is responsible for managing the county's blueprint to reduce congestion and improve air quality. The long-range countywide transportation plan and the means by which projects compete for funding and prioritization are documented in the Valley Transportation Plan (VTP). VTA adopted the current plan (VTP 2040) in October 2014.

VTA is authorized to set state and federal funding priorities for transportation improvements affecting the Santa Clara County Congestion Management Program (CMP) transportation system. The relevant state legislation requires that all urbanized counties in California prepare a CMP in order to obtain each county's share of gas tax revenues. The CMP legislation requires that each CMP contain the following five mandatory elements: (1) a system definition and traffic level of service standard element; (2) a transit service and standards element; (3) a trip reduction and transportation demand management element; (4) a land use impact analysis program element; and (5) a capital improvement element. The Santa Clara County CMP includes the five mandated elements and three additional elements, including a countywide transportation model and database element, an annual monitoring and conformance element, and a deficiency plan element. Preparation of a deficiency plan is required by cities for CMP facilities that operate at unacceptable levels based on the CMP's standard. The purpose of a deficiency plan is to improve system-wide traffic flow and air quality. VTA also requires local jurisdictions to analyze impacts of new developments or land use policy changes on CMP facilities if they are expected to generate 100 or more new peak-hour trips.

CMP-designated transportation system components in Sunnyvale include a regional roadway network, a transit network, and a bicycle network.

Transit

VTA's Short Range Transit Plan is a federally mandated planning document that describes the plans, programs, and goals of VTA's transit service. The plan has a 10-year planning horizon and is updated annually. It focuses on the characteristics and capital needs of the existing system and on committed (funded) expansion plans. The current plan proposes to keep bus and light rail service at existing levels, expand community bus services (neighborhood-based circulator and feeder routes that travel within a limited area), continue to contribute monetarily to Caltrain service, and replace and expand the bus vehicle fleet.

### County of Santa Clara

Streets in unincorporated areas, as well as all of the county expressways (including Central Expressway and Lawrence Expressway in Sunnyvale), are under the auspices of the Santa Clara County Roads and Airports Department. Roads and airports staff is responsible for maintaining and operating all of the expressways and all of the streets on County property.

The Santa Clara County Trails Master Plan was approved by the Santa Clara County Board of Supervisors in 1995. The goal of the plan is to direct the County's trail implementation efforts well into the twenty-first century with a balanced regard for the public good and individual desires for privacy. The plan implements the vision to provide a contiguous trail network that connects cities to one another, connects cities to the county's regional open space resources, connects county parks to other county parks, and connects the northern and southern urbanized regions of the county. The plan identifies regional trail routes, subregional trail routes, connector trail routes, and historic trails.

The Santa Clara Countywide Bicycle Plan synthesizes other local and county plans into a comprehensive 20-year cross-county bicycle corridor network and expenditure plan.

### LOCAL

#### City of Sunnyvale General Plan

The current General Plan Land Use and Transportation Element includes policies and implementing measures that address the following areas:

- Roadway, pedestrian, and bicycle facilities linkage with neighborhood and services.
- Pedestrian-friendly spaces in new development.
- Level of service E or better for citywide roadways and intersections and required roadway improvements for development projects to address level of service issues.
- Minimization of the total vehicle miles traveled.
- Support for all forms of transportation (pedestrian, bicycle, transit, and vehicle) and safety.

In addition, the General Plan Housing Element, last adopted in 2014, contains the following policy:

Policy F.3: Continue a high quality of maintenance for public streets, rights-of-way, and recreational areas, and provide safe and accessible pedestrian, bike, and transit linkages (accessibility) between jobs, residences, transportation hubs, and goods and services.

#### City of Sunnyvale Municipal Code

Municipal Code Chapter 10.60 Code sets forth the City's Transportation Demand Management program. Section 19.46.100 includes minimum and maximum requirements for off-street parking spaces. Section 19.46.150 establishes minimum requirements for bicycle parking (number and type of spaces).

##### Transportation Demand Management

Transportation Demand Management (TDM) is typically set as a condition of approval on some development projects in Sunnyvale. TDM is a requirement for all businesses located in the Moffett Industrial Park north of SR 237, as well as for all developments requesting floor area ratios that exceed 35 percent, regardless of location. TDM may also be used to achieve certain voluntary incentives under the City's Green Building program at this location. TDM is required for new residential development and redevelopment in High Density and Very High Density zoning districts

in targeted areas, and for all types of attached housing development located within 1/3 mile of major transit stops.

The City focuses the objectives and monitoring of TDM programs on the reduction of peak-hour trips. This is to minimize congestion during the peak commute periods and to allow more flexibility in the types of TDM techniques that can be employed. For private developments, project sponsors can play an effective role in supporting the City's initiatives through the deployment of TDM programs.

**Transportation Impact Fees**

Transportation impact fees are charged to new development to fund major transportation projects, including bicycle and pedestrian improvements necessary to support land use plans. The City's TIF program varies by area of the city (north of SR 237 and south of SR 237). The fees are charged to net new development (i.e., new residential units and increased commercial square footage). The existing development that remains would not be required to pay transportation impact fees.

**Level of Service Standards Outside of Sunnyvale**

The cities of Mountain View, Santa Clara, Cupertino, and San Jose level of service standards for signalized intersections are all LOS D or better, except on CMP facilities in Santa Clara, which have a standard of LOS E.

### 3.4.3 IMPACTS AND MITIGATION MEASURES

#### STANDARDS OF SIGNIFICANCE

Appendix G of the State CEQA Guidelines provides general considerations for lead agencies evaluating impacts on the transportation system. These considerations are listed below, along with the significance criteria for determining whether impacts would be significant.

1) 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.

**Significance Criteria for Intersections**

The criteria used to determine significant impacts on signalized intersections are based on the City of Sunnyvale, City of Cupertino, City of Santa Clara, City of San Jose, and VTA CMP level of service standards. The Draft LUTE would create a significant adverse impact on traffic conditions at a signalized intersection in Sunnyvale, Cupertino, Santa Clara, and/or San Jose if for either peak hour:

- The level of service at the intersection drops below its respective level of service standard when project traffic is added; or

- An intersection that operates below its level of service standard under no project conditions experiences an increase in critical-movement delay of 4 or more seconds, and the volume-to-capacity ratio (V/C) is increased by 0.01 or more when project traffic is added.

The exception to this threshold is when the addition of project traffic reduces the amount of average control delay for critical movements (i.e., when the change in average control delay for critical movements is negative). In this case, the threshold is when the project increases the critical V/C value by 0.01 or more.

The operation of principal arterials and state highways located in urbanized Santa Clara County is measured by the level of service at CMP intersections. CMP intersections are select, generally high-volume intersections. The definition of a significant impact at a CMP intersection is the same as for the City of Sunnyvale, except that the standard for acceptable level of service for all CMP and regional intersections is LOS E or better. A significant impact by all Sunnyvale, Cupertino, Santa Clara, San Jose, and VTA CMP standards is said to be satisfactorily mitigated when measures are implemented that would restore intersection conditions to its LOS standard <u>or</u> to an average delay that eliminates the project impact.

2) 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.

### Significance Criteria for Freeway Segments and Ramps

For this analysis, the criteria used to determine impacts on freeway segments are based on Santa Clara County, San Mateo County, and Alameda County guidelines which define that a project would cause a freeway impact if it deteriorates freeway levels of service from an acceptable level to an unacceptable level (LOS F), or if the freeway already operates at an unacceptable level under existing conditions, the project would add traffic exceeding 1 percent (3 percent in Alameda County) of the capacity.

For the purpose of this EIR, the project is said to create a significant adverse impact on a freeway ramp if its implementation:

- Causes the volume-to-capacity (V/C) ratio of the freeway ramp to exceed 1.0; or

- Increases the amount of traffic on a freeway ramp that is already exceeding its capacity by more than 1 percent of the ramp's capacity.

3) 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.

### Significance Criteria for Air Traffic Hazards

An air traffic impact is considered significant if implementation of the proposed project would:

- Increase air traffic levels resulting in a substantial safety risk.

4) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

### Significance Criteria for Transit

A transit impact is considered significant if implementation of the proposed project would:

- Disrupt existing or interfere with planned transit services or facilities.

### Significance Criteria for Bicycle Facilities

A bicycle impact is considered significant if implementation of the proposed project would:

- Disrupt existing bicycle facilities.
- Conflict or create inconsistencies with adopted bicycle system plans, guidelines, policies, or standards.

### Significance Criteria for Pedestrian Facilities

A pedestrian impact is considered significant if implementation of the proposed project would:

- Disrupt existing pedestrian facilities.
- Create inconsistencies with planned pedestrian facilities or adopted pedestrian system plans, guidelines, policies, or standards.

5) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). See discussion under item 4 regarding safety.

6) Result in inadequate emergency access.

### Significance Criteria for Emergency Access

An emergency vehicle access impact is considered to be significant if implementation of the proposed project would:

- Provide inadequate access to accommodate emergency vehicles.

## Impacts Not Evaluated in Detail

While the Planning Area of the Draft LUTE is within Moffett Federal Airfield's influence area and safety zones, the Draft LUTE would not involve changes in air traffic operations. There would be no impact relative to standard of significance 3, and impacts related to airport operations are not further evaluated.

## Change in Vehicle Miles Traveled under Existing and 2035 Conditions

Implementation of the Draft LUTE would result in a net increase in total VMT from existing conditions (see **Table 3.4-1**). However, the Draft LUTE would improve Sunnyvale and Santa Clara County VMT per capita as compared to the current LUTE in 2035, but the total VMT (12.00 miles per capita) would be higher than the VMT per capita set forth the City's Climate Action Plan (11.62 miles).

**TABLE 3.4-1**
**VEHICLE MILES TRAVELED SUMMARY**

| Vehicle Miles Traveled Data | Planning Area | | | Santa Clara County | | |
|---|---|---|---|---|---|---|
| | Existing Conditions | Current General Plan in 2035 | 2035 with Draft LUTE | Existing Conditions | Current General Plan in 2035 | 2035 with Draft LUTE |
| Total VMT | 2,142,494 | 2,804,752 | 3,082,098 | 31,466,492 | 38,011,140 | 38,360,794 |
| VMT per Capita | 10.62 | 12.30 | 12.00 | 11.22 | 10.85 | 10.83 |

## METHODOLOGY

The potential impacts of the Draft LUTE were evaluated in accordance with the standards set forth by the City of Sunnyvale and the Santa Clara County Valley Transportation Authority (VTA) Congestion Management Program (CMP). The analysis addresses project impacts under existing conditions as well as cumulative conditions in the year 2035 (assumed time frame for buildout of the Draft LUTE).

### Vehicle Miles Traveled

As noted above, the Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA currently proposes the use of VMT as a metric for evaluating traffic impacts. However, these updates have not been completed as of the release of this EIR. The text below analyzes changes in VMT as compared to existing and year 2035 conditions in the Planning Area as well as Santa Clara County as a whole. The VMT analysis is based on the TIA (see Table 17 in **Appendix C**).

### Bicycle and Pedestrian Facilities

Impacts on bicycle and pedestrian facilities were qualitatively evaluated based on information presented in the Draft LUTE.

### Transit Facilities

Impacts on Caltrain and VTA ridership and transit services were evaluated based on information presented in the Draft LUTE. Impacts on VTA transit services were based on whether intersection operations in the Planning Area would impact transit travel times.

### Emergency Access

Emergency access impacts were evaluated qualitatively based on proposed land use and transportation system changes under the Draft LUTE relative to the existing roadway network within and adjoining the Planning Area.

### Design Hazards

Impacts on design hazards were evaluated qualitatively based on a review of the proposed roadway and pedestrian/bicycle facilities in the Draft LUTE associated with existing facilities.

## Traffic Operations/Level of Service Analysis

### Intersections

Ninety-eight intersections were evaluated. Eight of the study intersections are in Mountain View, four are in Cupertino, 15 are in Santa Clara, and one is in San Jose. Twenty-seven of the study intersections are CMP intersections. The study intersections were selected to include locations where the Draft LUTE is expected to generate 10 or more peak-hour trips per lane, using the Sunnyvale Travel Demand Forecast Model (STFM).

### Freeway Segments and Ramps

In analyzing the freeway segments, the STFM was used to project the increase in traffic volumes between existing and 2035 proposed Draft LUTE conditions. VTA's CMP guidelines require freeway levels of service to be calculated based on density. However, congested freeway speed (used to measure density) cannot be accurately modeled. For the purpose of the TIA, freeway levels of service under the 2035 proposed Draft LUTE conditions were instead calculated based on volume to capacity (V/C) ratio. The traffic analysis also included a capacity analysis for freeway ramps. Freeway segments that were evaluated are shown on **Figures 3.4-3** through **3.4-6.** The following freeway ramps were evaluated.

*Ramps*

*US 101 at Fair Oaks Avenue*

1) US 101 southbound on-ramp from northbound Fair Oaks Avenue
2) US 101 southbound off-ramp to northbound Fair Oaks Avenue
3) US 101 northbound off-ramp to Fair Oaks Avenue
4) US 101 northbound on-ramp from Fair Oaks Avenue
5) US 101 southbound off-ramp to southbound Fair Oaks Avenue
6) US 101 southbound on-ramp from southbound Fair Oaks Avenue

*US 101 at Lawrence Expressway*

1) US 101 northbound on-ramp from northbound Lawrence Expressway
2) US 101 southbound on-ramp from northbound Lawrence Expressway
3) US 101 northbound on-ramp from southbound Lawrence Expressway
4) US 101 southbound on-ramp from southbound Lawrence Expressway
5) US 101 northbound off-ramp to Lawrence Expressway
6) US 101 southbound off-ramp to Lawrence Expressway

*US 101 at Mathilda Avenue*

1) US 101 southbound on-ramp from northbound Mathilda Avenue
2) US 101 northbound on-ramp from Mathilda Avenue
3) US 101 northbound off-ramp from Mathilda Avenue (ramp modification under year 2035)
4) US 101 southbound on-ramp from southbound Mathilda Avenue
5) US 101 southbound off-ramp to Mathilda Avenue (ramp modification under year 2035)

*SR 237 at Lawrence Expressway*

1) SR 237 eastbound on-ramp from northbound Lawrence Expressway
2) SR 237 westbound on-ramp to northbound Lawrence Expressway
3) SR 237 westbound on-ramp from southbound Lawrence Expressway
4) SR 237 eastbound on-ramp from southbound Lawrence Expressway
5) SR 237 eastbound off-ramp to southbound Lawrence Expressway
6) SR 237 eastbound off-ramp to northbound Lawrence Expressway
7) SR 237 westbound off-ramp to northbound Lawrence Expressway
8) SR 237 westbound off-ramp to southbound Lawrence Expressway

*SR 237 at Mathilda Avenue*

1) SR 237 eastbound off-ramp to Mathilda Avenue
2) SR 237 eastbound on-ramp from Mathilda Avenue
3) SR 237 westbound off-ramp to Mathilda Avenue (ramp modification under year 2035)
4) SR 237 westbound on-ramp from Mathilda Avenue

*SR 237 at Maude Avenue*

1) SR 237 eastbound on-ramp from Maude Avenue
2) SR 237 westbound off-ramp to Maude Avenue

*SR 237 at Middlefield Road*

1) SR 237 eastbound off-ramp to Middlefield Road
2) SR 237 westbound on-ramp from Middlefield Road

3) SR 237 westbound on-ramp from Middlefield Road (ramp modification under year 2035)

Under the 2035 proposed Draft LUTE conditions, the SR 237/Mathilda Avenue and US 101/Mathilda Avenue interchanges are proposed for reconfiguration. These interchange improvements are identified in the Valley Transportation Plan 2040 (as project H33). At the time of this writing, the proposed configurations at these interchanges have not been finalized. The two interchange improvement alternatives being studied (documented in the Notice of Preparation of an Environmental Impact Report, released on August 18, 2015) are different at only the SR 237/Mathilda Avenue interchange (diamond interchange versus diverging diamond interchange). The alternatives would differ from an operational perspective, but would not differ from a demand forecasting perspective. At the US 101/Mathilda Avenue interchange, the interchange would be reconfigured to a partial cloverleaf. The US 101 northbound and southbound off-ramps would be improved to allow full access onto Mathilda Avenue. The existing US 101 northbound off-ramp to southbound Mathilda Avenue would be demolished. The TIA assumed the configuration proposed under the Notice of Preparation of an Environmental Impact Report, released on August 18, 2015 (see Figure 29 of the TIA in **Appendix C**).

At the interchange of SR 237/Middlefield Road, the SR 237 westbound off-ramp is proposed to be realigned with Ferguson Drive to the west. The existing SR 237 westbound on-ramp would have access restricted to only eastbound Middlefield Road. As part of the same improvement project, a new loop on-ramp is proposed to connect westbound Middlefield Road to westbound SR 237. This interchange improvement is identified in the Valley Transportation Plan 2040 (as project H32). The interchange reconfiguration is assumed under the Draft LUTE conditions.

The 2035 proposed General Plan (GP) conditions freeway ramp volumes were forecast using the STFM and adjusted based on existing ramp volumes, where applicable. All interchange improvements listed above are assumed to be completed. Table 15 of the TIA in **Appendix C** shows the peak-hour ramp volumes.

### Analysis Scenarios

Traffic conditions were evaluated for the following scenarios:

Scenario 1: Existing Conditions. Existing traffic volumes are based on recent traffic counts conducted during 2014 and 2015, the 2014 CMP TRAFFIX database, and County records for the expressways.

Scenario 2: Current GP Conditions (existing LUTE).[1] The current GP conditions were included in the analysis. The current GP traffic volumes were estimated using the STFM for 2035.

Scenario 3: 2035 Proposed GP Conditions (referred to hereafter as the Draft LUTE).[2] The Draft LUTE comprises the Lawrence Station Area Plan (LSAP) and the Peery Park Specific Plan (PPSP), which have their own EIRs that were released prior to this report.

[1] The Current GP Conditions scenario is the implementation of the existing adopted Land Use and Transportation Element in 2035.
[2] The 2035 Proposed GP Conditions scenario is the proposed update of the Land Use and Transportation Element.

### Year 2035 Traffic Demand Model Forecasts

The 2035 forecasts of intersection turning movements, freeway traffic, ramp volumes, vehicle miles traveled, and ramp volumes were completed using the STFM, which is a mathematical representation of travel in the nine counties in the San Francisco Bay Area (including regional growth) and is calibrated to represent travel in Sunnyvale. The model uses socioeconomic data, such as the number of jobs and households, for different geographic areas (transportation analysis zones) to predict travel from place to place in the future. The model is adjusted (validated) using current socioeconomic data to predict current traffic volumes. Model forecasts are compared to actual counts in order to make the adjustments. There are 172 transportation analysis zones within the model to represent Sunnyvale.

The 2035 socioeconomic data is generated by ABAG and refined by VTA. The analysis assumes that growth outside of Sunnyvale would be constant.

The proposed LSAP and PPSP are to be managed by separate plans and their specific impacts are addressed in their respective EIRs that have been released for public review.

#### *Mode Split*

Mode split refers to the percentage of trips made using each of the primary modes of transportation: auto, transit, bicycling, and walking. The 2035 travel demand model calculates the mode split based on input factors taken from survey data or other validated sources. For example, the factors for calculating the transit mode share include residential development density, proximity to transit, household income, the cost of using transit versus auto, and travel times for transit versus auto. Table 16 in the TIA in **Appendix C** separately presents the total number of daily person-trips in the Planning Area made under existing, current GP, and Draft LUTE conditions. The table includes all trips beginning and/or ending within the study areas: trips that begin and end within study areas, trips that begin within and end outside of the study areas, and trips that begin outside of and end within the study areas.

Since mode split is based on person-trips rather than vehicle trips, the auto mode includes both single-occupant vehicle trips and multi-occupant vehicle trips, including carpooling and vanpooling. If, for example, there are three people in a car, the mode split table will show three person-trips made by automobile.

As shown on Table 16 of the TIA in **Appendix C**, in the Planning Area, the mode share for automobiles is expected to be reduced from existing (91.4 percent) to current GP (90.6 percent) to Draft LUTE (90.1 percent) conditions. Mode share for transit in the Planning Area would increase from existing (2.2 percent) to current GP (3.2 percent) to Draft LUTE (3.6 percent) conditions. Mode share for biking in the Planning Area would remain relatively constant at 1.2 percent across all scenarios. Mode share for walking in the Planning Area would also remain relatively constant from existing (5.2 percent) to current GP (4.9 percent) to Draft LUTE (5.1 percent) conditions.

### Analysis Methods

This subsection presents the methods used to determine the traffic conditions for each scenario described above. It includes descriptions of the data requirements, the analysis methods, and the applicable level of service standards.

The data required for the analysis was obtained from previous traffic studies, the City of Sunnyvale, the VTA CMP TRAFFIX database, County records for expressways, and field observations. The following data was collected from these sources: existing traffic volumes, existing lane configurations, and signal timing and phasing. Traffic conditions were evaluated using level of service. The analytical methods for intersections and freeway segments/ramps are described below.

*Signalized Study Intersections*

The City of Sunnyvale, City of Santa Clara, City of Cupertino, and City of San Jose level of service methodologies for signalized intersections use the 2000 Highway Capacity Manual (HCM) method. This method is applied using the TRAFFIX software. The 2000 HCM operations method evaluates signalized intersection operations on the basis of average control delay time for all vehicles at the intersection. Because TRAFFIX is also the CMP-designated intersection level of service methodology, the methodology uses the CMP default values for the analysis parameters.

The Sunnyvale, Santa Clara, Cupertino, and San Jose level of service standards for signalized intersections are all LOS D or better, except on roadways considered "regionally significant" in Sunnyvale and on CMP facilities in Santa Clara, which have a standard of LOS E. In the traffic study area, the signalized intersections in Sunnyvale along Lawrence Expressway, El Camino Real, and Sunnyvale Avenue (as an extension of Sunnyvale-Saratoga Road) along with its extensions into Mathilda Avenue and Sunnyvale Avenue are considered regionally significant. The signalized intersections in Santa Clara along Lawrence Expressway are CMP facilities.

Intersection levels of service under Draft LUTE conditions are evaluated relative to existing conditions to determine the Draft LUTE's potential significant impacts. This set of impacts is denoted as the cumulative impacts and is determined based on the intersection impact criteria discussed below.

Hexagon analyzed the potential impacts of the Draft LUTE within the context of year 2035 conditions, which assumes full buildout under the Draft LUTE, the Peery Park Specific Plan, and the Lawrence Station Area Plan, and includes regional growth in Sunnyvale and cities in nine of the surrounding counties. The Sunnyvale Travel Demand Forecasting Model (STFM) for year 2035 was used to forecast the Draft LUTE traffic volumes. As discussed in further detail below, in order to identify Draft LUTE–specific impacts, Hexagon disaggregated peak-hour traffic associated with the Draft LUTE to permit identification of significant impacts to affected intersections.

Since other proposed land uses (PPSP and LSAP) are included in the model, the 2035 traffic analysis included traffic volumes not only from the Draft LUTE but also from the LSAP, the PPSP, and other cities. These are referred to as cumulative traffic volumes. If an intersection was identified to have a cumulative impact in 2035 as a result of all of these combined land use changes, a separate analysis was completed to determine if the Draft LUTE had a significant impact on its own. To accomplish this, Hexagon disaggregated peak-hour traffic associated with the Draft LUTE. Once the Draft LUTE traffic was segregated, each cumulatively impacted intersection was analyzed to determine whether the Draft LUTE traffic would cause an impact on its own by calculating the level of Draft LUTE traffic volumes and the level of traffic volumes required to cause an impact. This process was completed through a full technical analysis. The volumes attributable to each land use were estimated using the select zone analysis in the STFM.[3] Regional traffic was defined as trips that have neither a trip origin nor destination in Sunnyvale. The threshold for a significant

[3] A select zone analysis follows traffic volumes from a single selected zone to all other zones.

contribution at each impacted intersection was calculated by determining the critical amount of traffic growth between the Draft LUTE and existing conditions that would generate a significant intersection impact (i.e., an increase in V/C ratio of 0.01 or an increase in delay of 4 seconds). The Draft LUTE would cause a significant intersection impact if Draft LUTE–related traffic alone would exceed the threshold for a significant contribution, compared to existing conditions.

*CMP Intersections*

The designated level of service methodology for the CMP is also the 2000 HCM operations method for signalized intersections, using TRAFFIX. The CMP level of service standard for signalized intersections in Sunnyvale, Cupertino, and Santa Clara is LOS E or better. In San Jose, the level of service standard for signalized CMP intersections is LOS D or better.

*Freeway Segments*

A freeway segment is assumed to operate at LOS F if:

- The freeway segment already operates at LOS F under existing conditions, or
- The STFM forecasts the freeway segment to operate at a V/C ratio above 1 under Draft LUTE conditions.

All Santa Clara County, San Mateo County, and Alameda County guidelines define that a project would cause a freeway impact if it deteriorates freeway levels of service from an acceptable level to an unacceptable level, or if the freeway already operates at an unacceptable level under existing conditions the project would add traffic exceeding 1 percent (3 percent in Alameda County) of the capacity. However, because the freeway volume increase between the existing and the Draft LUTE conditions is caused by a combination of the LSAP, PPSP, the Draft LUTE, and regional traffic, for the purpose of the TIA, the Draft LUTE would generate a cumulative freeway impact only if the freeway segment is projected to operate at an unacceptable level under the Draft LUTE conditions, and the increase in Draft LUTE volume exceeds 1 percent (3 percent in Alameda County) of capacity.

The CMP requires that mixed-flow lanes and auxiliary lanes be analyzed separately from high-occupancy vehicle (HOV) lanes (otherwise known as carpool lanes). The CMP specifies that a capacity of 2,300 vehicles per hour per lane (vphpl) be used for segments three lanes or wider in one direction, and a capacity of 2,200 vphpl be used for segments two lanes wide in one direction. HOV lanes are specified as having a capacity of 650 vphpl. The CMP defines an acceptable level of service for freeway segments as LOS E or better.

*Freeway Ramps*

A freeway ramp analysis was performed in order to verify that the freeway ramps would have sufficient capacity to serve the expected traffic volumes with and without the Draft LUTE. For the purpose of the TIA, the Draft LUTE is said to create a significant adverse impact on a freeway ramp if its implementation:

- Would cause the volume-to-capacity (V/C) ratio of the freeway ramp to exceed 1.0; or
- Would increase the amount of traffic on a freeway ramp that is already exceeding its capacity by more than 1 percent of the ramp's capacity.

## PROJECT AND CUMULATIVE IMPACTS AND MITIGATION MEASURES

### Transit Facilities (Standard of Significance 4)

**Impact 3.4.1** Subsequent land use activities associated with implementation of the Draft LUTE would be accommodated by transit services and facilities in the area. This would be a **less than cumulatively considerable (less than significant)** impact.

Existing transit lines in Sunnyvale operate primarily with 30- to 60-minute headways during the AM and PM peak hours. In conjunction with the TDM policies (with a trip reduction target of 20–35 percent), it is expected that the Draft LUTE would increase transit demand. It is expected that the City and VTA will coordinate to increase transit services in Sunnyvale.

The Draft LUTE includes various policies and actions to improve the transit network in Sunnyvale. The relevant policies are listed below.

Policy 24: Promote modes of travel and actions that provide safe access to city streets and reduce single-occupant vehicle trips and trip lengths locally and regionally.

The order of consideration of transportation users shall be:

1) Pedestrians
2) Non-automotive (bikes, three-wheeled bikes, scooters, etc.)
3) Mass transit vehicles
4) Delivery vehicles
5) Single-occupant automobiles

Policy 46: Support statewide, regional, and subregional efforts that provide for a safe, effective transportation system that serves all travel modes consistent with established service standards.

Action 2: Advocate expansion of and enhancement to bus, light rail, commuter rail, and shuttle services within Sunnyvale, consistent with adopted service level standards and incorporating a certainty of ongoing investment.

Action 4: Work in coordination with the Santa Clara Valley Transportation Authority (VTA) to ensure that the City creates streets that are transit-friendly, including bus signal pre-emption, adequate street and transit stop furniture, and appropriate lighting for nighttime riders.

Policy 48: Support regional and cross-regional transportation improvements and corridors while minimizing impacts to community form and intracity travel.

Action 1: Continue to improve north/south transit routes and facilities that connect to areas in Sunnyvale and through destinations such as transit stations, job centers, mixed-use areas, and retail/entertainment centers.

Action 2: Continue to support First-Last-Mile transit, bicycle, and pedestrian improvements that connect to regional-serving transit.

Action 3: Explore public and private opportunities to provide transportation and complete street improvements near regional-serving transit.

Implementation of Policies 46 and 48 and their associated actions would require the City to ensure that transit facilities and services are factored into roadway improvement projects.

Based on increases in transit mode share documented in the analysis methods above, it is expected that the Draft LUTE would increase the number of Caltrain riders. Caltrain has plans to increase the number of trains serving the Sunnyvale Caltrain Station from the existing 62 trains per day to 84 trains per day on weekdays, and to increase service at Lawrence Station from the existing 56 trains per day to 66 trains per day on weekdays. It is assumed that the planned increase in service will be sufficient to meet the demand.

With the implementation of these policies, the Draft LUTE's impact to transit facilities would be **less than significant.**

Mitigation Measures

None required.

### Impacts to Transit Travel Times (Standard of Significance 4)

**Impact 3.4.2** Subsequent land use activities associated with implementation of the Draft LUTE would result in traffic operations in the Planning Area that would adversely impact transit travel times. This is a **cumulatively considerable (significant)** impact.

As identified under Impact 3.4.7 below, traffic from the Draft LUTE buildout in 2035 would have significant traffic operational impacts at 17 intersections when compared to existing conditions. Currently, all but the SR 85 southbound ramps and the Fremont Avenue intersection are located on one or more bus routes. The intersection delays at 16 impacted intersections would significantly impact transit travel times.

As discussed below in Impact 3.4.7, feasible mitigation measures for improved operations are only available at the intersections of Duane Avenue/Stewart Drive and Duane Avenue and of Wolfe Road and Fremont Avenue.

The following Draft LUTE policies provide the elements of a Transportation Demand Management (TDM) program. A TDM program is a combination of services, incentives, facilities, and actions that reduce single-occupant vehicle trips to help relieve traffic congestion. The City would require that new development achieve a 20 to 35 percent trip reduction target, depending on the proposed land use and its location.

Policy 23: Follow California Environmental Quality Act requirements, Congestion Management Program requirements, and additional City requirements when analyzing the transportation impacts of proposed projects and assessing the need for offsetting transportation system improvements or limiting transportation demand.

Action 1: Reduce peak-hour and total daily single-occupant vehicle trips by expanding the use of transportation demand management programs in the city.

Policy 24: Promote modes of travel and actions that provide safe access to city streets and reduce single-occupant vehicle trips and trip lengths locally and regionally.

The order of consideration of transportation users shall be:

1) Pedestrians

2) Non-automotive (bikes, three-wheeled bikes, scooters, etc.)

3) Mass transit vehicles

4) Delivery vehicles

5) Single-occupant automobiles

Policy 25: Among motorized vehicles, give priority in all services such as carpools to low emission, zero emission, or environmentally friendly vehicles in providing parking and planning for lane priority and other operations.

Policy 31: Move progressively toward eliminating direct and hidden subsidies of motor vehicle parking and driving, making the true costs of parking and driving visible to motorists.

Action 1: Pursue opportunities for user fees such as paid parking, paid parking permits at workplaces, and paid parking places for on-street parking in residential neighborhoods, and promote corporate parking cash-out programs.

Action 2: Manage City-provided public parking though pricing and location strategies in order to match supply and demand, shift the market costs to users of vehicle parking, maintain mobility and access to Sunnyvale businesses, and reduce vehicle trips.

Policy 77: Participate in regional efforts to respond to transportation and housing problems caused by economic growth in order to improve the quality of life and create a better environment for businesses to flourish.

Action 2: Support transportation demand management programs and other ride-sharing programs countywide.

Implementation of a TDM program consistent with these policies would eliminate the intersection impacts at six more intersections. As further described under Impact 3.4.7 below, with the proposed mitigation measures and implementation of the Draft LUTE, the cumulative impact to transit travel times at these intersections would be less than significant. For the remaining eight impacted intersections, the Draft LUTE's cumulative impact to transit travel times would be **significant**.

Mitigation Measures

As further described under Impact 3.4.7, additional intersection and roadway facility improvements are not feasible and/or are not under the City's control. Thus, this impact would remain **significant and unavoidable**.

### Bicycle Facilities (Standard of Significance 4)

**Impact 3.4.3** Subsequent land use activities associated with implementation of the Draft LUTE would increase the demand for bicycle facilities. However, implementation of Draft LUTE policies would improve and expand bicycle facilities and support bicycle use. This would be a **less than cumulatively considerable (less than significant)** impact.

Buildout under the Draft LUTE would increase the population in the Planning Area. The Draft LUTE includes the following policies that would consist of improving bicycle facilities as part of transportation improvement projects, providing linkages to all modes of travel, and implementation of a citywide bike plan to improve bicycle access.

Policy 40: Provide safe access to city streets for all modes of transportation. Safety considerations of all transport modes shall take priority over capacity considerations of any one transport mode.

Action 2: Evaluate bicycle and pedestrian retrofit projects based on the merits of each project in the context of engineering and planning criteria.

Action 5: Implement road diets as a means of adding or enhancing bicycle and pedestrian facilities, increasing traffic safety, and enhancing street character.

Policy 41: Ensure that the movement of cars, trucks and transit vehicles, bicycles, and pedestrians of all ages and abilities does not divide the community. City streets are public spaces and an integral part of the community fabric

Action 1: Provide clear, safe, and convenient links between all modes of travel, including access to transit stations/stops and connections between work, home, commercial uses, and public/quasi-public uses.

Policy 44: Support proliferation of multi-use trails within Sunnyvale and their connection to regional trails, in order to provide enhanced access to open space, promote alternative transportation options, and increase recreational opportunities, while balancing those needs with preservation of natural habitat, public safety, and quality of life in residential neighborhoods.

Policy 69: Promote walking and bicycling through street design.

Action 1: Develop complete streets principles to accommodate all users including pedestrians, bicyclists, skaters, and wheelchair users, along with motor vehicles in transportation corridors.

Action 2: Enhance connectivity by removing barriers and improving travel times between streets, trails, transit stops, and other pedestrian thoroughfares.

Action 3: Support traffic calming to slow down vehicles in order to promote safety for non-motorists.

Action 6: Maintain and implement a citywide bicycle plan that supports bicycling through planning, engineering, education, encouragement, and enforcement.

Action 7: Support streetscape standards for vegetation, trees, and art installations to enhance the aesthetics of walking and biking.

Implementation of the above policies would ensure bicycle facilities are provided and improved and would result in a **less than significant** impact associated with implementation of the Draft LUTE.

It should also be noted that the planned Lawrence Expressway grade separation project would improve east–west pedestrian and bicycle connections. This project, currently in the planning stages by Santa Clara County, is anticipated to consist of depressing Lawrence Expressway under the Reed Avenue/Monroe Street, Kifer Road, and Arques Street intersections, Central Expressway, and the Caltrain tracks. Additional signalized intersections may also be warranted at certain intersections that would create controlled crossings for all modes of travel.

Mitigation Measures

None required.

**Pedestrian Facilities (Standard of Significance 4)**

**Impact 3.4.4** Subsequent land use activities associated with implementation of the Draft LUTE would increase the demand for pedestrian facilities as well as provide improved pedestrian facilities and opportunities. This would be a **less than cumulatively considerable (less than significant)** impact.

Buildout of subsequent projects under the Draft LUTE would increase demand for pedestrian facilities. Currently, pedestrian activity in the Planning Area is constrained due to the barriers presented by Lawrence Expressway, the Caltrain tracks, large busy intersections, and gaps in sidewalks and other challenging pedestrian conditions.

Implementation of the following Draft LUTE policies would close existing sidewalk gaps, build new pedestrian connections, enhance pedestrian intersection crossings, and enhance pedestrian comfort level on sidewalks.

Policy 40: Provide safe access to city streets for all modes of transportation. Safety considerations of all transport modes shall take priority over capacity considerations of any one transport mode.

Action 2: Evaluate bicycle and pedestrian retrofit projects based on the merits of each project in the context of engineering and planning criteria.

Action 5: Implement road diets as a means of adding or enhancing bicycle and pedestrian facilities, increasing traffic safety, and enhancing street character.

Policy 41: Ensure that the movement of cars, trucks and transit vehicles, bicycles, and pedestrians of all ages and abilities does not divide the community. City streets are public spaces and an integral part of the community fabric.

Action 1: Provide clear, safe, and convenient links between all modes of travel, including access to transit stations/stops and connections between work, home, commercial uses, and public/quasi-public uses.

Policy 44: Support proliferation of multiuse trails within Sunnyvale, and their connection to regional trails, in order to provide enhanced access to open space, promote alternative transportation options, and increase recreational opportunities, while balancing those needs with the preservation of natural habitat, public safety, and quality of life in residential neighborhoods.

Policy 69: Promote walking and bicycling through street design.

Action 1: Develop complete streets principles to accommodate all users including pedestrians, bicyclists, skaters, and wheelchair users, along with motor vehicles in transportation corridors.

Action 2: Enhance connectivity by removing barriers and improving travel times between streets, trails, transit stops, and other pedestrian thoroughfares.

Action 3: Support traffic calming to slow down vehicles in order to promote safety for non-motorists.

Action 4: Promote separation of streets and sidewalks with planter strips and widened sidewalks, especially on streets with no parking lane.

Action 5: Install and connect sidewalks and install safe crosswalks in industrial and office areas.

Action 6: Maintain and implement a citywide bicycle plan that supports bicycling through planning, engineering, education, encouragement, and enforcement.

Action 7: Support streetscape standards for vegetation, trees, and art installations to enhance the aesthetics of walking and biking.

Implementation of the above policies would result in pedestrian enhancements at uncontrolled intersections to ensure the visibility of pedestrians to drivers. Improvements could include enhanced crosswalk markings and striping; removal of free right turns and "pork chop" islands; high-visibility signs and markings; advance yield or stop lines; sidewalk extensions or bulbouts; rectangular rapid flashing beacons; and pedestrian crossing devices, including overhead flashing beacons and pedestrian hybrid beacons. Remediation of sidewalk gaps and other unsafe conditions in existing pedestrian facilities would also be implemented.

All new pedestrian facilities and improvements to existing facilities would be designed to be fully accessible, with appropriate widths, grades, transitions, warning strips, and audio or other crossing indicators, in compliance with accessibility standards established by the Americans with Disabilities Act (ADA).

With the improvements to the pedestrian network, the Draft LUTE would accommodate increased demand. Further, it would enhance, not disrupt, existing pedestrian facilities. This impact would be **less than significant.**

Mitigation Measures

None required.

### Design Hazards (Standard of Significance 5)

**Impact 3.4.5** Implementation of the Draft LUTE would increase the number of people and vehicles in the Planning Area, which could increase the risk of vehicle and bicycle/pedestrian conflicts, and would intensify urban uses in areas adjacent to the Caltrain tracks. This is a **less than cumulatively considerable (less than significant)** impact.

Draft LUTE policies (noted below) incorporate a "complete streets" approach for circulation planning that accommodates all travel modes and improves safety. Complete streets are designed and operated to enable safe and convenient access for all users, including pedestrians, bicyclists, and motorists. The anticipated circulation improvements in the Draft LUTE would help reduce the potential for pedestrian/bicycle and vehicle conflicts. All roadway and pedestrian/bicycle facilities would be designed in accordance with City standards.

Policy 36: Facilitate safe and orderly traffic flow and promote school pedestrian and bicycle safety.

Action 1: Help manage school traffic on city streets and develop management plans.

Action 2: Work with school districts to facilitate efficient on-site traffic circulation and minimize safety and congestion impacts of school drop-off and pick-up traffic on the public street system.

Action 3: Encourage and support non-automobile trips to public and private schools.

Policy 37: Utilize intelligent transportation systems and other technological applications to improve travel efficiency and safety.

Policy 38: Optimize the city's multimodal traffic signal system and respond quickly to signal breakdowns.

Policy 40: Provide safe access to city streets for all modes of transportation. Safety considerations of all transport modes shall take priority over capacity considerations of any one transport mode.

Action 5: Implement road diets as a means of adding or enhancing bicycle and pedestrian facilities, increasing traffic safety, and enhancing street character.

Action 6: Actively evaluate possible candidate locations for alternative traffic control installations (e.g., roundabouts, curb extensions) in order to provide "Stage 2" traffic calming for minor residential streets, particularly in locations with a significant collision history.

Policy 41: Ensure that the movement of cars, trucks and transit vehicles, bicycles, and pedestrians of all ages and abilities does not divide the community. City streets are public spaces and an integral part of the community fabric

Action 1: Provide clear, safe, and convenient links between all modes of travel, including access to transit stations/stops and connections between work, home, commercial uses, and public/quasi-public uses.

Policy 42: Ensure effective and safe traffic flows for all modes of transport through physical and operational transportation improvements.

Implementation of these policies would improve safety for vehicles and alternative transportation beyond existing conditions through traffic calming features, design, and improved connections between land uses. This impact would be **less than significant**.

Mitigation Measures

None required.

### Emergency Access (Standard of Significance 6)

**Impact 3.4.6** Implementation of the Draft LUTE would not adversely affect emergency access. This is a **less than cumulatively considerable (less than significant)** impact.

As noted under Impact 3.4.5, Draft LUTE policies incorporate a complete streets approach for circulation planning that accommodates all travel modes as well as improves safety and access. Complete streets are designed and operated to enable safe and convenient access for all users. All improvements would be required to meet City of Sunnyvale roadway design standards. This impact would be **less than significant**.

Mitigation Measures

None required.

### Traffic Operational Impacts (Standards of Significance 1 and 2)

**Impact 3.4.7** Subsequent land use activities associated with implementation of the Draft LUTE would contribute to significant traffic operational impacts to intersections and freeway segments as compared to existing conditions. This would be a **cumulatively considerable (significant)** impact.

Intersection Operations

**Figures 3.4-9a** through **3.4-9e** show traffic volumes under year 2035 conditions that include the proposed Draft LUTE. The level of service results for the study intersections under the Draft LUTE conditions compared to existing conditions are summarized in Table 12 of the TIA in **Appendix C**.

The results show that many of the signalized intersections would operate at acceptable levels of service under the Draft LUTE conditions during the AM and PM peak hours or where the Draft LUTE would not result in a cumulatively considerable increase in deficient traffic operations in year 2035.

However, the Draft LUTE would result in significant contributions under year 2035 conditions to the following intersections as compared to existing conditions:

- Lawrence Expressway & Tasman Drive (#11) (CMP intersection) – from E in PM under existing conditions to LOS F in PM peak hour under 2035 conditions[4]
- Lawrence Expressway & Lakehaven Drive (#12) (intersection on CMP roadway) – from E in PM under existing conditions to LOS F in PM peak hour under 2035 conditions[4]
- Lawrence Expressway & Oakmead Parkway (#15) (intersection on CMP roadway) – from LOS D in AM and LOS E in PM under existing conditions to LOS F in AM and PM peak hours under 2035 conditions[4]
- Duane Avenue/Stewart Drive & Duane Avenue (#19) – from LOS C in AM under existing conditions to LOS F in AM peak hour under 2035 conditions[4]
- Wolfe Road & Fremont Avenue (#29) – from LOS D in AM and PM under existing conditions to LOS E in AM and LOS F in PM peak hour under 2035 conditions[4]
- Fair Oaks Avenue & Arques Avenue (#31) – from LOS C in AM and PM under existing conditions to LOS F in AM and PM peak hours under 2035 conditions[5]
- Fair Oaks Avenue & El Camino Real (#34) (CMP intersection) – from LOS D in PM under existing conditions to LOS F in PM peak hour under 2035 conditions[4]
- Sunnyvale-Saratoga Road & Remington Drive (#40) (CMP intersection) – from LOS D in PM under existing conditions to LOS F in PM peak hour under 2035 conditions[4]
- Mathilda Avenue & El Camino Real (#48) (CMP intersection) – from LOS D in PM under existing conditions to LOS F in PM peak hour under 2035 conditions
- Mary Avenue & Central Expressway (#52) (CMP intersection) – from LOS E in PM under existing conditions to LOS F in PM peak hour under 2035 conditions[4]
- Mary Avenue & Fremont Avenue (#55) – from LOS D in AM and PM under existing conditions to LOS F in AM and PM peak hours under 2035 conditions[4]
- SR 85 Southbound & Fremont Avenue (#60) – from LOS D in AM and LOS C PM under existing conditions to LOS F in AM and PM peak hours under 2035 conditions[5]
- Lawrence Expressway & Cabrillo Avenue (#82) (intersection on CMP roadway in the City of Santa Clara) – from LOS E in AM and PM under existing conditions to LOS F in AM and PM peak hours under 2035 conditions[4]
- Lawrence Expressway & Benton Street (#84) (intersection on CMP roadway in the City of Santa Clara) – from LOS F in AM and LOS E PM under existing conditions to LOS F in AM and PM peak hours under 2035 conditions[4]

[4] This impact would also occur under the existing General Plan (LUTE) for year 2035 conditions.
[5] The existing General Plan (LUTE) would result in the same impacts for the PM peak hour for year 2035 conditions.

- Lawrence Expressway & Homestead Road (#85) (CMP intersection in the City of Santa Clara) – from LOS F in PM and PM under existing conditions to increased delay and LOS F in AM and PM peak hours under 2035 conditions4

- Lawrence Expressway & Pruneridge Avenue (#86) (intersection on CMP roadway in the City of Santa Clara) – from LOS E in AM under existing conditions to LOS F in AM peak hour under 2035 conditions4

- Bowers Avenue & Central Expressway (#95) (CMP intersection in the City of Santa Clara) – from LOS E in PM under existing conditions to LOS F in PM peak hour under 2035 conditions[4]

These deficiencies would be **significant** impacts and the Draft LUTE's contribution to the impacts would be **cumulatively considerable**.

Freeway Segment Operations

The Draft LUTE would result in significant contributions to mixed-flow lanes on the following freeway segments that are expected to operate at LOS F during either the AM or PM peak hour under 2035 conditions as compared to existing conditions (see **Figures 3.4-10** and **3.4-11**):

*Santa Clara County*

- US 101, northbound from Silver Creek Valley Road to Mathilda Avenue, and from Moffett Boulevard to SR 85 – AM peak hour

- US 101, northbound from SR 85 to Embarcadero Road – AM and PM peak hours

- US 101, southbound from Embarcadero Road to Rengstorff Avenue, from Shoreline Boulevard to SR 237, and from Fair Oaks Avenue to Oakland Road – PM peak hour

- SR 237, westbound from I-880 to First Street – AM peak hour

- SR 237, westbound from First Street to Great America Parkway – AM and PM peak hours

- SR 237, westbound from Fair Oaks Avenue to Mathilda Avenue, and from Maude Avenue to SR 85 – PM peak hour

- SR 237, eastbound from Fair Oaks Avenue to Lawrence Expressway, and from Great America Parkway to First Street – AM and PM peak hours

- SR 237, eastbound from US 101 to Fair Oaks Avenue, from Lawrence Expressway to Great America Parkway, from First Street to Zanker Road, and from McCarthy Road to I-880 – PM peak hour

- SR 85, northbound from Cottle Road to El Camino Real – AM peak hour

- SR 85, southbound from US 101 to Fremont Avenue, from I-280 to Winchester Boulevard, and from SR 17 to Camden Avenue – PM peak hour

- SR 87, northbound from I-280 to US 101 – AM peak hour

- SR 87, southbound from Skyport Drive to Taylor Street – PM peak hour

- I-280, northbound from US 101 to SR 17, and from Winchester Boulevard to Foothill Expressway – AM peak hour
- I-280, northbound from SR 17 to Winchester Boulevard – AM and PM peak hours
- I-280, southbound from Page Mill Road to Magdalena Avenue, and from SR 85 to 10th Street – PM peak hour
- I-880, northbound from I-280 to Stevens Creek Boulevard – AM peak hour
- I-880, northbound from Stevens Creek Boulevard to Bascom Avenue, and from The Alameda to First Street – AM and PM peak hours
- I-880, northbound from Bascom Avenue to The Alameda, and from SR 237 to Dixon Landing Road – PM peak hour
- I-880, southbound from Brokaw Road to Coleman Avenue – AM and PM peak hours
- I-880, southbound from Montague Expressway to Brokaw Road, and from Coleman Avenue to Stevens Creek Boulevard – PM peak hour

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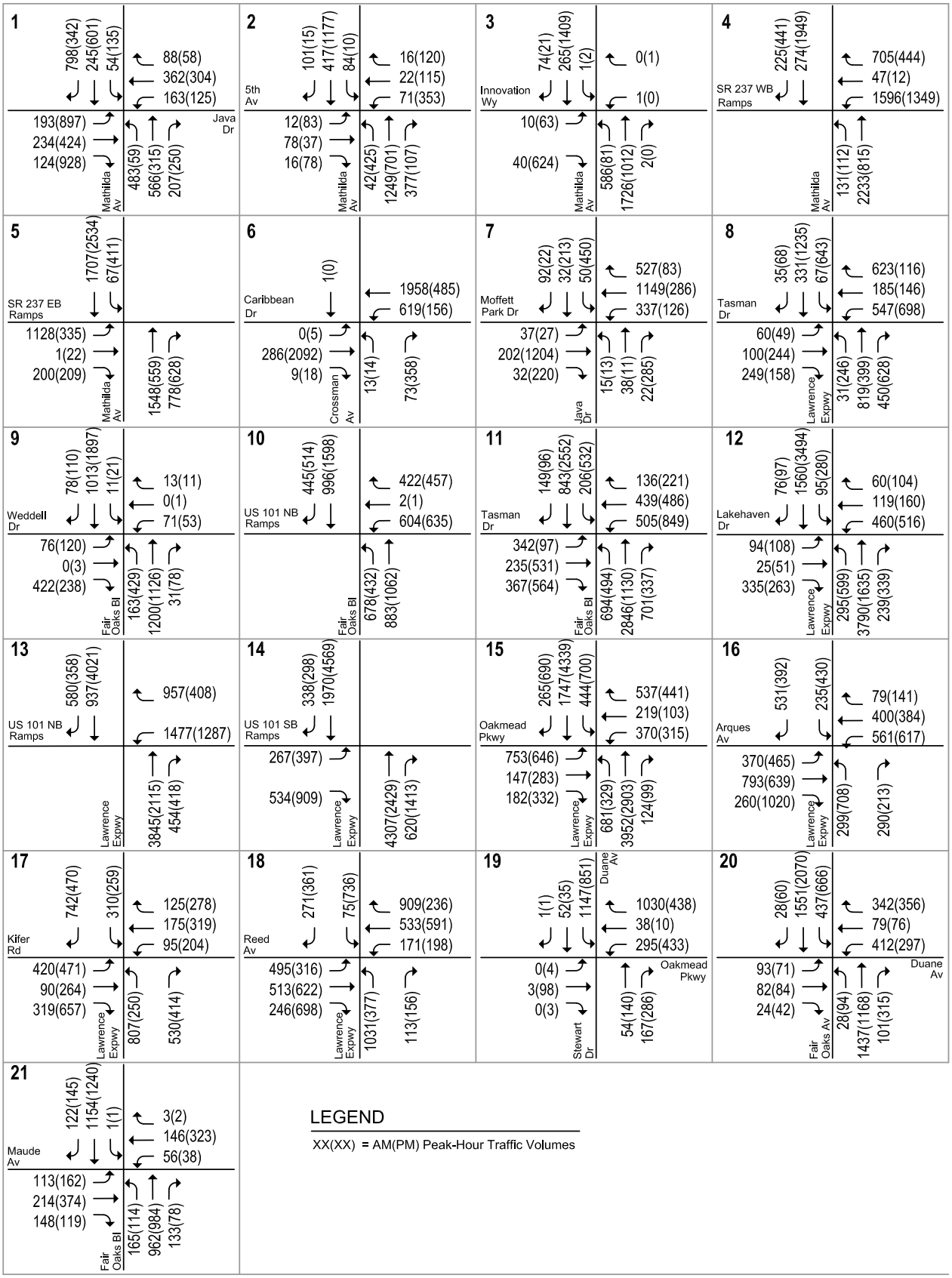


Source: Hexagon Transportation Consultants, Inc.

Not To Scale

**FIGURE 3.4-9A**

Year 2035 with Draft LUTE Intersection Peak Hour Traffic Volumes

Michael Baker INTERNATIONAL

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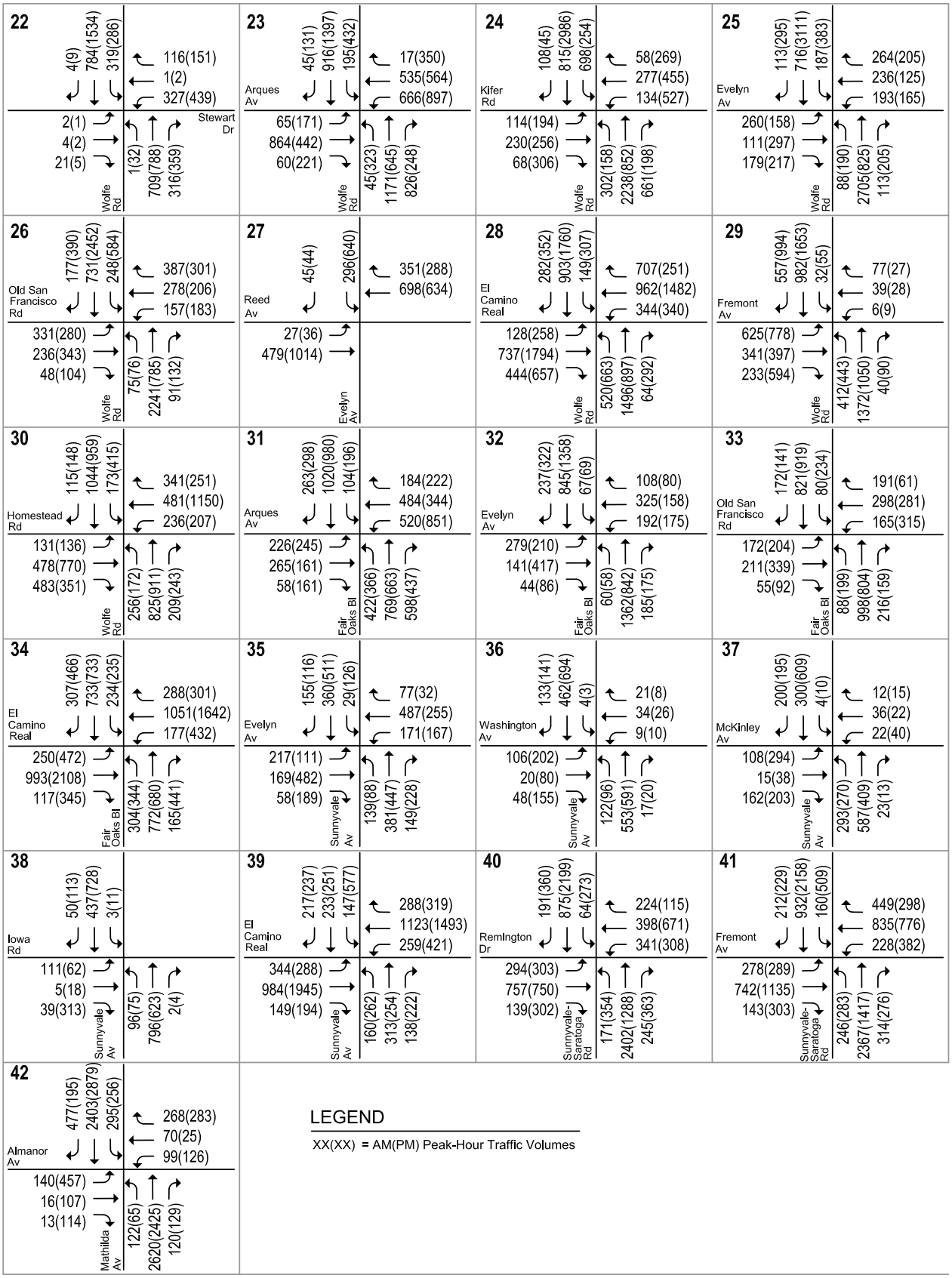



Source: Hexagon Transportation Consultants, Inc.

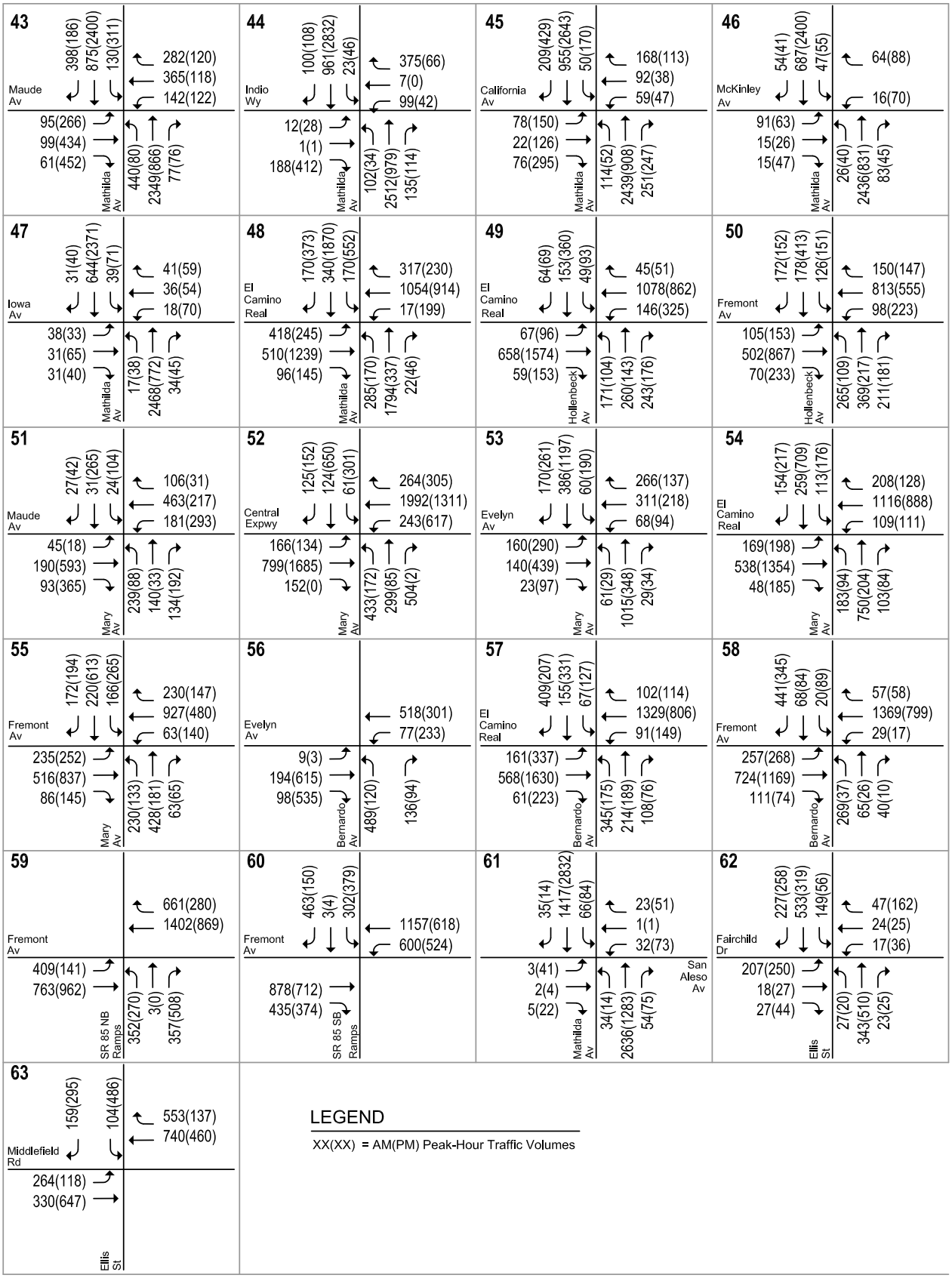
Not To Scale

**FIGURE 3.4-9B**

Year 2035 with Draft LUTE Intersection Peak Hour Traffic Volumes

Michael Baker INTERNATIONAL

T:_CS\Work\Sunnyvale, City of\LUTE\Figures




Source: Hexagon Transportation Consultants, Inc.

Not To Scale

**FIGURE 3.4-9C**

Year 2035 with Draft LUTE Intersection Peak Hour Traffic Volumes

Michael Baker INTERNATIONAL

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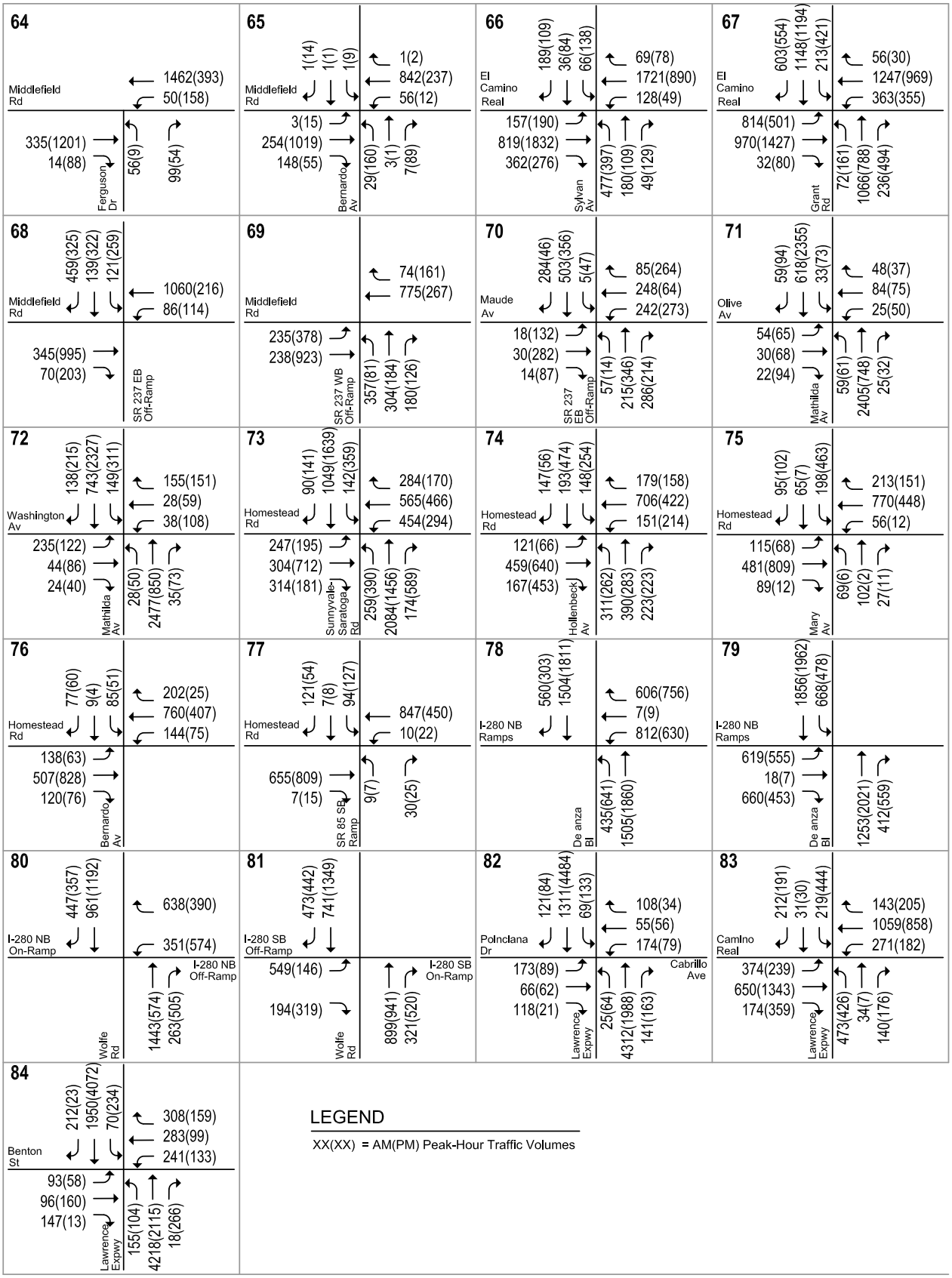


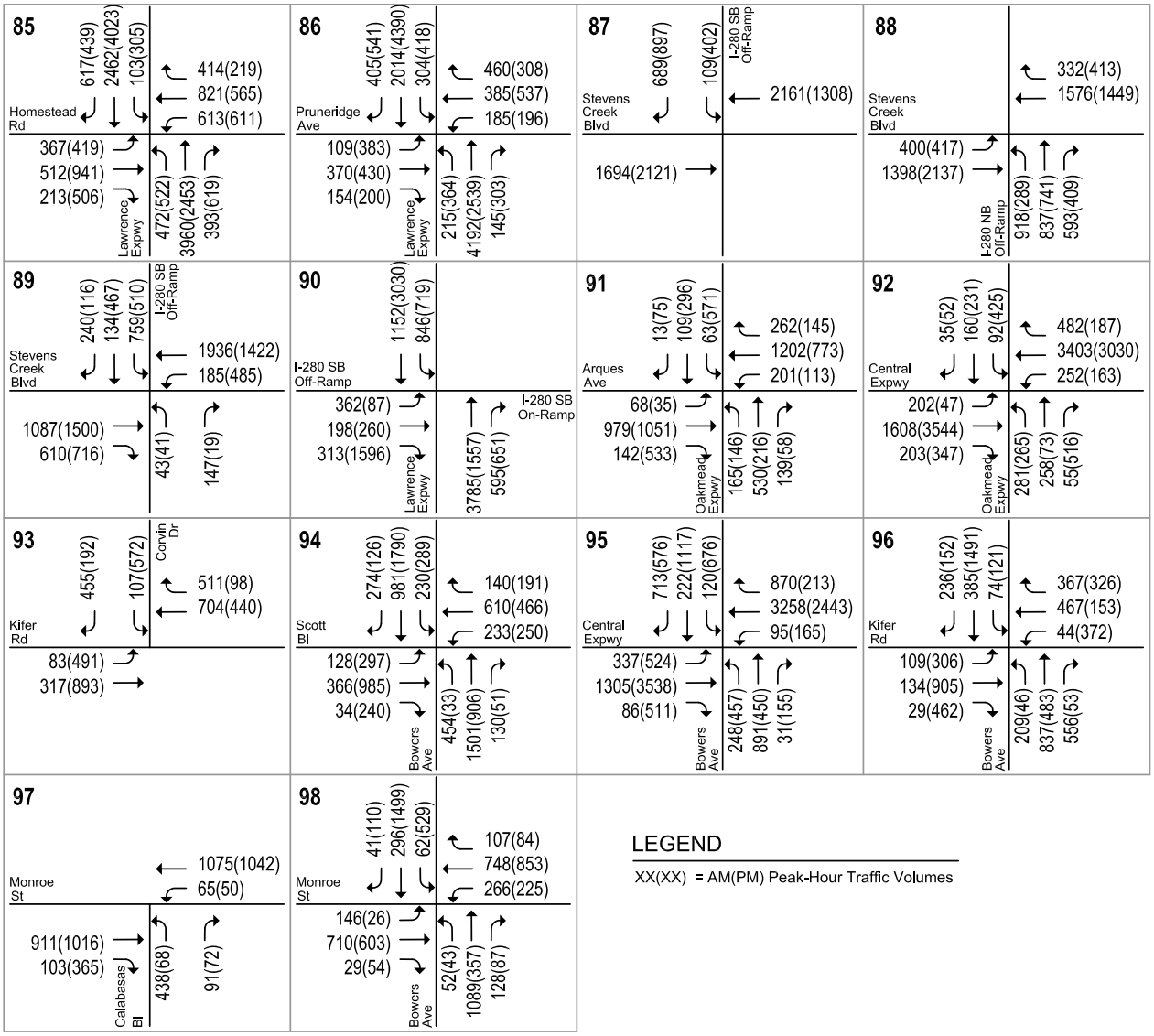

Source: Hexagon Transportation Consultants, Inc.

Not To Scale

**FIGURE 3.4-9D**

Year 2035 with Draft LUTE Intersection Peak Hour Traffic Volumes

Michael Baker INTERNATIONAL




Source: Hexagon Transportation Consultants, Inc.

Not To Scale

**FIGURE 3.4-9E**

Year 2035 with Draft LUTE Intersection Peak Hour Traffic Volumes

Michael Baker INTERNATIONAL

*San Mateo County*

- US 101, between Embarcadero Road and SR 92 – AM & PM peak hours
- I-280, between Alpine Road and SR 84 – AM & PM peak hours

*Alameda County*

- I-880, northbound from Alvarado-Niles Road to Tennyson Road – AM and PM peak hours
- I-880, northbound from Dixon Landing Road to Mission Boulevard – PM peak hour
- I-880, southbound from SR 92 to Tennyson Road, from Industrial Boulevard to Whipple Road, and from Alvarado-Niles Road to Stevenson Boulevard – AM peak hour
- I-880, southbound from Tennyson Road to Industrial Boulevard, and from Whipple Road to Alvarado-Niles Road – AM and PM peak hours
- I-880, southbound from Mission Boulevard to Dixon Landing Road – PM peak hour

The Draft LUTE would result in significant contributions to HOV lanes on the following freeway segments that are expected to operate at LOS F during either the AM or PM peak hour under 2035 conditions as compared to existing conditions (see **Figure 3.4-8a** and **b**):

*Santa Clara County*

- US 101, northbound from Tully Road to Mathilda Avenue, and from Ellis Street to Moffett Boulevard – AM peak hour
- US 101, northbound from SR 85 to Rengstorff Avenue, and from San Antonio Avenue to Embarcadero Road – AM and PM peak hours
- US 101, southbound from Embarcadero Road to San Antonio Avenue – AM peak hour
- US 101, southbound from San Antonio Avenue to SR 85 – AM and PM peak hours
- US 101, southbound from Mathilda Avenue to I-280, and from Story Road to Tully Road – PM peak hour
- SR 237, westbound from I-880 to Mathilda Avenue – AM peak hour
- SR 237, eastbound from Lawrence Expressway to I-880 – PM peak hour
- SR 85, northbound from Blossom Hill Road to SR 87, and from SR 17 to El Camino Real – AM peak hour
- SR 85, southbound from SR 237 to Homestead Road, from I-280 to De Anza Boulevard – PM peak hour
- SR 87, northbound from Julian Street to US 101 – AM peak hour

- I-280, northbound from Leigh Avenue to Winchester Boulevard, and from Saratoga Road to Lawrence Expressway – AM peak hour
- I-280, southbound from Winchester Boulevard to Leigh Avenue – PM peak hour
- I-880, northbound from SR 237 to Dixon Landing Road – AM and PM peak hours
- I-880, northbound from SR 237 to Dixon Landing Road – AM and PM peak hours

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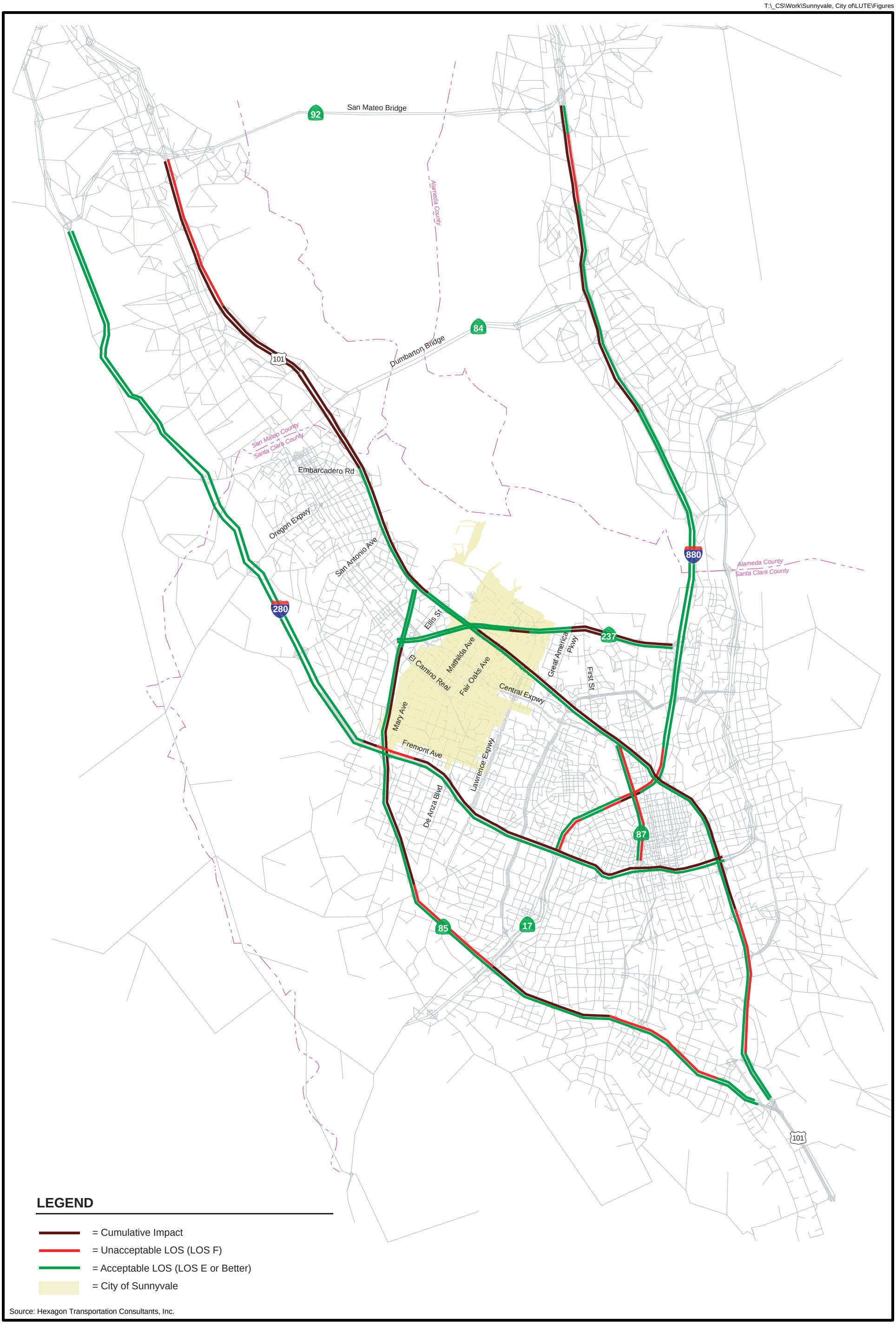


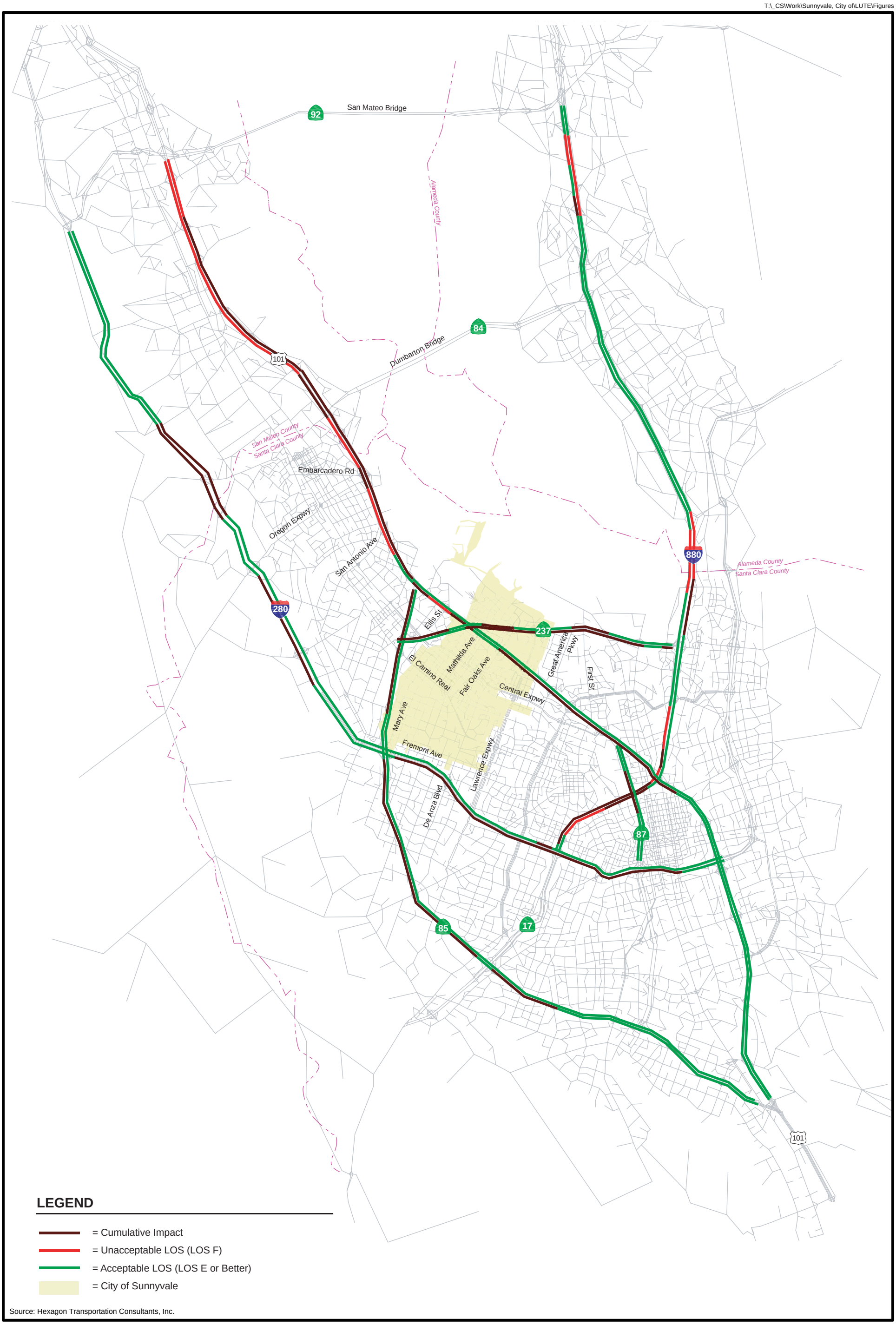

Source: Hexagon Transportation Consultants, Inc.

Not To Scale

**FIGURE 3.4-10**

Year 2035 with Draft LUTE Freeway Mixed Flow Lanes Level of Service AM Peak Hour

Michael Baker INTERNATIONAL




Source: Hexagon Transportation Consultants, Inc.

Not To Scale

**FIGURE 3.4-11**

Year 2035 with Draft LUTE Freeway Mixed Flow Lanes Level of Service PM Peak Hour

Michael Baker INTERNATIONAL

*San Mateo County*

- US 101, northbound from Willow Road to Whipple Avenue – AM and PM peak hours
- US 101, northbound from Embarcadero Road to Willow Road – PM peak hour
- US 101, southbound from Whipple Avenue to Embarcadero Road – AM peak hour

*Alameda County*

- I-880, northbound from Mission Boulevard to Fremont Boulevard (S) – AM peak hour
- I-880, northbound from Decoto Road to Fremont Boulevard (N) – AM and PM peak hours
- I-880, northbound from Alvarado-Niles Road to Whipple Road – PM peak hour
- I-880, southbound from Stevenson Boulevard to Fremont Boulevard (S) – AM peak hour
- I-880, southbound from Fremont Boulevard (S) to Mission Boulevard – AM and PM peak hours
- I-880, southbound from Industrial Parkway to Fremont Boulevard (N) – PM peak hour

These traffic operation impacts would be **significant**, and the Draft LUTE's contribution to the impacts would be **cumulatively considerable**.

Freeway Ramp Capacity

Under Draft LUTE conditions, the SR 237/Mathilda Avenue and US 101/Mathilda Avenue interchanges are proposed for reconfiguration. These interchange improvements are identified in the Valley Transportation Plan 2040 (as project H33). At the time of this writing, the proposed configurations at these interchanges have not been finalized. The two interchange improvement alternatives being studied (documented in the Notice of Preparation of an Environmental Impact Report, released on August 18, 2015) are different at only the SR 237/Mathilda Avenue interchange (diamond interchange versus diverging diamond interchange). The alternatives would differ from an operational perspective, but would not differ from a demand forecasting perspective. At the US 101/Mathilda Avenue interchange, the interchange would be reconfigured to a partial cloverleaf. The US 101 northbound and southbound off-ramps would be improved to allow full access onto Mathilda Avenue. The existing US 101 northbound off-ramp to southbound Mathilda Avenue would be demolished. This TIA assumed the configuration proposed under the Notice of Preparation of an Environmental Impact Report, released on August 18, 2015 (see Figure 29 of the TIA in **Appendix C**).

At the interchange of SR 237/Middlefield Road, the SR 237 westbound off-ramp is proposed to be realigned with Ferguson Drive to the west. The existing SR 237 westbound on-ramp would have access restricted to only eastbound Middlefield Road. As part of the same improvement project, a new loop on-ramp is proposed to connect westbound Middlefield Road to westbound SR 237. This interchange improvement is identified in the Valley Transportation Plan 2040 (as project H32). The interchange reconfiguration is assumed under the Draft LUTE conditions.

The Draft LUTE conditions freeway ramp volumes were forecast using the STFM and adjusted based on existing ramp volumes, where applicable. All interchange improvements listed above are assumed completed. Table 15 of the TIA in **Appendix C** shows the peak-hour ramp volumes.

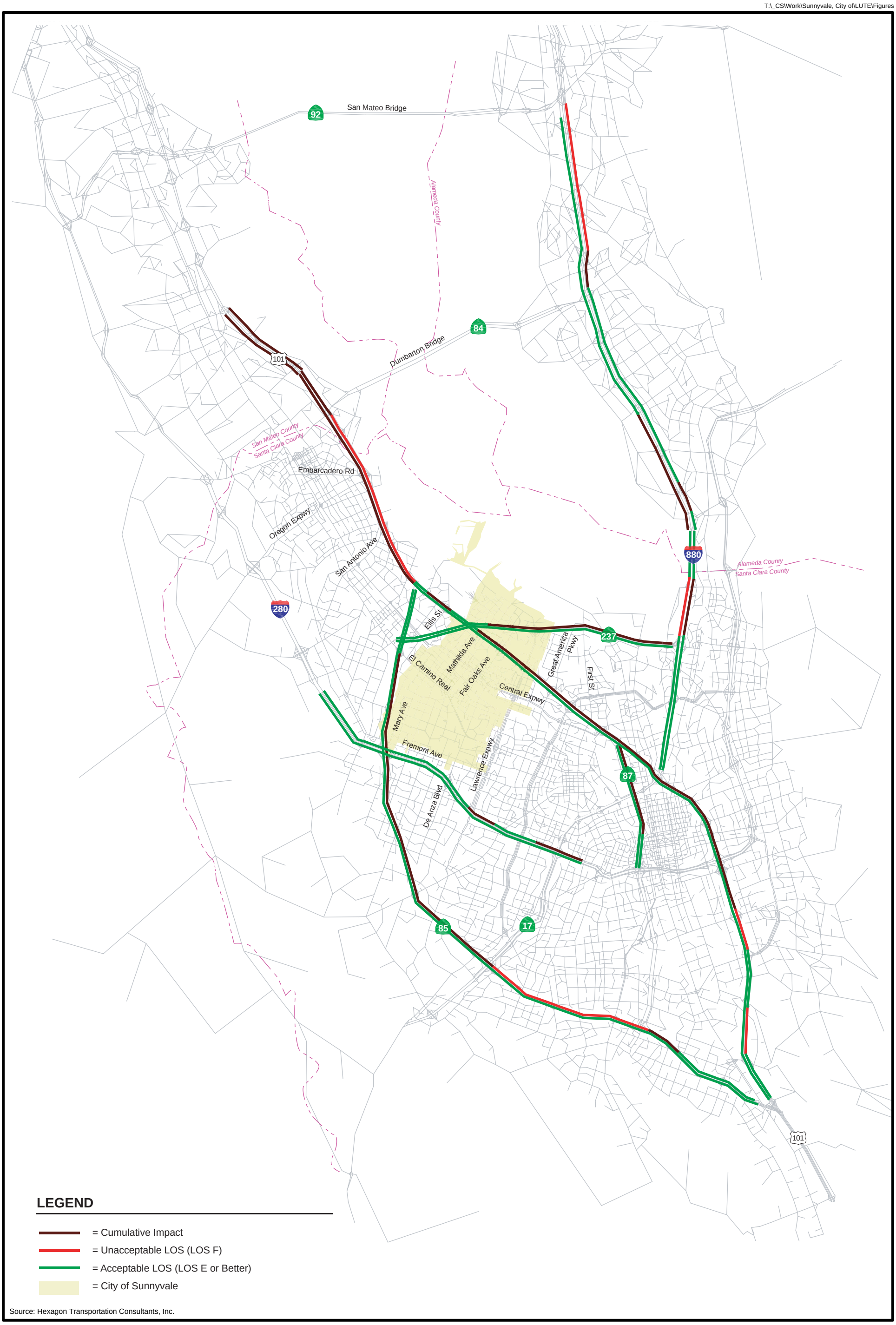
The ramp analysis showed that under the Draft LUTE conditions, all ramps would continue to operate below capacity. This would be a **less than significant** traffic operation impact.

Mitigation Measures – Intersections

*Lawrence Expressway & Tasman (#11) – CMP Intersection*

Potential At-Grade Mitigation: At this intersection, the August 2015 update of the County of Santa Clara Expressway Plan 2040 identified depressing the light rail tracks under the intersection as a Tier 3 project. At the time of this writing, no finalized intersection reconfiguration plans exist. It is assumed that the finalized reconfiguration plans would restore intersection operations to an acceptable LOS E. Development in the city would be required to pay its fair share contribution toward this improvement.

No other feasible at-grade mitigations exist. Any at-grade intersection improvements would require additional right-of-way acquisition and displacement of homes and businesses. Widening the intersection would also extend the pedestrian and bicycle exposure time to traffic, which could lead to secondary pedestrian and bicycle impacts. These impacts to pedestrian and bicycle usage are counter to the objectives and intent of the Draft LUTE to promote transportation options from vehicle use. The City has determined that this mitigation is infeasible given the physical and economic impacts on existing homes and businesses and its conflict with the intent of the Draft LUTE.




Source: Hexagon Transportation Consultants, Inc.

Not To Scale

**FIGURE 3.4-12**

Year 2035 with Draft LUTE Freeway HOV Lanes Level of Service AM Peak Hour

Michael Baker INTERNATIONAL

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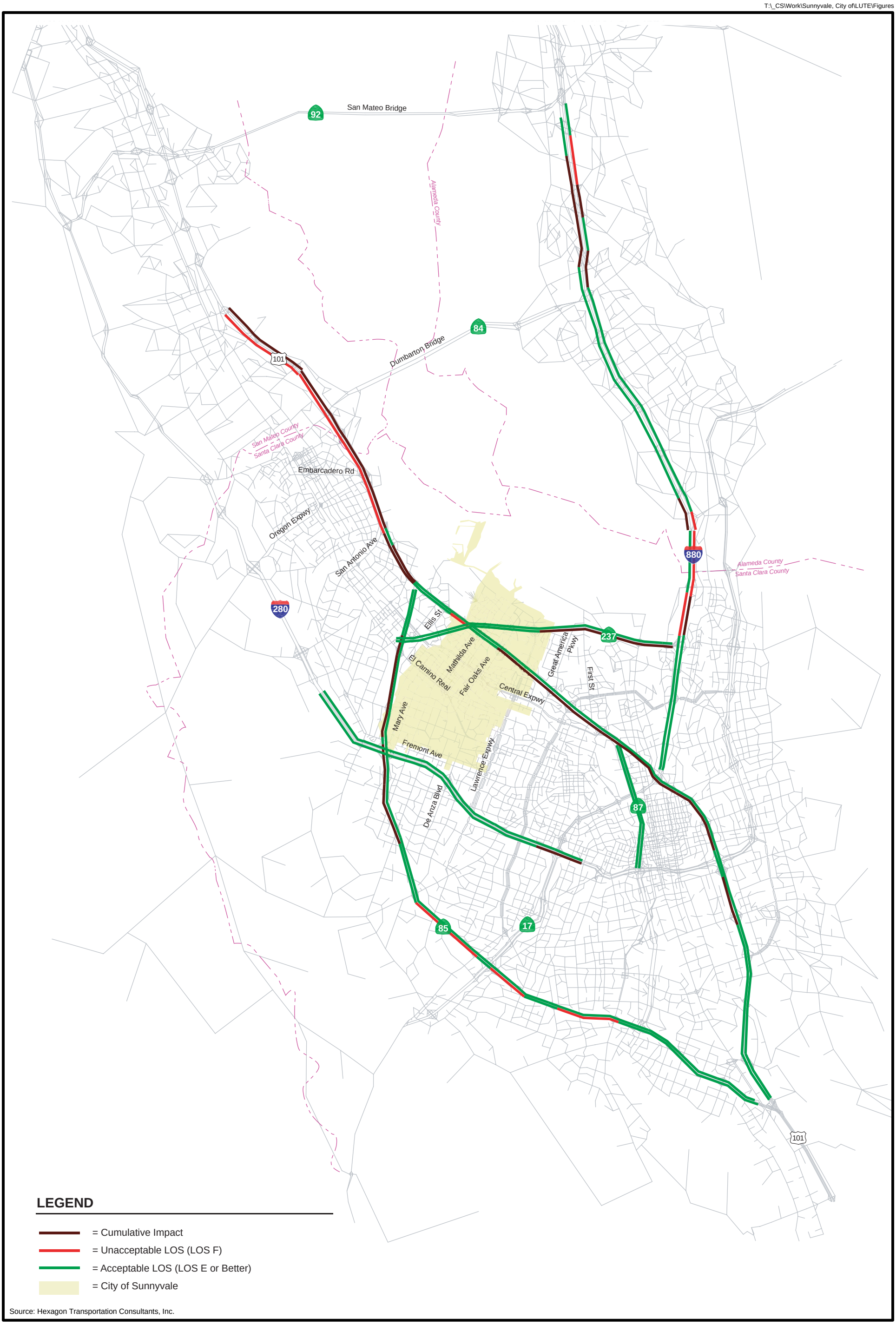


Source: Hexagon Transportation Consultants, Inc.

Not To Scale

**FIGURE 3.4-13**

Year 2035 with Draft LUTE Freeway HOV Lanes Level of Service PM Peak Hour

Michael Baker INTERNATIONAL

Since the intersection is controlled by the County of Santa Clara, the City of Sunnyvale cannot ensure implementation of any mitigation measure. The timing of implementation and the availability of funding are also uncertain. Therefore, the Draft LUTE's impact at this intersection is considered **cumulatively considerable** and **significant and unavoidable.**

*Lawrence Expressway & Lakehaven Drive (#25) – Intersection on CMP Roadway*

Potential At-Grade Mitigation**:** At-grade mitigation would require widening the northbound leg to include a total of two left turn lanes, four through lanes, and one right turn lane. The southbound leg would need to be widened to two left turn lanes, five through lanes, and one right turn lane. The eastbound leg would need to be widened to two left turn lanes, one shared through-right lane, and one right turn lane. The westbound leg would require a third left turn lane. On Lawrence Expressway, the County of Santa Clara currently has no plans to add capacity. All components of the mitigation would require additional right-of-way acquisition and displacement of homes and businesses. Widening the intersection would also extend the pedestrian and bicycle exposure time to traffic, which could lead to secondary pedestrian and bicycle impacts. These impacts to pedestrian and bicycle usage are counter to the objectives and intent of the Draft LUTE to promote transportation options from vehicle use. Therefore, no feasible at-grade mitigation exists at this intersection because the intersection is not within the City's jurisdiction and the County has no plans for at-grade improvements, the required mitigation would displace homes and businesses, and the required mitigation would lead to secondary pedestrian and bicycle impacts.

Potential Grade-Separation Mitigation: An interchange would eliminate the Draft LUTE's impact at this intersection. However, this intersection is within the jurisdiction of the County of Santa Clara, and the County currently has no plans to construct an interchange at this intersection.

Therefore, the impact at this intersection would be **cumulatively considerable** and **significant and unavoidable**.

*Lawrence Expressway & Oakmead Parkway (#25) – Intersection on CMP Roadway*

Proposed At-Grade Mitigation: At this intersection, the August 2015 update of the County of Santa Clara Expressway Plan 2040 identified a Tier 1 interim project of converting the southbound HOV lane to a mixed-flow lane. This interim project would only partially mitigate the intersection impact. The intersection impact could be further reduced (but not fully mitigated) by restriping the eastbound lane to include three left turn lanes, one through lane, and one right turn lane. No feasible at-grade improvement exists that would fully mitigate the intersection impact. Widening the intersection would also extend the pedestrian and bicycle exposure time to traffic, which could lead to secondary pedestrian and bicycle impacts. These impacts to pedestrian and bicycle usage are counter to the objectives and intent of the Draft LUTE to promote transportation options from vehicle use.

Potential Grade-Separation Mitigation: The August 2015 update of the County of Santa Clara Expressway Plan 2040 identifies an interchange at this intersection as a Tier 3 project. At the time of this writing, the interchange configurations have not been finalized. It is assumed that the final interchange configuration would restore intersection operations to an acceptable LOS D. With the interchange, the Draft LUTE's impact at this intersection would be eliminated. Thus, a future project consistent with the Draft LUTE would be required to pay its fair share contribution toward the planned interchange.

However, because the intersection is controlled by the County of Santa Clara, the City of Sunnyvale cannot ensure implementation. The timing of implementation and the availability of funding for this interchange are also uncertain. Therefore, the Draft LUTE's impact at this intersection is considered **cumulatively considerable** and **significant and unavoidable.**

*Duane Avenue/Stewart Drive & Duane Avenue (#19)*

**MM 3.4.7a** The following roadway improvements shall be included in the City's fee program:

- Restripe the westbound leg to one left turn lane, one shared through-right lane, and one right turn lane.

Or

- Convert the intersection to a two-lane roundabout.

Intersection improvements would involve street widening or modifications to signal phasing. Secondary impacts to pedestrians and bicyclists would not be significant. A roundabout would require right-of-way acquisition mostly on the northeast, northwest, and southwest corners that consist of maintained landscaping and no significant natural resources requiring mitigation. Pedestrian crosswalks would need to be provided 20–40 feet back from the roundabout.

With implementation of mitigation measure **MM 3.4.7a**, the intersection would operate at an acceptable LOS C (LOS A with roundabout) during the AM peak hour, and the impact at this intersection would be **less than significant.**

*Wolfe Road & Fremont Avenue (#29)*

**MM 3.4.7b** The following roadway improvements shall be included in the City's fee program:

Construction of an exclusive southbound right turn lane for the length of the segment. The northbound leg will also require a second left turn lane. The eastbound inner left turn lane will require restricting the U-turn movement to allow for a southbound overlap right turn phase. Depending on the extent of the median on the north leg that could be removed, the north leg will be widened between 3 and 11 feet. The north leg will be realigned to accommodate the southbound right turn. There is existing right-of-way on the northeast quadrant of the intersection. The second northbound left turn lane will need to be the same length as the existing left turn lane. Right-of-way acquisition would be required from the southwest quadrant. The south leg will need to be realigned. The south leg will be widened by 10 feet.

With implementation of mitigation measure **MM 3.4.7b**, the intersection would operate at an acceptable LOS D during both the AM and PM peak hours. Secondary impacts associated with this mitigation on pedestrian and bicycle facilities would not be significant. The increased exposure time is approximately 1 to 3 seconds for pedestrians and 1 to 2 seconds for bicyclists. This increased exposure time is minimal. The required right-of-way acquisition would not displace businesses. Therefore, the intersection impact would be **less than significant** with mitigation incorporated.

*Fair Oaks Avenue & Arques Avenue (#31)*

Possible mitigation for this intersection would require construction of dedicated right turn pockets on the southbound, eastbound, and westbound legs. The southbound right turn pocket would need to be approximately 150 feet long. This right turn pocket would require additional right-of-way acquisition and displacement of business parking. The southbound right turn pocket would also widen the north crosswalk by approximately 12 feet. The eastbound right turn pocket would need to be approximately 150 feet long. The existing median on the eastbound leg could be shifted north to accommodate the right turn pocket within the existing right-of-way. The westbound right turn pocket would need to be approximately 150 feet long. This right turn pocket could be accommodated by removing the inner east receiving lane for approximately 150 to 200 feet. The westbound lanes would all be shifted south by one lane to accommodate the right turn pocket. Removing the inner eastbound receiving lane would not cause secondary impacts because the other three legs each have only one lane feeding into the eastbound receiving lanes. The eastbound through lane would require realignment, and the westbound right turn pocket can be accommodated within the existing right-of-way.

With the proposed mitigation, the intersection would operate at LOS D during both the AM and PM peak hours. The eastbound and westbound right turn pockets could be accommodated within the existing right-of-way and would not cause secondary impacts to pedestrians and bicyclists. The southbound right turn pocket would displace approximately half of the parking spaces for the business at the northwest corner of the intersection. There would also be secondary impacts associated with this right turn pocket such as increased pedestrian and bicyclist exposure to traffic when crossing the intersection. The increased exposure time is approximately 3 seconds for pedestrians and 2 seconds for bicyclists. This increased exposure time is minimal. It is uncertain whether the City of Sunnyvale would be able to acquire the required right-of-way for the southbound right turn pocket. For these reasons, the proposed mitigation is infeasible, and the impact at this intersection would be **cumulatively considerable** and **significant and unavoidable.**

*Fair Oaks Avenue & El Camino Real (#34) – CMP Intersection*

Possible mitigation for this intersection would require construction of a dedicated southbound right turn pocket, a second eastbound left turn lane, and a second westbound left turn lane. The southbound right turn pocket would need to be approximately 150 feet, ending at the southern end of the bike lane. The bike lane would need to be extended south to the stop-bar. The weaving section for bikes and right turn vehicles should be maintained at 50 feet. The outer southbound through lane would require widening by approximately 12 feet to accommodate the right turn pocket. The north crosswalk would not be widened. The second eastbound left turn lane would need to be approximately 200 feet long. The second westbound left turn lane would need to be the same length as the existing left turn lane. Right-of-way acquisition would be required for the second eastbound and westbound left turn lanes. Depending on the extent of the median that could be removed, the east and west legs would both need to be widened between 4 and 11 feet. The east–west through lanes would also require realignment. Additional right-of-way acquisition would be required.

With the proposed mitigation, the intersection would operate at an acceptable LOS E during the PM peak hour. The required right-of-way acquisition to accommodate the second eastbound and westbound left turn lanes would displace business parking and remove trees. It is uncertain whether the required right-of-way can be acquired. The intersection is also controlled by Caltrans and Santa Clara County, so the City cannot ensure implementation of the mitigation. For these reasons, the proposed mitigation is infeasible, and the impact at this intersection would be **cumulatively considerable** and **significant and unavoidable.**

*Sunnyvale-Saratoga Road & Remington Drive (#40) – CMP Intersection*

Possible mitigation for this intersection would require a dedicated right turn lane on the southbound leg. The westbound leg would require widening to include a second through lane. The southbound right turn lane would need to be 200 feet in length, extending north to the beginning of the bike weaving area. The existing bike lane would be striped on the inner side of the right turn lane. The north crosswalk would require lengthening by 12 feet. Additional right-of-way acquisition would be required. The second westbound through lane would need to be extended to Azure Street so the inner westbound through lane east of Azure Street would feed into both the left turn lanes and the inner through lane. Remington Drive would require realignment to accommodate the second westbound through lane. The east crosswalk would require lengthening by 12 feet. Additional right-of-way acquisition would be required.

With the proposed mitigation, the intersection would operate at an acceptable LOS E during the PM peak hour. The lengthened north and east crosswalks would increase traffic exposure time by 3 to 4 seconds for pedestrians and 1 to 2 seconds for bicyclists. Existing bike lanes would be maintained. Secondary impacts to bicyclists and pedestrians would be minimal. The required right-of-way acquisition to accommodate the southbound right turn lane and the second westbound through lane would displace homes and business parking, and remove trees. It is uncertain whether the required right-of-way can be acquired and the facility is controlled by Santa Clara County. For these reasons, the proposed mitigation is infeasible, and the impact at this intersection would be **cumulatively considerable** and **significant and unavoidable.**

*Mathilda Avenue & El Camino Real (#48) – CMP Intersection*

Possible mitigation for this intersection would require dedicated right turn lanes on the northbound and eastbound legs. The westbound leg would require a second left turn lane. The northbound curb lane should be modified to allow right-turning vehicles to get by the northbound through vehicles. The curb lane should be widened for approximately 200 feet, south to the beginning of the existing bike weaving area. The northbound leg can be restriped to accommodate the widened right turn lane within the existing right-of-way. The eastbound right turn lane would need to be approximately 500 feet long. The required right-of-way would need to be acquired from the southwest quadrant of the intersection. The second westbound left turn lane would need to be the same length as the existing westbound left turn lane. The second left turn lane can be accommodated within the existing right-of-way by removing most of the landscaped median, as by well as restriping and realigning the westbound leg.

With the proposed mitigation, the intersection would operate at an acceptable LOS E during the PM peak hour. Only the west crosswalk would be lengthened. The increased traffic exposure time would be 3 to 4 seconds for pedestrians and 1 to 2 seconds for bicyclists. Existing bike facilities would be maintained at all legs. Secondary impacts to bicyclists and pedestrians would be minimal. The required right-of-way acquisition to accommodate the eastbound right turn lane would displace businesses. It is uncertain whether the required right-of-way can be acquired. The intersection is controlled by Caltrans and Santa Clara County, so the City cannot ensure the implementation of the mitigation. For these reasons, the proposed mitigation is infeasible, and the impact at this intersection would be **cumulatively considerable** and **significant and unavoidable.**

*Mary Avenue & Central Expressway (#52) – CMP Intersection*

Potential At-Grade Mitigation: At this intersection, a third westbound left turn lane is identified as a Tier 3 project as part of the August 2015 update of the County of Santa Clara Expressway Plan 2040. The third westbound left turn lane can be accommodated within the existing right-of-way. There would be minimal secondary impacts to pedestrians and bicyclists. However, a third westbound left turn lane would not be enough to mitigate the cumulative impact. No further at-grade improvements are feasible at this intersection. Therefore, as a partial mitigation, future development under the Draft LUTE would be required to pay its fair share contribution toward the planned third westbound left turn lane at this intersection.

Potential Grade-Separation Mitigation: An interchange would eliminate the Draft LUTE's impact at this intersection. However, the County of Santa Clara currently has no plans to construct an interchange at this intersection and the City has no jurisdiction to construct the improvement.

Because no feasible mitigation exists at this intersection to fully mitigate the impact, the impact at this intersection would be **cumulatively considerable** and **significant and unavoidable.**

*Mary Avenue & Fremont Avenue (#55)*

Possible mitigation for this intersection would require construction of dedicated right turn pockets on the northbound, eastbound, and westbound legs. The southbound leg would require widening to include a total of one left turn lane, one through lane, one shared through-right lane, and one right turn lane. All of the northbound, eastbound, and westbound right turn pockets would need to be approximately 100 feet long. The bike lanes on all three legs should be striped on the inner side of the right turn lane. The southbound right turn lane would need to be 300 feet long. Additional right-of-way acquisition would be required at all four quadrants of the intersection. All crosswalks would be lengthened by 12 feet.

With the proposed mitigation, the intersection would operate at an acceptable LOS D during both the AM and PM peak hours. At all four crosswalks, the increased traffic exposure time would be 3 to 4 seconds for pedestrians and 1 to 2 seconds for bicyclists. Existing bike facilities would be maintained at all legs. The southbound dual right turns could create potential safety issues for pedestrians and bicyclists. Secondary impacts to bicyclists would be significant. These impacts to pedestrian and bicycle usage are counter to the objectives and intent of the Draft LUTE to promote transportation options from vehicle use. The required right-of-way acquisition would displace businesses at the southern quadrants and displace business parking at the northern quadrants. It is uncertain whether the required right-of-way can be acquired. For these reasons, the proposed mitigation is infeasible, and the impact at this intersection would be **cumulatively considerable** and **significant and unavoidable.**

*SR 85 Southbound & Fremont Avenue (#60)*

Possible mitigation for this intersection would require widening the SR 85 off-ramp to include a left turn lane, a shared left-through-right lane, and a right turn lane. The eastbound leg would require restriping to include a bike box in advance of the stop-line to allow right-turning vehicles to bypass the through vehicles on the curb lane. The off-ramp would need to be widened to the proposed three lanes approximately 370 feet back from the intersection. The north sidewalk would not be lengthened, but the pedestrian refuge island would be removed. The off-ramp would also need to be realigned with the SR 85 southbound on-ramp. Widening the off-ramp could be accommodated within the existing right-of-way. Within the existing right-of-way, the required eastbound right turn lane could be achieved by providing a bike box east of the stop-line to allow

bicyclists to clear the right turn area. The westbound curb lane is 20 feet under existing conditions. With the bike box, right-turning vehicles would be able to bypass the through vehicles. The existing stop-line for the eastbound leg would need to be moved back by approximately 15 feet. Widening the SR 85 off-ramp and providing the bike box on the eastbound leg would fully mitigate the impact during the AM peak hour. During the PM peak hour, the proposed mitigation would only partially mitigate the intersection impact. No other feasible mitigation measure exists at this intersection.

Because no feasible mitigation exists at this intersection to fully mitigate the PM peak hour intersection impact and since the intersection is under the control of Caltrans, the impact at this intersection would be **cumulatively considerable** and **significant and unavoidable.**

*Lawrence Expressway & Cabrillo Avenue (#82) – Intersection on CMP Roadway in the City of Santa Clara*

Potential At-Grade Mitigation: At-grade mitigation would require four mixed-flow lanes on Lawrence Expressway in both directions, as well as exclusive right turn lanes on Cabrillo Avenue in both directions. On Lawrence Expressway, the County of Santa Clara currently has no plans to add capacity. All components of the mitigation would require additional right-of-way acquisition and displacement of homes and businesses. Widening the intersection would also extend the pedestrian and bicycle exposure time to traffic, which could lead to secondary pedestrian and bicycle impacts. These impacts to pedestrian and bicycle usage are counter to the objectives and intent of the Draft LUTE to promote transportation options other than vehicle use. Therefore, no feasible at-grade mitigation exists at this intersection.

Potential Grade-Separation Mitigation: The August 2015 update of the County of Santa Clara Expressway Plan 2040 identifies an interchange at this intersection as a Tier 3 project. At the time of this writing, the interchange configurations have not been finalized. It is assumed that the final interchange configuration would restore the intersection operations to an acceptable LOS D. With the interchange, the Draft LUTE's impact at this intersection would be eliminated. The City would be required to pay its fair share contribution toward the planned interchange.

However, because the intersection is controlled by the County of Santa Clara, the City of Sunnyvale cannot ensure implementation of the interchange. The timing of implementation and the availability of funding are also uncertain. For these reasons, the proposed mitigation is infeasible, and the impact at this intersection would be **cumulatively considerable** and **significant and unavoidable.**

*Lawrence Expressway & Benton Street (#84) – Intersection on CMP Roadway in the City of Santa Clara*

Potential At-Grade Mitigation: At-grade mitigation would require four mixed-flow lanes on Lawrence Expressway in both directions, a second southbound left turn lane, exclusive right turn lanes on Benton Street in both directions, and a second westbound left turn lane. The County of Santa Clara currently has no plans to add capacity on Lawrence Expressway. All components of the mitigation would require additional right-of-way acquisition and displacement of homes and businesses. Widening the intersection would also extend the pedestrian and bicycle exposure time to traffic, which could lead to secondary pedestrian and bicycle impacts. These impacts to pedestrian and bicycle usage are counter to the objectives and intent of the Draft LUTE to promote transportation options other than vehicle use. Therefore, no feasible at-grade mitigation exists at this intersection.

Potential Grade-Separation Mitigation: The August 2015 update of the County of Santa Clara Expressway Plan 2040 identifies an interchange at this intersection as a Tier 3 project. At the time of this writing, the interchange configurations have not been finalized. It is assumed that the final interchange configuration would restore the intersection operations to an acceptable LOS D. With the interchange, the Draft LUTE's impact at this intersection would be eliminated. The City would be required to pay its fair share contribution toward the planned interchange.

However, because the intersection is controlled by the County of Santa Clara, the City of Sunnyvale cannot ensure implementation of the interchange. The timing of implementation and the availability of funding are also uncertain. For these reasons, the proposed mitigation is infeasible and the impact at this intersection would be **cumulatively considerable** and **significant and unavoidable.**

*Lawrence Expressway & Homestead Road (#85) – CMP Intersection in the City of Santa Clara*

Proposed At-Grade Mitigation**:** At-grade mitigation would require widening Lawrence Expressway to five mixed-flow lanes and Homestead Road to three lanes. The northbound leg would require three left turn lanes. The southbound leg would require two left turn lanes. The eastbound leg would require two right turn lanes. The westbound leg would require three left turn lanes. The County of Santa Clara currently has no plans to add capacity on Lawrence Expressway. All components of the mitigation would require additional right-of-way acquisition and displacement of homes and businesses. Widening the intersection would also extend the pedestrian and bicycle exposure time to traffic, which could lead to secondary pedestrian and bicycle impacts. These impacts to pedestrian and bicycle usage are counter to the objectives and intent of the Draft LUTE to promote transportation options other than vehicle use. Therefore, no feasible at-grade mitigation exists at this intersection.

Potential Grade-Separation Mitigation: The August 2015 update of the County of Santa Clara Expressway Plan 2040 identifies an interchange at this intersection as a Tier 3 project. At the time of this writing, the interchange configurations have not been finalized. It is assumed that the final interchange configuration would restore the intersection operations to an acceptable LOS D. With the interchange, the Draft LUTE's impact at this intersection would be eliminated. The City would be required to pay its fair share contribution toward the planned interchange.

However, because the intersection is controlled by the County of Santa Clara, the City of Sunnyvale cannot ensure the implementation of the interchange. The timing of implementation and the availability of funding are also uncertain. For these reasons, the proposed mitigation is infeasible and the impact at this intersection would be **cumulatively considerable** and **significant and unavoidable.**

*Lawrence Expressway & Pruneridge Avenue (#86) – Intersection on CMP Roadway in the City of Santa Clara*

Proposed At-Grade Mitigation**:** At-grade mitigation would require widening Lawrence Expressway to four mixed-flow lanes. The County of Santa Clara currently has no plans to add capacity on Lawrence Expressway. All components of the mitigation would require additional right-of-way acquisition and displacement of homes and businesses. Widening the intersection would also extend the pedestrian and bicycle exposure time to traffic, which could lead to secondary pedestrian and bicycle impacts. These impacts to pedestrian and bicycle usage are counter to the objectives and intent of the Draft LUTE to promote transportation options other than vehicle use. Therefore, no feasible at-grade mitigation exists at this intersection.

Potential Grade-Separation Mitigation: The August 2015 update of the County of Santa Clara Expressway Plan 2040 identifies an interchange at this intersection as a Tier 3 project. At the time of this writing, the interchange configurations have not been finalized. It is assumed that the final interchange configuration would restore the intersection operations to an acceptable LOS D. With the interchange, the Draft LUTE's impact at this intersection would be eliminated. The City would be required to pay its fair share contribution toward the planned interchange.

However, because the intersection is controlled by the County of Santa Clara, the City of Sunnyvale cannot ensure the implementation of the interchange. The timing of implementation and the availability of funding are also uncertain. For these reasons, the proposed mitigation is infeasible and the impact at this intersection would be **cumulatively considerable** and **significant and unavoidable.**

*Bowers Avenue & Central Expressway (#95) – Intersection on CMP Roadway in the City of Santa Clara*

Proposed At-Grade Mitigation: The August 2015 update of the County of Santa Clara Expressway Plan 2040 identifies a Tier 2 project to widen the eastbound leg to include a third left turn lane. This identified mitigation would only partially mitigate the intersection impact as a result of the Draft LUTE. No other feasible at-grade mitigation exists.

Potential Grade-Separation Mitigation: The August 2015 update of the County of Santa Clara Expressway Plan 2040 identifies an interchange at this intersection as a Tier 3 project. At the time of this writing, the interchange configurations have not been finalized. It is assumed that the final interchange configuration would restore the intersection operations to an acceptable LOS D. With the interchange, the Draft LUTE's impact at this intersection would be eliminated. The City would be required to pay its fair share contribution toward the planned interchange.

However, because the intersection is controlled by the County of Santa Clara, the City of Sunnyvale cannot ensure the implementation of the interchange. The timing of implementation and the availability of funding are also uncertain. Therefore, the impact at this intersection would be **cumulatively considerable** and **significant and unavoidable.**

Draft LUTE Measures to Address Traffic Operations

The following Draft LUTE policies constitute the elements of a Transportation Demand Management (TDM) program. A TDM program is a combination of services, incentives, facilities, and actions that reduce single-occupant vehicle trips to help relieve traffic congestion. The City would require that new development achieve a 20 to 35 percent trip reduction target depending on the proposed land use and its location. The discussions of Impacts 3.4.1, 3.4.3, and 3.4.4 also list Draft LUTE policies that would promote alternative transportation which would assist in reducing traffic congestion.

Policy 23: Follow California Environmental Quality Act requirements, Congestion Management Program requirements, and additional City requirements when analyzing the transportation impacts of proposed projects and assessing the need for offsetting transportation system improvements or limiting transportation demand.

Action 1: Reduce peak-hour and total daily single-occupant vehicle trips by expanding the use of transportation demand management programs in the city.

Policy 24: Promote modes of travel and actions that provide safe access to city streets and reduce single-occupant vehicle trips and trip lengths locally and regionally.

The order of consideration of transportation users shall be:

1) Pedestrians

2) Non-automotive (bikes, three-wheeled bikes, scooters, etc.)

3) Mass transit vehicles

4) Delivery vehicles

5) Single-occupant automobiles

Policy 25: Among motorized vehicles, give priority in all services such as carpools to low emission, zero emission, or environmentally friendly vehicles in providing parking and planning for lane priority and other operations.

Policy 31: Move progressively toward eliminating direct and hidden subsidies of motor vehicle parking and driving, making the true costs of parking and driving visible to motorists.

Action 1: Pursue opportunities for user fees such as paid parking, paid parking permits at workplaces, and paid parking places for on-street parking in residential neighborhoods, and promote corporate parking cash-out programs.

Action 2: Manage City-provided public parking though pricing and location strategies in order to match supply and demand, shift the market costs to users of vehicle parking, maintain mobility and access to Sunnyvale businesses, and reduce vehicle trips.

Policy 77: Participate in regional efforts to respond to transportation and housing problems caused by economic growth in order to improve the quality of life and create a better environment for businesses to flourish.

Action 2: Support transportation demand management programs and other ride-sharing programs countywide.

The City of Sunnyvale typically requires new development to achieve between a 20 and 35 percent trip reduction, depending on the type and location. A TDM program in this range would be sufficient to mitigate certain Draft LUTE intersection impacts by reducing the Draft LUTE's traffic increase below the threshold for significant contribution. With implementation of a TDM program, the Draft LUTE intersection impact at the following intersections would be **less than significant**. The intersection-specific minimum percent trip reductions required to eliminate the LUTE intersection impacts are listed below.

- Lawrence Expressway & Tasman Drive (#11) – 33 percent trip reduction
- Duane Ave/Stewart Drive & Duane Avenue (#19) – 34 percent trip reduction
- Wolfe Road & Fremont Avenue (#29) – 33 percent trip reduction

- Fair Oaks Avenue & Arques Avenue (#31) – 24 percent trip reduction
- Fair Oaks Avenue & El Camino Real (#34) – 30 percent trip reduction
- Sunnyvale-Saratoga Road & Remington Drive (#40) – 20 percent trip reduction
- Mathilda Avenue & El Camino Real (#48) – 17 percent trip reduction
- Bowers Avenue & Central Expressway (#95) – 9 percent trip reduction

At the nine remaining intersections with a Draft LUTE intersection impact, a TDM program would not be sufficient to mitigate the intersection impacts by reducing the Draft LUTE's contribution below the threshold for a significant contribution or reducing the overall intersection volumes to a level that eliminates significant cumulative impacts. The Draft LUTE intersection impact at all nine remaining intersections is considered **cumulatively considerable** and **significant and unavoidable**.

Mitigation Measures – Freeway Segments

The VTA's Valley Transportation Plan 2040 identifies freeway express lane projects along SR 237 between North First Street and SR 85, along US 101 between Cochrane Road and Whipple Avenue, along I-280 between Leland Avenue and Magdalena Avenue, along I-880 between the Alameda County Line and US 101, and along all of SR 87 and SR 85. The Metropolitan Transportation Commission (MTC) plans to convert the existing HOV lanes into express lanes on I-880 between Marina Boulevard and Dixon Landing Road. On all identified freeway segments, the existing HOV lanes are proposed to be converted to express lanes. On US 101 and SR 85 along the identified segments, a second express lane is proposed to be implemented in each direction for a total of two express lanes.

On SR 237, I-280, I-880, and SR 87, the existing HOV lanes would already be operating over capacity under the Draft LUTE conditions. Converting the HOV lanes to express lanes would not mitigate the project impact. On US 101 and SR 85, converting the existing HOV lane to an express lane and adding an express lane in each direction would increase freeway capacity and would fully mitigate the freeway impacts. Future projects consistent with the Draft LUTE should make a fair share contribution toward the cost of the identified express lane program along US 101 and SR 85.

However, capacity improvements on freeways are beyond the capabilities of the City of Sunnyvale. Furthermore, freeways are under Caltrans jurisdiction. Therefore, the freeway impacts would be **cumulatively considerable** and **significant and unavoidable**.

## REFERENCES

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# 3.5 Air Quality

This section examines air quality in Sunnyvale and the region, includes a summary of applicable air quality regulations, and analyzes potential air quality impacts associated with the Draft LUTE.

A summary of the impact conclusions related to air quality is provided below.

| Impact Number | Impact Topic | Impact Significance |
|---|---|---|
| 3.5.1 | Conflict with or Obstruct Implementation of the Bay Area 2010 Clean Air Plan | Less than significant |
| 3.5.2 | Violate an Air Quality Standard or Contribute Substantially to an Air Quality Violation During Long-Term Operations | Significant and unavoidable |
| 3.5.3 | Violate an Air Quality Standard or Contribute Substantially to an Air Quality Violation During Short-Term Construction Activities | Significant and unavoidable |
| 3.5.4 | Exposure of Sensitive Receptors to Substantial Carbon Monoxide Pollutant Concentrations | Less than significant |
| 3.5.5 | Exposure of Sensitive Receptors to Substantial Toxic Air Contaminant Concentrations During Construction | Less than significant with mitigation |
| 3.5.6 | Exposure of Sensitive Receptors to Substantial Toxic Air Contaminant Concentrations During Operations | Less than significant with mitigation |
| 3.5.7 | Exposure of Sensitive Receptors to Odors | Less than significant with mitigation |
| 3.5.8 | Cumulative Air Quality Impacts | Cumulatively considerable and significant and unavoidable |

## 3.5.1 EXISTING SETTING

### SAN FRANCISCO BAY AREA AIR BASIN

Sunnyvale is located in the San Francisco Bay Area Air Basin (SFBAAB). The Bay Area Air Quality Management District (BAAQMD) is the regional air quality agency for the SFBAAB, which comprises all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties, the southern portion of Sonoma County, and the southwestern portion of Solano County. Air quality in this area is determined by such natural factors as topography, meteorology, and climate, in addition to the presence of existing air pollution sources and ambient conditions. These factors are briefly described below.

#### Topography

The air basin's topography is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays. This complex terrain, especially at higher elevations, distorts the normal wind flow patterns in the air basin.

#### Meteorology and Climate

During the summer, the large-scale meteorological condition that dominates the West Coast is a semi-permanent high-pressure cell over the Pacific Ocean. This high-pressure cell keeps storms

from affecting the California coast. Hence, the SFBAAB experiences little precipitation in the summer months. Winds tend to blow onshore out of the north-northwest. Generally in the winter, the Pacific high-pressure cell weakens and shifts southward, winds tend to flow offshore, upwelling ceases, and storms occur. During the winter rainy periods, inversions (layers of warmer air over colder air; see below) are weak or nonexistent, winds are usually moderate, and air pollution potential is low. The Pacific high-pressure cell periodically becomes dominant, bringing strong inversions, light winds, and high pollution potential (BAAQMD 2011).

During the summer, winds flowing from the northwest are drawn inland through the Golden Gate and over the lower portions of the San Francisco Peninsula. This channeling of wind through the Golden Gate produces a jet that sweeps eastward and splits off to the northwest toward Richmond and to the southwest toward San Jose when it meets the East Bay hills. In the winter, the SFBAAB frequently experiences stormy conditions with moderate to strong winds, as well as periods of stagnation with very light winds. Winter stagnation episodes are characterized by nighttime drainage flows in coastal valleys (BAAQMD 2011).

During rainy periods, ventilation (rapid horizontal movement of air and injection of cleaner air) and vertical mixing are usually high, and thus pollution levels tend to be low. However, frequent dry periods do occur during the winter where mixing and ventilation are low and pollutant levels build up (BAAQMD 2011).

Summertime temperatures in the SFBAAB are determined in large part by the effect of differential heating between land and water surfaces. Because land tends to heat up and cool off more quickly than water, a large-scale gradient (differential) in temperature is often created between the coast and the Central Valley, and small-scale local gradients are often produced along the shorelines of the ocean and bays. The temperature gradient near the ocean is also exaggerated, especially in summer, because of the upwelling of cold ocean bottom water along the coast. On summer afternoons, the temperatures at the coast can be 35°F cooler than temperatures 15 to 20 miles inland. At night, this contrast usually decreases to less than 10°F.

In the winter, the relationship of minimum and maximum temperatures is reversed. During the daytime, the temperature contrast between the coast and inland areas is small, whereas at night the variation in temperature is large (BAAQMD 2011).

### Santa Clara Valley Climatological Subregion

Eleven major climatological subregions make up the SFBAAB. Sunnyvale is located in the Santa Clara Valley climatological Subregion, which is bounded by the San Francisco Bay to the north and by mountains to the east, south, and west. Temperatures are warm on summer days and cool on summer nights, and winter temperatures are fairly mild. At the northern end of the valley, mean maximum temperatures are in the low 80s during the summer and the high 50s during the winter, and mean minimum temperatures range from the high 50s in the summer to the low 40s in the winter. Farther inland, where the moderating effect of the Bay is not as strong, temperature extremes are greater.

Winds in the valley are greatly influenced by the terrain, resulting in a prevailing flow that roughly parallels the valley's northwest–southeast axis. A north-northwesterly sea breeze flows through the valley during the afternoon and early evening, and a light south-southeasterly drainage flow occurs during the late evening and early morning. In the summer, the southern end of the valley sometimes becomes a "convergence zone," when air flowing from the Monterey Bay gets channeled northward into the southern end of the valley and meets with the prevailing north-northwesterly winds. Wind speeds are greatest in the spring and summer and weakest in the fall

and winter. Nighttime and early morning hours frequently have calm winds in all seasons, while summer afternoons and evenings are breezy. Strong winds are rare, associated mostly with the occasional winter storm.

### Air Pollution Potential

The potential for high pollutant concentrations developing at a given location depends on the quantity of pollutants emitted into the atmosphere in the surrounding area or upwind and the ability of the atmosphere to disperse the contaminated air. The topographic and climatological factors discussed above influence the atmospheric pollution potential of an area. Atmospheric pollution potential, as the term is used here, is independent of the location of emission sources and is instead a function of the factors described below.

#### Atmospheric Conditions

The hills and mountains in the SFBAAB contribute to the high pollution potential of some areas. An inversion is a layer of warmer air over a layer of cooler air. Inversions affect air quality conditions significantly because they influence the mixing depth, i.e., the vertical depth in the atmosphere available for diluting air contaminants near the ground. The highest air pollutant concentrations in the SFBAAB, and therefore in Sunnyvale, generally occur during inversions.

The areas having the highest air pollution potential also tend to be those that experience the highest temperatures in the summer and the lowest temperatures in the winter. The frequency of hot, sunny days during the summer months in the SFBAAB is another important factor that affects air pollution potential. It is at the higher temperatures that ozone is formed. In the presence of ultraviolet sunlight and warm temperatures, reactive organic gases and oxides of nitrogen react to form secondary photochemical pollutants, including ozone. Because temperatures in many of the air basin's inland valleys are so much higher than near the coast, the inland areas are especially prone to photochemical air pollution. In late fall and winter, solar angles are low, resulting in insufficient ultraviolet light and warming of the atmosphere to drive the photochemical reactions. Ozone concentrations do not reach significant levels in the SFBAAB during these seasons (BAAQMD 2011).

The air pollution potential in the Santa Clara Valley is high. High summer temperatures, stable air, and mountains surrounding the valley combine to promote ozone formation. In addition to the many local sources of pollution, ozone precursors from San Francisco, San Mateo, and Alameda counties are carried by prevailing winds to the Santa Clara Valley. The valley tends to channel pollutants to the southeast. In addition, on summer days with low-level inversions, ozone can be recirculated by southerly drainage flows in the late evening and early morning and by the prevailing northwesterlies in the afternoon. A similar recirculation pattern occurs in the winter, affecting levels of carbon monoxide and particulate matter. This movement of the air up and down the valley significantly increases the pollutants' impact.

#### Emission Sources

Although air pollution potential is strongly influenced by climate and topography, the air pollution that occurs in a location also depends on the amount of air pollutant emissions in the surrounding area or those that have been transported from more distant places. Air pollutant emissions generally are highest in areas that have high population densities, high motor vehicle use, and/or industrialization. The contaminants created by photochemical processes in the atmosphere, such as ozone, may result in high concentrations many miles downwind from the sources of their precursor chemicals (BAAQMD 2011).

Pollution sources are plentiful and complex in the Santa Clara Valley. The Santa Clara Valley has a high concentration of industry at the northern end, in Silicon Valley. Some of these industries are sources of toxic air contaminants as well as criteria air pollutants. In addition, the Santa Clara Valley's large population and many work-site destinations generate the highest mobile source emissions of any subregion in the SFBAAB.

### AIR POLLUTANTS OF CONCERN

The air pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and state law. These regulated air pollutants are known as criteria air pollutants and are categorized into primary and secondary pollutants. Primary air pollutants are those emitted directly from sources. Carbon monoxide (CO), reactive organic gases (ROG), nitrogen oxide ($NO_X$), sulfur dioxide ($SO_2$), coarse particulate matter ($PM_{10}$) and fine particulate matter ($PM_{2.5}$), lead, and fugitive dust are primary air pollutants. Of these, CO, $SO_2$, $PM_{10}$, and $PM_{2.5}$ are criteria pollutants. ROG and $NO_X$ are criteria pollutant precursors and go on to form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. Ozone ($O_3$) and nitrogen dioxide ($NO_2$) are the principal secondary pollutants. Descriptions of each of the primary and secondary criteria air pollutants and their known health effects are presented in **Table 3.5-1**.

**TABLE 3.5-1**
**CRITERIA AIR POLLUTANTS SUMMARY OF COMMON SOURCES AND EFFECTS**

| Pollutant | Major Man-Made Sources | Human Health Effects |
|---|---|---|
| Carbon Monoxide (CO) | An odorless, colorless gas formed when carbon in fuel is not burned completely; a component of motor vehicle exhaust. | Reduces the ability of blood to deliver oxygen to vital tissues, affecting the cardiovascular and nervous system. Impairs vision, causes dizziness, and can lead to unconsciousness or death. |
| Nitrogen Dioxide ($NO_2$) | A reddish-brown gas formed during fuel combustion for motor vehicles and industrial sources. Sources include motor vehicles, electric utilities, and other sources that burn fuel. | Respiratory irritant; aggravates lung and heart problems. Precursor to ozone. Contributes to global warming and nutrient overloading which deteriorates water quality. Causes brown discoloration of the atmosphere. |
| Ozone ($O_3$) | Formed by a chemical reaction between reactive organic gases (ROGs) and nitrous oxides (NOx) in the presence of sunlight. Common sources of these precursor pollutants include motor vehicle exhaust, industrial emissions, gasoline storage and transport, solvents, paints, and landfills. | Irritates and causes inflammation of the mucous membranes and lung airways; causes wheezing, coughing, and pain when inhaling deeply; decreases lung capacity; aggravates lung and heart problems. Damages plants; reduces crop yield. |
| Particulate Matter ($PM_{10}$ & $PM_{2.5}$) | Produced by power plants, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles and other sources. | Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; asthma; chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility. |
| Sulfur Dioxide ($SO_2$) | A colorless gas formed when fuel containing sulfur is burned and when gasoline is extracted from oil. Examples are petroleum refineries, cement manufacturing, metal processing facilities, locomotives, and ships. | Respiratory irritant. Aggravates lung and heart problems. In the presence of moisture and oxygen, sulfur dioxide converts to sulfuric acid which can damage marble, iron and steel. Damages crops and natural vegetation. Impairs visibility. Precursor to acid rain. |

*Source: CAPCOA 2011*

## AMBIENT AIR QUALITY

Ambient air quality in Sunnyvale can be inferred from air quality measurements conducted at nearby air quality monitoring stations. Existing levels of ambient air quality and historical trends and projections in the vicinity are documented by measurements made by the BAAQMD, the air pollution regulatory agency in the SFBAAB that maintains air quality monitoring stations which process ambient air quality measurements.

As described in more detail under the Regulatory Framework subsection below, ozone, $PM_{10}$, and $PM_{2.5}$ are the primary pollutants affecting the SFBAAB. The 22601 Voss Avenue air quality monitoring station in Cupertino is the closest station to Sunnyvale, located approximately 5 miles to the southwest. This station monitors ambient concentrations of ozone, $PM_{10}$, and $PM_{2.5}$. Ambient emission concentrations will vary due to localized variations in emission sources and climate and should be considered "generally" representative of ambient concentrations in Sunnyvale. The concentrations of pollutants monitored at the Voss Avenue station are representative of Sunnyvale because it is the closest monitoring station to the city and is located in the same climatological subregion. In addition, the Jackson Street – San Jose monitoring station in San Jose is located approximately 6 miles to the east and is also located in the same

climatological subregion as Sunnyvale. **Table 3.5-2** summarizes the published data since 2012 from the Cupertino-Voss Avenue and Jackson Street – San Jose air quality monitoring stations for each year that monitoring data is provided.

**TABLE 3.5-2**
**SUMMARY OF AMBIENT AIR QUALITY DATA**

| Pollutant Standards | 2012 | 2013 | 2014 |
|---|---|---|---|
| **22601 Voss Avenue Air Quality Monitoring Station – Cupertino** | | | |
| **Ozone** | | | |
| Max 1-hour concentration (ppm) | 0.083 | 0.091 | * |
| Max 8-hour concentration (ppm) (state/federal) | 0.067 / 0.066 | 0.078 / 0.077 | * / * |
| Number of days above state 1-hour standard | 0 | 0 | 0 |
| Number of days above state/federal 8-hour standard | 0 / 0 | 1 / 1 | * / * |
| **Respirable Particulate Matter ($PM_{10}$)** | | | |
| Max 24-hour concentration ($\mu g/m^3$) (state/federal) | 41.5 / 39.1 | 33.5 / 31.0 | * / * |
| Number of days above state/federal standard | 0 / 0 | 0 / 0 | * / * |
| **Fine Particulate Matter ($PM_{2.5}$)** | | | |
| Max 24-hour concentration ($\mu g/m^3$) (state/federal) | 27.5 / * | 38.9 / * | * / * |
| Number of days above federal standard | * | * | * |
| **Jackson Street – San Jose Air Quality Monitoring Station – San Jose** | | | |
| **Ozone** | | | |
| Max 1-hour concentration (ppm) | 0.101 | 0.093 | 0.089 |
| Max 8-hour concentration (ppm) (state/federal) | 0.062 / 0.063 | 0.079 / 0.080 | 0.066 / 0.066 |
| Number of days above state 1-hour standard | 1 | 0 | 0 |
| Number of days above state/federal 8-hour standard | 0 / 0 | 1 / 1 | 0 / 0 |
| **Respirable Particulate Matter ($PM_{10}$)** | | | |
| Max 24-hour concentration ($\mu g/m^3$) (state/federal) | 59.6 / 56.5 | 58.1 / 55.8 | 54.7 / 56.4 |
| Number of days above state/federal standard | 2.9 / 0 | 15.2 / 0 | 3.1 / 0 |
| **Fine Particulate Matter ($PM_{2.5}$)** | | | |
| Max 24-hour concentration ($\mu g/m^3$) (state/federal) | 38.4 / 38.4 | 57.7 / 57.7 | 60.4 / 60.4 |
| Number of days above federal standard | 2.1 | 6.0 | 2.0 |

*Source: CARB 2015*
*Notes: $\mu g/m^3$ = micrograms per cubic meter; ppm = parts per million*
** = No data is currently available from CARB to determine the value.*

Areas with air quality that exceed adopted air quality standards are designated as nonattainment areas for the relevant air pollutants, while areas that comply with air quality standards are designated as attainment areas for the relevant air pollutants. The attainment status for the Sunnyvale portion of the SFBAAB is included in **Table 3.5-3** (air quality standards are listed in **Table 3.5-4**). The region is nonattainment for state ozone, $PM_{10}$, and $PM_{2.5}$ standards in addition to federal ozone and $PM_{2.5}$ standards (BAAQMD 2015a).

**TABLE 3.5-3**
**FEDERAL AND STATE AMBIENT AIR QUALITY ATTAINMENT STATUS FOR SUNNYVALE**

| Pollutant | Federal | State |
|---|---|---|
| Ozone ($O_3$) | Nonattainment | Nonattainment |
| Coarse Particulate Matter ($PM_{10}$) | Unclassified | Nonattainment |
| Fine Particulate Matter ($PM_{2.5}$) | Unclassified/Attainment | Nonattainment |
| Carbon Monoxide (CO) | Attainment | Attainment |
| Nitrogen Dioxide ($NO_2$) | Unclassified/Attainment | Attainment |
| Sulfur Dioxide ($SO_2$) | Attainment | Attainment |

*Source: BAAQMD 2015a*

## Toxic Air Contaminants

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern. TACs are considered either carcinogenic or noncarcinogenic based on the nature of the health effects associated with exposure to the pollutant. For regulatory purposes, carcinogenic TACs are assumed to have no safe threshold below which health impacts would not occur, and cancer risk is expressed as excess cancer cases per one million exposed individuals. Noncarcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

There are many different types of TACs, with varying degrees of toxicity. Sources of TACs include industrial processes, such as petroleum refining; commercial operations, such as gasoline stations and dry cleaners; and motor vehicle exhaust. Public exposure to TACs can result from emissions from normal operations, as well as from accidental releases of hazardous materials during upset conditions. The health effects associated with TACs are quite diverse and generally are assessed locally rather than regionally.

To date, the California Air Resources Board (CARB) has designated nearly 200 compounds as TACs. Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from TACs can be attributed to relatively few compounds.

Most recently, CARB identified diesel particulate matter (diesel PM) as a toxic air contaminant. Diesel PM differs from other TACs in that it is not a single substance but rather a complex mixture of hundreds of substances. Diesel exhaust is a complex mixture of particles and gases produced when an engine burns diesel fuel. Diesel PM is a concern because it causes lung cancer; many compounds found in diesel exhaust are carcinogenic. Diesel PM includes the particle-phase constituents in diesel exhaust. The chemical composition and particle sizes of diesel PM vary between different engine types (heavy-duty, light-duty), engine operating conditions (idle, accelerate, decelerate), fuel formulations (high/low sulfur fuel), and the year of the engine (EPA 2002, pp. 1-1 and 1-2). Some short-term (acute) effects of diesel exhaust include eye, nose, throat, and lung irritation, and diesel exhaust can cause coughs, headaches, light-headedness, and nausea. Diesel PM poses the greatest health risk among the TACs; due to their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung.

Toxic air contaminant sources in Sunnyvale are identified under Impact 3.5.6 and include Caltrain, major thoroughfares and highways, and stationary sources in the area.

**Sensitive Receptors**

Some land uses are considered more sensitive to air pollution than others because of the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardiorespiratory diseases.

Residential areas are considered to be sensitive receptors to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Children are considered more susceptible to the health effects of air pollution due to their immature immune systems and developing organs (OEHHA 2007). As such, schools are also considered sensitive receptors, as children are present for extended durations and engage in regular outdoor activities.

## 3.5.2 REGULATORY FRAMEWORK

During construction and operational activities associated with implementation of the Draft LUTE, there is potential that gaseous emissions of criteria pollutants and dust into the ambient air would occur; therefore, development activities associated with the Draft LUTE fall under the ambient air quality standards promulgated at the local, state, and federal levels. The federal Clean Air Act of 1971 and the Clean Air Act Amendments (1977) established the national ambient air quality standards (NAAQS), which are promulgated by the US Environmental Protection Agency (EPA). The State of California has also adopted its own California ambient air quality standards (CAAQS), which are promulgated by CARB. Implementation of the project would occur in the San Francisco Bay Area Air Basin, which is under the air quality regulatory jurisdiction of the BAAQMD and is subject to the rules and regulations adopted by the air district to achieve the national and state ambient air quality standards. Federal, state, regional, and local laws, regulations, plans, and guidelines are summarized below.

### AMBIENT AIR QUALITY STANDARDS

The Clean Air Act established NAAQS, with states retaining the option to adopt more stringent standards or to include other pollution species. These standards are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect those sensitive receptors most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

Both the State of California and the federal government have established health-based ambient air quality standards for six air pollutants. As shown in **Table 3.5-4**, these pollutants include ozone, CO, $NO_2$, $SO_2$, $PM_{10}$, $PM_{2.5}$, and lead. In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

**TABLE 3.5-4**
**AIR QUALITY STANDARDS**

| Pollutant | Averaging Time | California Standards | National Standards |
|---|---|---|---|
| Ozone ($O_3$) | 8 Hour | 0.070 ppm (137$\mu$g/m$^3$) | 0.070 ppm |
| | 1 Hour | 0.09 ppm (180 $\mu$g/m$^3$) | — |
| Carbon Monoxide (CO) | 8 Hour | 9.0 ppm (10 mg/m$^3$) | 9 ppm (10 mg/m$^3$) |
| | 1 Hour | 20 ppm (23 mg/m$^3$) | 35 ppm (40 mg/m$^3$) |
| Nitrogen Dioxide ($NO_2$) | 1 Hour | 0.18 ppm (339 $\mu$g/m$^3$) | 100 ppb |
| | Annual Arithmetic Mean | 0.030 ppm (57 $\mu$g/m$^3$) | 53 ppb (100 $\mu$g/m$^3$) |
| Sulfur Dioxide ($SO_2$) | 24 Hour | 0.04 ppm (105 $\mu$g/m$^3$) | 140 ppb (365 $\mu$g/m$^3$) |
| | 3 Hour | — | — |
| | 1 Hour | 0.25 ppm (665 $\mu$g/m$^3$) | 75 ppb (196 $\mu$g/m$^3$) |
| Particulate Matter ($PM_{10}$) | Annual Arithmetic Mean | 20 $\mu$g/m$^3$ | — |
| | 24 Hour | 50 $\mu$g/m$^3$ | 150 $\mu$g/m$^3$ |
| Particulate Matter – Fine ($PM_{2.5}$) | Annual Arithmetic Mean | 12 $\mu$g/m$^3$ | 12 $\mu$g/m$^3$ |
| | 24 Hour | — | 35 $\mu$g/m$^3$ |
| Sulfates | 24 Hour | 25 $\mu$g/m$^3$ | — |
| Lead | Calendar Quarter | — | 1.5 $\mu$g/m$^3$ |
| | 30 Day Average | 1.5 $\mu$g/m$^3$ | — |
| Hydrogen Sulfide | 1 Hour | 0.03 ppm (42 $\mu$g/m$^3$) | — |
| Vinyl Chloride (chloroethene) | 24 Hour | 0.01 ppm (26 $\mu$g/m$^3$) | — |
| Visibility-Reducing Particles | 8 Hour (10:00 to 18:00 PST) | — | — |

*Source: BAAQMD 2015a*

*Notes: mg/m$^3$ = milligrams per cubic meter; ppm = parts per million; ppb = parts per billion; $\mu$g/m$^3$ = micrograms per cubic meter*

## AIR QUALITY ATTAINMENT PLANS

The BAAQMD is responsible for preparing plans to attain ambient air quality standards in the SFBAAB. The BAAQMD prepares ozone attainment plans for the national ozone standard and clean air plans for the California standard, both in coordination with the Metropolitan Transportation Commission and the Association of Bay Area Governments (ABAG).

With respect to applicable air quality plans, the BAAQMD prepared the Bay Area 2010 Clean Air Plan to address nonattainment of the national 1-hour ozone standard in the air basin. The Clean Air Plan defines a control strategy that the BAAQMD and its partners will implement to: (1) reduce emissions and decrease ambient concentrations of harmful pollutants; (2) safeguard public health by reducing exposure to air pollutants that pose the greatest health risk, with an emphasis on protecting the communities most heavily impacted by air pollution; and (3) reduce greenhouse gas (GHG) emissions to protect the climate. It is important to note that, in addition to updating the previously prepared ozone plan, the Clean Air Plan also serves as a multipollutant plan to protect public health and the climate. This effort to develop its first-ever multipollutant air quality plan is a voluntary initiative by the BAAQMD. The district believes that an

integrated and comprehensive approach to planning is critical to respond to air quality and climate protection challenges in the years ahead. In its dual roles as an update to the state ozone plan and a multipollutant plan, the Bay Area 2010 Clean Air Plan addresses four categories of pollutants (BAAQMD 2010):

- Ground-level ozone and its key precursors, ROG and NOX
- Particulate matter: primary PM2.5, as well as precursors to secondary PM2.5
- Air toxics
- Greenhouse gases

The Clean Air Plan provides local guidance for the State Implementation Plan (SIP), which provides the framework for air quality basins to achieve attainment of the state and federal ambient air quality standards (CAAQS and NAAQS). Areas that meet ambient air quality standards are classified as attainment areas, while areas that do not meet these standards are classified as nonattainment areas. Areas for which there is insufficient data available are designated unclassified.

### TOXIC AIR CONTAMINANT REGULATIONS

The California Health and Safety Code defines a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." California regulates TACs primarily through Assembly Bill (AB) 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics "Hot Spot" Information and Assessment Act of 1987). The Tanner Air Toxics Act sets forth a formal procedure for CARB to designate substances as toxic air contaminants. Once a TAC is identified, CARB adopts an "airborne toxics control measure" for sources that emit designated TACs. If there is a safe threshold for a substance (a point below which there is no toxic effect), the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology to minimize emissions. CARB has, to date, established formal control measures for eleven TACs, all of which are identified as having no safe threshold.

Air toxics from stationary sources are also regulated in California under the Air Toxics "Hot Spot" Information and Assessment Act of 1987. Under AB 2588, TAC emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High-priority facilities are required to perform a health risk assessment and, if specific thresholds are exceeded, are required to communicate the results to the public in the form of notices and public meetings. Stationary sources of air toxics in Sunnyvale include gasoline fuel stations, diesel-powered backup generators, and dry cleaning facilities.

#### Land Use Compatibility with TAC Emission Sources

The location of a development project is a major factor in determining whether it will result in localized air quality impacts. The potential for adverse air quality impacts increases as the distance between the source of emissions and members of the public decreases. While impacts on all members of the population should be considered, impacts on sensitive receptors, such as schools or hospitals, are of particular concern. CARB (2005) published an informational guide entitled *Air Quality and Land Use Handbook: A Community Health Perspective*. The purpose of this guide is to provide information to aid local jurisdictions in addressing issues and concerns related to the placement of sensitive land uses near major sources of air pollution. The

handbook includes recommended separation distances between TAC sources and new sensitive land uses. However, these recommendations are not site-specific and should not be interpreted as mandated "buffer zones." It is also important to note that the recommendations are advisory and need to be balanced with other state and local policies (CARB 2005). The recommended distances for potential TAC sources that are relevant to evaluating proposed project impacts are listed in **Table 3.5-5**.

**TABLE 3.5-5**
**RECOMMENDATIONS ON SITING NEW SENSITIVE LAND USES NEAR AIR POLLUTANT SOURCES**

| Source Category | Advisory Recommendations |
|---|---|
| Freeways and High-Traffic Roads | • Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles per day. |
| Dry Cleaners Using Perchloroethylene | • Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with three or more machines, consult with the local air district.<br>• Do not site new sensitive land uses in the same building with perc. dry cleaners. |
| Gasoline Dispensing Facilities | • Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50-foot separation is recommended for typical gas dispensing facilities. |

*Source: CARB 2005*

*Notes: Recommendations are advisory, are not site-specific, and may not fully account for future reductions in emissions, including those resulting from compliance with existing/future regulatory requirements, such as reductions in diesel-exhaust emissions anticipated to occur with continued implementation of CARB's Diesel Risk Reduction Plan.*

### California Diesel Risk Reduction Plan

CARB has adopted the Diesel Risk Reduction Plan (DRRP), which recommends many control measures to reduce the risks associated with diesel PM and achieve a reduction goal of 85 percent by 2020. The DRRP incorporates measures to reduce emissions from diesel-fueled vehicles and stationary diesel-fueled engines. CARB's ongoing efforts to reduce diesel-exhaust emissions from these sources include the development of specific statewide regulations, which are designed to further reduce diesel PM emissions. The goal of each regulation is to make diesel engines as clean as possible by establishing state-of-the-art technology requirements or emission standards to reduce diesel PM emissions.

Since the initial adoption of the DRRP in September 2000, CARB has adopted numerous rules related to the reduction of diesel PM from mobile sources, as well as the use of cleaner-burning fuels. Transportation sources addressed by these rules that pertain to projects in Sunnyvale include public transit buses, school buses, on-road heavy-duty trucks, and off-road heavy-duty construction equipment.

## BAY AREA AIR QUALITY MANAGEMENT DISTRICT

The BAAQMD attains and maintains air quality conditions in the SFBAAB through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The BAAQMD's clean air strategy includes the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, and issuance of permits for stationary sources of air pollution. The BAAQMD also inspects stationary sources of air

pollution and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the federal Clean Air Act, the Clean Air Act Amendments, and the California Clean Air Act.

### Rules and Regulations

The BAAQMD develops regulations to improve air quality and protect the health and welfare of Bay Area residents and their environment. BAAQMD rules and regulations most applicable to the project area include but are not limited to the following:

- ***Regulation 2, Rule 2: New Source Review.*** Requires any new source resulting in an increase of any criteria pollutant to be evaluated for adherence to best available control technology. For compression internal combustion engines, best available control technology requires that the generator be fired on California diesel fuel (fuel oil with a sulfur content less than 0.05 percent by weight and less than 20 percent by volume of aromatic hydrocarbons). All stationary internal combustion engines larger than 50 horsepower must obtain a Permit to Operate. If the engine is diesel fueled, it must also comply with the BAAQMD-administered Statewide Air Toxics Control Measure for Stationary Diesel Engines.

- ***Regulation 7: Odorous Substances.*** Establishes general limitations on odorous substances and specific emission limitations on certain odorous compounds.

- ***Regulation 8, Rule 3: Architectural Coatings.*** Limits the quantity of volatile organic compounds in architectural coatings supplied, sold, offered for sale, applied, solicited for application, or manufactured for use within the district.

- ***Regulation 8, Rule 15: Emulsified and Liquid Asphalts.*** Limits the emissions of volatile organic compounds caused by the use of emulsified and liquid asphalt in paving materials and paving and maintenance operations.

- ***Regulation 14: Mobile Source Emissions Reduction Measures.*** Includes measures to reduce emissions of air pollutants from mobile sources by reducing motor vehicle use and/or promoting the use of clean fuels and low-emission vehicles.

The above list represents rules and regulations most applicable to Sunnyvale. Additional rules and regulations may apply, depending on the sources proposed and the activities conducted.

### BAAQMD Construction Mitigation Measures

The BAAQMD recommends quantifying a proposed project's construction-generated emissions implementing the Basic Construction Mitigation Measures as mitigation for dust and exhaust construction impacts in the CEQA compliance documentation. If additional construction measures are required to reduce construction-generated emissions, the Additional Construction Mitigation Measures should be applied to mitigate construction impacts, according to the BAAQMD. **Table 3.5-6** identifies the BAAQMD's Basic and Additional Construction Mitigation Measures. In addition, all projects must implement any applicable air toxic control measures. For example, projects that have the potential to disturb asbestos (from soil or building material) must comply with all the requirements of CARB's air toxic control measures for construction, grading, quarrying, and surface mining operations.

**TABLE 3.5-6**
**BAAQMD BASIC AND ADDITIONAL CONSTRUCTION MITIGATION MEASURES**

| BAAQMD Basic Construction Mitigation Measures |
|---|
| 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). 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 manufacturers' specifications. All equipment shall be checked by a certified visible emissions evaluator. |
| 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. |
| **BAAQMD Additional Construction Mitigation Measures** |
| 1. All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe. |
| 2. All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph. |
| 3. Wind breaks (e.g., trees, fences) shall be installed on the windward side(s) of actively disturbed areas of construction. Wind breaks should have at maximum 50 percent air porosity. |
| 4. Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established. |
| 5. The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time. |
| 6. All trucks and equipment, including their tires, shall be washed off prior to leaving the site. |
| 7. Site accesses to a distance of 100 feet from the paved road shall be treated with a 6- to 12-inch compacted layer of wood chips, mulch, or gravel. |
| 8. Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than 1 percent. |
| 9. Minimize the idling time of diesel-powered construction equipment to 2 minutes. |
| 10. The project shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project-wide fleet average 20 percent NOx reduction and 45 percent PM reduction compared to the most recent CARB fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available. |
| 11. Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., Regulation 8, Rule 3: Architectural Coatings). |
| 12. Require that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOx and PM. |
| 13. Require all contractors use equipment that meets CARB's most recent certification standard for off-road heavy-duty diesel engines. |

*Source: BAAQMD 2011*

### 3.5.3 IMPACTS AND MITIGATION MEASURES

#### STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following California Environmental Quality Act (CEQA) Guidelines Appendix G thresholds of significance:

1) Conflict with or obstruct implementation of any applicable air quality plan.

2) Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

3) Expose sensitive receptors to substantial pollutant concentrations.

4) Create objectionable odors affecting a substantial number of people.

5) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

*CEQA Guidance*

The BAAQMD publishes CEQA Air Quality Guidelines to assist local jurisdictions and lead agencies in complying with the requirements of CEQA regarding potentially adverse impacts to air quality. The District's guidelines were updated in June 2010 to include new thresholds of significance (2010 thresholds) adopted by the BAAQMD Governing Board on June 2, 2010. The BAAQMD's guidelines were further updated in May 2011. The 2010 thresholds included new thresholds of significance for construction emissions, cumulative toxic air contaminant impacts, and fine particulate matter concentration increases.

On March 5, 2012, the Alameda County Superior Court issued a judgment in connection with a lawsuit filed by the Building Industry Association, finding that the BAAQMD had failed to comply with CEQA when it adopted the 2010 thresholds. The court did not determine whether the 2010 thresholds were valid on the merits, but found that adoption of the 2010 thresholds was a "project" under CEQA. The court issued a writ of mandate ordering the BAAQMD to set aside the 2010 thresholds and cease dissemination of them until the district had complied with CEQA. However, the court did not address the Building Industry Association's remaining arguments. The BAAQMD appealed the Alameda County Superior Court's decision and the case went to the Court of Appeal, First Appellate District.

After the Alameda County Superior Court's decision, the BAAQMD stopped recommending the 2010 thresholds be used as a generally applicable measure of a project's significant air quality impacts. The BAAQMD released a new version of its CEQA Air Quality Guidelines in May 2012 removing the 2010 thresholds. The BAAQMD, however, provided a recommendation that lead agencies determine appropriate air quality thresholds of significance based on substantial evidence in the record.

On August 13, 2013, the Court of Appeals reversed the Superior Court's decision, finding that the BAAQMD's thresholds were not a "project" under CEQA and as such, did not require CEQA review. On November 26, 2013, the California Supreme Court by unanimous vote granted review to address the legal issue of whether CEQA review is confined to an analysis of a proposed

project's impacts on the existing environment or also requires analysis of the existing environment's impacts on the proposed project and its future occupants and users. On December 17, 2015, the State Supreme Court concluded that agencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents. But when a proposed project risks exacerbating those environmental hazards or conditions that already exist, an agency must analyze the potential impact of such hazards on future residents or users. In those specific instances, it is the *project's* impact on the environment—and not the *environment's* impact on the project. Given the recent date of the Supreme Court decision compared with the writing of this DEIR, the BAAQMD has yet to announce a recommendation to use its 2010 thresholds. Nevertheless, in the meantime jurisdictions may exercise their discretion and utilize said thresholds based on a determination that they are supported by substantial evidence. For purposes of this analysis, the City of Sunnyvale has determined, in its discretion, to utilize the BAAQMD's thresholds, finding that the thresholds are supported by substantial evidence. Using these criteria, an air quality impact is considered significant if the project would violate any ambient air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations.

### Air Pollutant Emissions Analysis

The BAAQMD CEQA Guidelines do not contain numeric thresholds related to criteria pollutant emissions resulting from plan implementation, such as implementation of the proposed Draft LUTE. According to the BAAQMD CEQA Guidelines, in order to identify whether a plan would violate any ambient air quality standard or contribute substantially to an existing or projected air quality violation, the proposed plan (i.e., the proposed Draft LUTE) must demonstrate consistency with the control measures contained in the Bay Area 2010 Clean Air Plan, described above, and show that projected vehicle miles traveled (VMT) increases as a result of the plan are less than or equal to projected employment and population increases over the planning period of the plan.

### CO Hot-Spot Analysis

The California 1-hour and 8-hour CO standards are:

- 1-hour = 20 parts per million
- 8-hour = 9 parts per million

The significance of localized impacts depends on whether ambient carbon monoxide levels within or in the vicinity of the plan area are above state and federal CO standards. Carbon monoxide concentrations in Sunnyvale no longer exceed the CAAQS or NAAQS criteria, and the SFBAAB has been designated as attainment under the 1-hour and 8-hour standards. Based on BAAQMD guidance, projects meeting all of the following screening criteria would be considered to have a less than significant impact on localized carbon monoxide concentrations if:

1) The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plans, and local congestion management agency plans.

2) The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.

3) The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

### Toxic Air Contaminant Analysis

In addition to criteria air pollutants and CO hot spots, this Draft EIR evaluates the plan area's impacts with respect to toxic air contaminants. The BAAQMD regulates levels of air toxics through a permitting process that covers both construction and operation. Per BAAQMD guidance, all other sources within 1,000 feet of a proposed sensitive receptor need to be identified and analyzed. If emissions of TAC concentrations at a new sensitive receptor generated from all TAC sources in a 1,000-foot radius result in the exceedance of an excess cancer risk level of more than 100 in one million, or a non-cancer hazard index greater than 10, the project would result in a significant impact. In terms of the placement of a source of TAC emissions in the vicinity of existing sensitive receptors, if emissions of TACs exceed an excess cancer risk level of more than 10 in one million or a non-cancer hazard index greater than 1.0, the proposed source would result in a significant impact.

## METHODOLOGY

Air quality impacts were assessed in accordance with methodologies recommended by CARB and the BAAQMD. Where quantification was required, emissions were modeled using the California Emissions Estimator Model (CalEEMod). CalEEMod is a statewide land use emissions computer model designed to quantify potential criteria pollutant emissions associated with both construction and operations from a variety of land use projects. Mobile emissions are based on traffic volume data from **Appendix C**.

## IMPACTS AND MITIGATION MEASURES

### Conflict with or Obstruct Implementation of the Bay Area 2010 Clean Air Plan (Standard of Significance 1)

**Impact 3.5.1** Subsequent land use activities associated with implementation of the proposed Draft LUTE would not conflict with the Bay Area 2010 Clean Air Plan. This impact is **less than significant**.

Consistency of the Draft LUTE with Clean Air Plan control measures is demonstrated by assessing whether the LUTE implements all of the applicable Clean Air Plan control measures. The Bay Area 2010 Clean Air Pla*n* (BAAQMD 2010) includes approximately 55 control measures that are intended to reduce air pollutant emissions in the Bay Area either directly or indirectly. The control measures are divided into five categories: 18 measures to reduce stationary and area sources; 10 mobile source measures; 17 transportation control measures; 6 land use and local impact measures; and 4 energy and climate measures.

In developing the control strategy, the BAAQMD identified the full range of tools and resources available, both regulatory and non-regulatory, to develop each measure. Implementation of each control measure will rely on some combination of the following:

- Adoption and enforcement of rules to reduce emissions from stationary sources, area sources, and indirect sources.

- Revisions to the BAAQMD permitting requirements for stationary sources.
- Enforcement of CARB rules to reduce emissions from heavy-duty diesel engines.
- Allocation of grants and other funding by the BAAQMD and/or partner agencies.
- Promotion of best policies and practices that can be implemented by local agencies through guidance documents, model ordinances, and other measures.
- Partnerships with local governments, other public agencies, the business community, nonprofits, and other groups.
- Public outreach and education.
- Enhanced air quality monitoring.
- Development of land use guidance and CEQA guidelines, and BAAQMD review and comment on Bay Area projects pursuant to CEQA.
- Leadership and advocacy.

This approach relies on lead agencies to assist in implementing some of the control measures. A key tool for local agency implementation is the development of land use policies and implementing measures that address new development or redevelopment in local communities. The consistency of the proposed Draft LUTE is evaluated with respect to each set of control measures.

The Clean Air Plan includes stationary source control measures that the BAAQMD adopts as rules or regulations through its authority to control emissions from stationary and area sources. The BAAQMD is the implementing agency, since these control measures are applicable to sources of air pollution that must obtain BAAQMD permits. The City uses the BAAQMD's CEQA Air Quality Guidelines to evaluate air pollutant emissions from new sources. Additionally, the Clean Air Plan includes mobile source measures that would reduce emissions by accelerating the replacement of older, dirtier vehicles and equipment through programs such as the BAAQMD's Vehicle Buy-Back and Smoking Vehicle Programs and by promoting advanced technology vehicles that reduce emissions. The implementation of these measures relies heavily on incentive programs, such as the Carl Moyer Program and the Transportation Fund for Clean Air, to achieve voluntary emission reductions in advance of or in addition to CARB requirements. CARB has new regulations that require the replacement or retrofit of on-road trucks, construction equipment, and other specific equipment that is diesel powered. The Clean Air Plan also includes transportation control measures (TCMs) that are strategies meant to reduce vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion for the purpose of reducing motor vehicle emissions. While most of the TCMs are implemented at the regional level (that is, by MTC or Caltrans), the Clean Air Plan relies on local communities to assist with implementation of some measures. In addition, the Clean Air Plan includes land use measures and energy and climate measures whose implementation is aided by proper land use planning decisions.

The BAAQMD's 2010 Clean Air Plan includes various control strategies to reduce emissions of local and regional pollutants and promote public health and energy conservation. Consistent with the control strategies identified in the Clean Air Plan, the proposed Draft LUTE include numerous provisions to reduce emissions of local and regional pollutants and to promote public health and

energy conservation. The Clean Air Plan control strategies and policy provisions that are most applicable are summarized in **Table 3.5-7**.

**TABLE 3.5-7**
**DRAFT LUTE CONSISTENCY WITH CLEAN AIR PLAN CONTROL STRATEGIES**

| Clean Air Plan Strategies | Draft LUTE Policies and Actions |
|---|---|
| **Transportation Control Measures** | |
| TCM A: Improve Transit Services<br>A-1 Improve Local & Areawide Bus Service<br>A-2: Improve Local & Regional Rail Service | Policy 2/Action 1; Policy 5/Action 4; Policy 6/Action 2; Policy 7; Policy 8/Action 6; Policy 19/Action 1; Policy 20/Action 2; Policy 46/Actions 2, 3, 4, & 5; Policy 48/Action 1 |
| TCM B: Improve System Efficiency<br>B-1: Freeway & Arterial Operational Strategies<br>B-2: Transit Efficiency & Use Strategies<br>B-3: Bay Area Express Lane Network<br>B-4: Goods Movement Improvements & Emission Reduction Strategies | Policy 1/Actions 1 & 2; Policy 4/Action 1; Policy 6/Actions 1 & 2; Policy 7; Policy 8/Action 6; Policy 19; Policy 20/Action 1; Policy 22/Action 1; Policy 23/Actions 1, 2, & 3; Policy 29; Policy 37 |
| TCM C: Encourage Sustainable Travel Behavior<br>C-1: Voluntary Employer Based Trip Reduction Program<br>C-2: Safe Routes to School & Safe Routes to Transit<br>C-3: Rideshare Services and Incentives<br>C-4: Conduct Public Outreach & Education<br>C-5: Smart Driving | Policy 5/Action 3; Policy 19; Policy 20/Action 2; Policy 21/Action 1; Policy 22; Policy 24; Policy 25; Policy 33; Policy 34; Policy 36; Policy 40/Actions 1, 2, 3, 4, & 5; Policy 44; Policy 48 |
| TCM D: Support Focused Growth<br>D-1: Bicycle Access & Facilities Improvement<br>D-2: Pedestrian Access & Facilities Improvement<br>D-3: Local Land Use Strategies | Policy 2/Actions 1, 3, & 4; Policy 5/Action 4; Policy 6/Action 1; Policy 18/Action 1; Policy 20/Action 2; Policy 21/Action 1; Policy 33; Policy 40/Actions 2 & 5; Policy 48/Action 2 |
| TCM E: Implement Pricing Strategies<br>E-1: Value Pricing Strategies<br>E-2: Promote Parking Pricing to Reduce Motor Vehicle Travel<br>E-3: Implement Transportation Parking Reform | Policy 1/Action 3; Policy 19/Action 2; Policy 25; Policy 28; Policy 31/Actions 1, 2, & 3 |
| **Land Use & Local Impact Measures** | |
| LUM 1: Goods Movement<br>LUM 4: Land Use Guidance | Policy 1/Actions 1 & 2; Policy 2/Actions 1, 2, 3, & 4; Policy 4; Policy 6/Action 1; Policy 20/Action 1; Policy 53/Action 3 |

| Clean Air Plan Strategies | Draft LUTE Policies and Actions |
|---|---|
| **Energy & Climate Measures** | |
| ECM 1: Energy Efficiency<br>ECM 2: Renewable Energy<br>ECM 3: Urban Heat Island Mitigation<br>ECM 4: Shade Tree Planting | Policy 12; Policy 14; Policy 15; Policy 16; Policy 18<br><br>In addition, future development within the plan area would be required to comply with the provisions of the Sunnyvale Climate Action Plan (CAP). Ways in which the project could comply include but are not limited to the following (see Section 3.13, Greenhouse Gases and Climate Change):<br>• Use of energy-efficient lighting technologies for parking lot lighting.<br>• Installation of interior real-time energy monitors.<br>• Installation of new and resurfaced parking lots, sidewalks, and crosswalks made of materials with high reflectivity, such as concrete or reflective aggregate in paving materials.<br>• Pre-wiring for solar water heating and solar electricity.<br>• Reduction of potable indoor water consumption by 30 percent (Tier 1 CALGreen) and outdoor landscaping water use by 40 percent.<br>• Installation of electrical outlets on the exterior of building at an accessible location to charge electric-powered lawn and garden equipment.<br>• Designation of preferred parking stalls for electric, hybrid, and other alternative-fuel vehicles in all public and private parking lots consistent with the California Green Building Code.<br>• Use of high reflectivity materials for paving and roofing.<br>• Continued implementation of the City's Tree Preservation requirements, development of canopy coverage for parking lots, and expansion of open space. |

The proposed Draft LUTE seeks to reduce the environmental impact (including air quality) of land use development by increasing the viability of walking, biking, and transit. The proposed LUTE supports the development of projects that facilitate and enhance the use of alternative modes of transportation, including pedestrian-oriented retail and activity centers and dedicated bicycle lanes and paths. For example, the proposed Draft LUTE states that the areas of focused change under the proposed Draft LUTE include the Nodes on El Camino Real, newly identified Village Centers, the Lawrence Station area, and the Peery Park industrial/office area. The focus of future development goals in these areas includes: transforming older shopping centers and office areas into new mixed-use development centers that provide close-in services and residential diversity (mixed-use projects provide land use arrangements that reduce reliance on automobiles and improve opportunities for pedestrian, bicycle, and transit use); developing a transit village near the Caltrain Lawrence Station with increased housing and business intensity and supporting services; and developing pockets of more intensive industrial and office development on corridors such as Mathilda Avenue in anticipation of future improved north/south transit, and along Tasman Avenue near the Reamwood light rail station in the Woods business area. These goals would be implemented with the proposed Actions of Draft LUTE Policy 1, which seek to promote transit-oriented and mixed-use development near transit centers such as Lawrence Station, Downtown, and El Camino Real, and in neighborhood villages by zoning the appropriate sites for mixed use development. Additionally, Draft LUTE Policy 19 proposes the use of land use planning, including mixed and higher-intensity uses, to support alternatives to the single-occupant automobile, such as walking and bicycling, and to

attract and support high investment transit such as light rail, buses, and commuter rail. Policy 19 would require that as part of the development project review process in mixed-use and other high-intensity use areas, adequate off-street loading areas for transit stops must be provided, even if bus stops are not yet located there.

Other examples of air quality–related policy provisions proposed under the proposed Draft LUTE include Policy 2, which seeks to minimize regional sprawl by endorsing strategically placed development density in Sunnyvale and by utilizing a regional approach to providing and preserving open space for the broader community. Also, Policy 33 proposes to prioritize transportation subsidies and project financing over time to the most environmentally friendly modes and services. This policy supports bicycling through planning, engineering, education, encouragement, and enforcement. Policy 46 seeks to support statewide, regional, and subregional efforts that provide for a safe, effective transportation system that serves all travel modes consistent with established service standards. Specifically, Policy 46 proposes increased expansion and enhancement to bus, light rail, commuter rail and shuttle services within Sunnyvale.

The intent of proposed Draft LUTE policies is to accommodate anticipated growth in a compact urban form, including mixed-use development, as well as focusing development along transit corridors and at other key locations. Policy provisions proposed by the LUTE support the goals of the 2010 Clean Air Plan, as they include applicable pollutant control mechanisms. Therefore, this impact is considered **less than significant**.

Mitigation Measures

None required.

### Violate an Air Quality Standard or Contribute Substantially to an Air Quality Violation During Long-Term Operations (Standard of Significance 2)

**Impact 3.5.2** Subsequent land use activities associated with implementation of the proposed Draft LUTE would not conflict with the Bay Area 2010 Clean Air Plan; however, such activities would result in a vehicle miles traveled increase greater than the projected population increase. Therefore, consistent with BAAQMD guidance, the Draft LUTE would result in an air quality violation and this impact is **significant**.

As previously described, the BAAQMD CEQA Guidelines do not contain numeric thresholds related to criteria pollutant emissions resulting from plan implementation, such as implementation of the proposed Draft LUTE. According to the BAAQMD CEQA Guidelines, in order to identify whether the proposed Draft LUTE would violate any ambient air quality standard or contribute substantially to an existing or projected air quality violation, the proposed project must demonstrate consistency with the control measures contained in the Bay Area 2010 Clean Air Plan and show that projected VMT increases as a result of the Draft LUTE are less than or equal to projected jobs and population increases (service population increases) over the plan's planning period. As demonstrated in Impact 3.5.1, the proposed Draft LUTE would be consistent with the 2010 Clean Air Plan. However, as shown in **Table 3.5-8**, the Draft LUTE would result in an estimated addition of 27,445 residents and 42,410 jobs over existing conditions by the year 2035, equating to a 30.4 percent service population increase. As further shown, the LUTE would result in the estimated addition of 939,604 daily VMT over existing conditions in 2035, an increase of 43.8 percent. As a result, VMT would increase at a higher rate than service population growth in

comparison to existing conditions. Therefore, this impact would be significant. There is no feasible mitigation that could reduce this impact.

**TABLE 3.5-8**
**SUMMARY OF EXISTING AND DRAFT LUTE VEHICLE MILES TRAVELED AND SERVICE POPULATION**

| Metric/Variable | Existing Conditions | Draft LUTE 2035 | Percentage Change |
|---|---|---|---|
| **VMT[1]** | 2,142,494 | 3,082,098 | 43.8% |
| **Service Population[2]** | 229,055 | 298,910 | 30.4% |
| Are Increases in VMT Greater Than Increases in Population Compared with Existing Conditions? | | | **Yes** |

*Source: [1]Hexagon 2015, [2]Section 2.0, Project Description, Table 2.0-2*

It is important to note that the proposed Draft LUTE would reduce result in a reduction in the VMT per capita as compared to the existing LUTE under 2035 conditions (12.0 miles per capita under the Draft LUTE versus 12.30 miles per capita under the existing LUTE).

For informational purposes, **Table 3.5-9** is presented in order to show estimated emissions resulting from operation of the new land uses allowed in Sunnyvale beyond existing conditions. It is important to note that these estimates reflect combined emissions from all the potential development allowed under the proposed land use changes in the Draft LUTE and do not reflect emissions attributable to individual projects, as none are currently proposed. However, the proposed project does not include any provisions which require that its growth potential be attained. Not all of the identified land will be available for development at any given time based on site readiness, environmental constraints, market changes, and other factors. This impact analysis assumes the "worst-case" potential under the proposed project in order to present the maximum amount of pollutant emissions possible and thus a conservative analysis.

**TABLE 3.5-9**
**CRITERIA POLLUTANT AND PRECURSOR EMISSIONS (NEW DEVELOPMENT IN 2035)[1]**

| Source | ROG | $NO_X$ | CO | $SO_2$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|
| **LUTE New Development (Summer) – Pounds per Day** | | | | | | |
| Area Sources | 740.6 | 14.3 | 1,243.6 | 0.0 | 19.9 | 19.7 |
| Energy Sources | 15.1 | 132.5 | 80.5 | 0.8 | 10.4 | 10.4 |
| Mobile Sources[2] | 309.9 | 465.0 | 2,602.9 | 10.4 | 736.9 | 204.5 |
| ***Total*** | ***1,065.7*** | ***611.9*** | ***3,927.1*** | ***11.3*** | ***767.2*** | ***234.7*** |
| **LUTE New Development (Winter) – Pounds per Day** | | | | | | |
| Area Sources | 740.6 | 14.3 | 1,243.6 | 0.0 | 19.9 | 19.7 |
| Energy Sources | 15.1 | 132.5 | 80.5 | 0.8 | 10.4 | 10.4 |
| Mobile Sources[2] | 321.6 | 510.3 | 3,094.6 | 9.81 | 736.9 | 204.5 |
| ***Total*** | ***1,077.4*** | ***657.2*** | ***4,418.9*** | ***10.7*** | ***767.3*** | ***234.7*** |
| **LUTE New Development (Annual) – Tons per Year** | | | | | | |
| Area Sources | 128.3 | 1.29 | 111.8 | 0.0 | 0.6 | 0.6 |
| Energy Sources | 2.7 | 24.1 | 14.7 | 0.1 | 1.9 | 1.9 |
| Mobile Sources[2] | 54.5 | 89.4 | 504.5 | 1.8 | 129.6 | 36.1 |
| ***Total*** | ***185.6*** | ***114.9*** | ***631.1*** | ***1.9*** | ***132.1*** | ***38.6*** |

*Source: CalEEMod 2013.2.2 (see **Appendix B**)*

*Notes:*

1. *Emission projections account for 15,100 new residential units and 12.5 million square feet of non-residential square footage.*
2. *Emission projections account for the trip generation rates and vehicle miles traveled identified in the transportation impact analysis prepared for the project (Hexagon 2015, **Appendix C**).*

Long-term operational emissions attributable to new development allowed under the proposed LUTE are summarized in **Table 3.5-9**. New development would result in a net increase of approximately 185.6 tons per year of ROG, 114.9 tons per year of NOx, 631.1 tons per year of CO, 132.1 tons per year of $PM_{10}$, and 38.6 tons per year of $PM_{2.5}$ beyond existing conditions. It is important to note that these emissions estimates reflect combined emissions from all proposed land uses and do not reflect emissions attributable to individual projects.

As previously described, the BAAQMD CEQA Guidelines do not contain numeric thresholds related to criteria pollutant emissions resulting from plan implementation. According to the BAAQMD CEQA Guidelines, in order to identify whether the proposed LUTE would violate any ambient air quality standard or contribute substantially to an existing or projected air quality violation, it must demonstrate consistency with the control measures contained in the Bay Area 2010 Clean Air Plan and show that projected VMT increases as a result of the project are less than or equal to projected service population increases over the LUTE planning period. As previously described, the proposed LUTE is consistent with the 2010 Clean Air Plan. However, VMT would increase at a higher rate than service population growth in comparison to existing conditions. Therefore, this impact would be **significant and unavoidable**.

Mitigation Measures

As noted under Impact 3.5.1, the Draft LUTE seeks to increase the viability of walking, biking, and transit that would reduce vehicle use. The Draft LUTE supports the development of projects that facilitate and enhance the use of alternative modes of transportation, including pedestrian-oriented retail and activity centers and dedicated bicycle lanes and paths. For example, the proposed Draft LUTE states that the areas of focused change under the proposed Draft LUTE include the Nodes on El Camino Real, newly identified Village Centers, the Lawrence Station area, and the Peery Park industrial/office area. The focus of future development goals in these areas include transforming older shopping centers and office areas into new mixed-use development centers that provide close-in services and residential diversity (mixed-use projects provide land use arrangements that reduce reliance on automobiles and improve opportunities for pedestrian, bicycle, and transit use), developing a transit village near the Caltrain Lawrence Station with increased housing and business intensity and supporting services, and developing pockets of more intensive industrial and office development on corridors such as Mathilda Avenue in anticipation of future improved north/south transit, and along Tasman Avenue near the Reamwood light rail station in the Woods business area. These goals would be implemented with the proposed actions of Draft LUTE Policy 1 and 19.

Even with the Draft LUTE's focus on infill and alternative transportation modes, there are no feasible measures to further reduce VMT without substantially altering the Draft LUTE and reducing its infill development potential.

### Violate an Air Quality Standard or Contribute Substantially to an Air Quality Violation During Short-Term Construction Activities (Standard of Significance 2)

**Impact 3.5.3** Subsequent land use activities associated with implementation of the proposed Draft LUTE could result in short-term construction emissions that could violate or substantially contribute to a violation of federal and state standards. This is considered a **significant** impact.

Development allowed under the LUTE would include the potential construction of approximately 15,100 dwelling units and more than 12.5 million square feet of nonresidential land uses. Emissions commonly associated with construction activities include fugitive dust from soil disturbance, fuel combustion from mobile heavy-duty diesel- and gasoline-powered equipment, portable auxiliary equipment, and worker commute trips. During construction, fugitive dust, the dominant source of $PM_{10}$ and $PM_{2.5}$ emissions, is generated when wheels or blades disturb surface materials. Uncontrolled dust from construction can become a nuisance and potential health hazard to those living and working nearby. Demolition and renovation of buildings can also generate $PM_{10}$ and $PM_{2.5}$ emissions. Construction projects can also produce ozone precursors. Off-road construction equipment is often diesel-powered and can be a substantial source of nitrogen oxide ($NO_X$) emissions, in addition to exhaust $PM_{10}$ and $PM_{2.5}$ emissions. Worker commute trips and architectural coatings are dominant sources of reactive organic gas (ROG) emissions.

Quantifying the air quality pollutant emissions from future, short-term, temporary construction activities allowed under the proposed Draft LUTE is not possible due to project-level variability and uncertainties related to future individual projects in terms of detailed site plans, construction schedules, equipment requirements, etc., which are not currently determined. However, depending on how development proceeds, construction-generated emissions associated with the Draft LUTE could potentially exceed BAAQMD thresholds of significance. Therefore, future project-level analyses of air quality impacts may be conducted on a case-by-case basis as individual, future development projects allowed under the Draft LUTE proceed.

The BAAQMD has promulgated methodology protocols for the preparation of air quality analyses. For instance, the BAAQMD has adopted thresholds of significance depicting the approximate level of construction-generated emissions that would result in a potentially significant impact (i.e., violation of an ambient air quality standard) for each pollutant of concern in the SFBAAB. The significance criteria established by the BAAQMD may be relied upon to make a determination of impact significance level. In addition, the BAAQMD recommends appropriate emissions modeling input parameters for the SFBAAB in addition to other recommended procedures for evaluating potential air quality impacts during the environmental review process consistent with CEQA requirements.

Projects estimated to exceed BAAQMD significance thresholds are required to implement mitigation measures in order to reduce air pollutant emissions as much as feasible. Such measures could include the requirement that all construction equipment employ the use of the most efficient diesel engines available, which are able to reduce $NO_X$, $PM_{10}$, and $PM_{2.5}$ emissions by 60–90 percent (e.g., EPA-classified Tier 3 and/or Tier 4 engines[1]), and/or that construction equipment be equipped with diesel particulate filters. Furthermore, all development projects in the SFBAAB are subject to BAAQMD rules and regulations adopted to reduce air pollutant emissions. For example, BAAQMD Regulation 8, Rule 3, Architectural Coatings, limits the quantity of volatile organic compounds in architectural coatings supplied, sold, offered for sale, applied, solicited for application, or manufactured for use within the district. Regulation 8, Rule 15, Emulsified and Liquid Asphalts, limits the emissions of volatile organic compounds caused by the use of emulsified and liquid asphalt in paving materials and paving and maintenance operations.

While the BAAQMD has promulgated methodology protocols for the preparation of air quality analyses, and future development projects allowed under the LUTE that are projected to exceed BAAQMD significance thresholds are required to implement mitigation measures in order to reduce air pollutant emissions as much as feasible, BAAQMD significance thresholds may still be exceeded during project construction. Since it cannot be guaranteed that construction of future projects allowed under the LUTE would generate air pollutant emissions below BAAQMD significance thresholds due to the programmatic and conceptual nature of the proposed Draft LUTE and uncertainties related to future individual projects, this is considered a **significant** impact. Mitigation is required in order to reduce construction-generated air pollutants.

[1] NOx emissions are primarily associated with use of diesel-powered construction equipment (e.g., graders, excavators, rubber-tired dozers, tractor/loader/backhoes). The Clean Air Act of 1990 directed the EPA to study, and regulate if warranted, the contribution of off-road internal combustion engines to urban air pollution. The first federal standards (Tier 1) for new off-road diesel engines were adopted in 1994 for engines over 50 horsepower and were phased in from 1996 to 2000. In 1996, a Statement of Principles pertaining to off-road diesel engines was signed between the EPA, CARB, and engine makers (including Caterpillar, Cummins, Deere, Detroit Diesel, Deutz, Isuzu, Komatsu, Kubota, Mitsubishi, Navistar, New Holland, Wis-Con, and Yanmar). On August 27, 1998, the EPA signed the final rule reflecting the provisions of the Statement of Principles. The 1998 regulation introduced Tier 1 standards for equipment under 50 horsepower and increasingly more stringent Tier 2 and Tier 3 standards for all equipment with phase-in schedules from 2000 to 2008. As a result, all off-road, diesel-fueled construction equipment manufactured in 2006 or later has been manufactured to Tier 3 standards.

On May 11, 2004, the EPA signed the final rule introducing Tier 4 emission standards, which are currently phased-in over the period of 2008-2015. The Tier 4 standards require that emissions of PM and NOx be further reduced by about 90 percent. All off-road, diesel-fueled construction equipment manufactured in 2015 or later will be manufactured to Tier 4 standards.

Mitigation Measures

**MM 3.5.3** The following will be added as policies to the Environmental Management Chapter of the General Plan:

NEW POLICY: Prior to the issuance of grading or building permits, the City of Sunnyvale shall ensure that the Bay Area Air Quality Management District's (BAAQMD) basic construction mitigation measures from Table 8-1 of the BAAQMD 2011 CEQA Air Quality Guidelines (or subsequent updates) are noted on the construction documents.

NEW POLICY: In the cases where construction projects are projected to exceed the BAAQMD's air pollutant significance thresholds for $NO_X$, $PM_{10}$, and/or $PM_{2.5}$, all off-road diesel-fueled equipment (e.g., rubber-tired dozers, graders, scrapers, excavators, asphalt paving equipment, cranes, tractors) shall be at least California Air Resources Board (CARB) Tier 3 Certified or better.

Implementation of the above policy provisions would likely mitigate most construction emissions from development under the LUTE by dust control and construction equipment emission control. However, the extent of construction that may occur at any specific period of time is currently unknown to determine whether the above mitigation measures would fully mitigate this temporary impact below BAAQMD thresholds. Given this uncertainty, this impact is **significant and unavoidable**.

### Expose of Sensitive Receptors to Substantial Carbon Monoxide Pollutant Concentrations (Standard of Significance 3)

**Impact 3.5.4** Subsequent land use activities associated with implementation of the proposed Draft LUTE would not contribute to localized concentrations of mobile-source CO that would exceed applicable ambient air quality standards. This is considered a **less than significant** impact.

The primary mobile-source criteria pollutant of local concern is carbon monoxide. Concentrations of CO are a direct function of the number of vehicles, length of delay, and traffic flow conditions. Transport of this criteria pollutant is extremely limited; CO disperses rapidly with distance from the source under normal meteorological conditions. Under certain meteorological conditions, however, CO concentrations close to congested intersections that experience high levels of traffic and elevated background concentrations may reach unhealthy levels, affecting nearby sensitive receptors. Areas of high CO concentrations, or "hot spots," are typically associated with intersections that are projected to operate at unacceptable levels of service during the peak commute hours.[2] Modeling is therefore typically conducted for intersections that are projected to operate at unacceptable levels of service during peak commute hours.

[2] Level of service (LOS) is a measure used by traffic engineers to determine the effectiveness of transportation infrastructure. Level of service is most commonly used to analyze intersections by categorizing traffic flow with corresponding safe driving conditions. LOS A is considered the most efficient level of service and LOS F the least efficient.

Based on BAAQMD guidance, projects meeting all of the following screening criteria would be considered to have a less than significant impact on localized carbon monoxide concentrations if:

1. The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.

2. The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

According to the traffic impact analysis prepared for the Draft LUTE (Hexagon 2015; see **Appendix C**), none of the traffic volumes at any intersection would experience more than 44,000 vehicles per hour. Similarly, the project would not result in 24,000 vehicles per hour where vertical and/or horizontal mixing of pollutants and atmosphere is substantially limited (i.e., an enclosed parking structure). As a result, this impact would be considered **less than significant**.

Mitigation Measures

None required.

**Expose of Sensitive Receptors to Substantial Toxic Air Contaminant Concentrations During Construction (Standard of Significance 3)**

**Impact 3.5.5** Subsequent land use activities associated with implementation of the proposed Draft LUTE could result in increased exposure of existing or planned sensitive land uses to construction-source toxic air contaminant (TAC) emissions. This impact is considered **potentially significant**.

Sensitive land uses are defined as facilities or land uses that include members of the population who are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers.

Implementation of the Draft LUTE would result in the construction of new dwelling units and nonresidential square footage. Sources of construction-related TACs potentially affecting sensitive receptors include off-road diesel-powered equipment. Construction would result in the generation of diesel PM emissions from the use of off-road diesel equipment required for site grading and excavation, paving, and other construction activities. The amount to which the receptors are exposed (a function of concentration and duration of exposure) is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). Health-related risks associated with diesel-exhaust emissions are primarily linked to long-term exposure and the associated risk of contracting cancer. Concentrations of mobile-source diesel PM emissions are typically reduced by 70 percent at a distance of approximately 500 feet (CARB 2005). In addition, current models and methodologies for conducting health risk assessments are associated with longer-term exposure periods of 9, 40, and 70 years, which do not correlate well with the temporary and highly variable nature of construction activities.

In the case of most construction projects allowed under the Draft LUTE, duration would be short term, lasting less than one year. According to the BAAQMD (2011), construction-generated diesel PM emissions contribute to negative health impacts when construction is extended over

lengthy periods of time. The use of diesel-powered construction equipment during construction would be temporary and episodic and would occur over several locations isolated from one another. Furthermore, future development allowed under the proposed Draft LUTE would be subject to and would comply with California regulations limiting idling to no more than 5 minutes, which would further reduce nearby sensitive receptors exposure to temporary and variable diesel PM emissions. Many of the individual construction projects would span small areas. Construction projects contained in a site of less than 5 acres are generally considered to represent less than significant health risk impacts due to (1) limitations on the off-road diesel equipment able to operate and thus a reduced amount of generated diesel PM, (2) the reduced amount of dust-generating ground disturbance possible compared to larger construction sites, and (3) the reduced duration of construction activities compared to the development of larger sites. For these reasons and because diesel fumes disperse rapidly over relatively short distances, diesel PM generated by most construction activities, in and of itself, would not be expected to create conditions where the probability of contracting cancer is greater than 10 in one million for nearby receptors. In addition, mitigation measure **MM 3.5.3** requires that off-road diesel-fueled equipment employed during construction activities be CARB Tier 3 Certified or better when construction activities are projected to exceed $NO_X$ and PM thresholds. Implementation of this mitigation measure would reduce the emissions of toxic pollutants generated by heavy-duty diesel-powered equipment during larger-scale construction projects. Also, mitigation measure **MM 3.5.3** requires the employment of BAAQMD basic construction mitigation measures during all construction projects. These basic construction mitigation measures include measures that would substantially reduce nuisance fugitive dust.

Nonetheless, larger-scale construction projects may occur under the Draft LUTE. Additionally, there is a potential for construction to occur in close proximity to residential and other sensitive land uses, making this impact **potentially significant** and requiring the following mitigation.

Mitigation Measures

**MM 3.5.5** The following will be added as policies to the Environmental Management Chapter of the General Plan:

NEW POLICY: In the case when a subsequent project's construction span is greater than 5 acres and/or is scheduled to last more than two years, the subsequent project applicant shall be required to prepare a site-specific construction pollutant mitigation plan in consultation with Bay Area Air Quality Management District (BAAQMD) staff prior to the issuance of grading permits. A project-specific construction-related dispersion modeling acceptable to the BAAQMD shall be used to identify potential toxic air contaminant impacts, including diesel particulate matter. If BAAQMD risk thresholds (i.e., probability of contracting cancer is greater than 10 in one million) would be exceeded, mitigation measures shall be identified in the construction pollutant mitigation plan to address potential impacts and shall be based on site-specific information such as the distance to the nearest sensitive receptors, project site plan details, and construction schedule. The City shall ensure construction contracts include all identified measures and that the measures reduce the health risk below BAAQMD risk thresholds. Construction pollutant mitigation plan measures shall include but not be limited to:

1. Limiting the amount of acreage to be graded in a single day.

2. Restricting intensive equipment usage and intensive ground disturbance to hours outside of normal school hours.

3. Notifying affected sensitive receptors one week prior to commencing on-site construction so that any necessary precautions (such as rescheduling or relocation of outdoor activities) can be implemented. The written notification shall include the name and telephone number of the individual empowered to manage construction of the project. In the event that complaints are received, the individual empowered to manage construction shall respond to the complaint within 24 hours. The response shall include identification of measures being taken by the project construction contractor to reduce construction-related air pollutants. Such a measure may include the relocation of equipment.

As previously stated, implementation of mitigation measure **MM 3.5.3** requires the use of specified off-road construction equipment manufactured to Tier 3 standards or higher during all construction activities. Compared to current standards, Tier 3 standards for heavy-duty vehicles represent approximately a 60 percent reduction in per vehicle PM emissions compared with equipment that does not meet the Tier 3 standard (EPA 2014). Implementation of this mitigation measure would reduce the emissions of toxic pollutants generated by heavy-duty diesel-powered equipment during construction. Also, mitigation measure **MM 3.5.3** requires that BAAQMD basic construction mitigation measures be employed. These basic construction mitigation measures include measures that would substantially reduce nuisance fugitive dust. Mitigation measure **MM 3.5.5** requires a site-specific analysis of large-scale construction projects (greater than 5 acres lasting longer than two years) for the potential for construction-generated air pollutant impacts based on specific project details of future development, and the development of adequate mitigation, in consultation with the BAAQMD, to address any such impacts. As a result, implementation of these mitigation measures would reduce the impact to **less than significant**.

### Expose of Sensitive Receptors to Substantial Toxic Air Contaminant Concentrations During Operations (Standard of Significance 3)

**Impact 3.5.6** Subsequent land use activities associated with implementation of the proposed Draft LUTE could result in the development of housing units (sensitive land uses) near stationary or mobile-source TACs. In addition, future development could generate new sources of TACs in the city, which could expose existing or new sensitive receptors to unhealthy levels of TACs and $PM_{2.5}$. This impact is **potentially significant**.

There are many different types of TACs, with varying degrees of toxicity. Sources of TACs potentially affecting the sensitive receptors include mobile sources, such as freeways and diesel locomotive trains. These mobile sources are sources of diesel PM, which CARB has listed as a toxic air contaminant. Sensitive receptors can also be exposed to stationary sources, such as gasoline stations, dry cleaners, certain manufacturing operations, and backup generators. There is a potential that future sensitive receptors in Sunnyvale could be exposed to TAC emissions from stationary and/or mobile sources, depending on location. Additionally, there is a potential that new TAC sources could be constructed, exposing existing or new sensitive receptors to air toxics.

The primary mobile sources affecting Sunnyvale includes the Caltrain corridor, the major streets, Central Expressway, El Camino Real, Lawrence Expressway, Mathilda Avenue, and Sunnyvale-Saratoga Road, and the highways, US 101, State Route (SR) 237, and SR 85. Stationary sources of TACs within and adjacent to Sunnyvale include gasoline stations, emergency backup generators, and dry cleaning facilities.

The primary TAC emitted by trains traversing Sunnyvale is diesel PM. Caltrain trains presently consist of diesel locomotive–hauled, bi-level passenger cars. As of mid- 2013, Caltrain operates 46 northbound and 46 southbound (for a total of 92) trains per day between San Jose and San Francisco during the week (PCJPB 2014). According to the Caltrain Electrification Project Draft Environmental Impact Report (PCJPB 2014), electrification of the Caltrain rail line is scheduled to be operational by 2019 and approximately 75 percent of Caltrain trains would be powered by electricity instead of with diesel fuel. By 2040, 100 percent of Caltrain trains are scheduled to be powered by electricity. Electrification of the Caltrain rail line would substantially reduce PM emissions compared both with existing conditions and with the "no electrification" 2020 and 2040 scenarios (PCJPB 2014). According to the Caltrain Electrification Project Draft Environmental Impact Report (PCJPB 2014), PM emissions generated along the Caltrain corridor between San Jose and San Francisco would be reduced by 71 percent in 2020 and by 100 percent in 2040. Cancer risks from the Caltrain rail line would be reduced from a probability of contracting cancer of 24 in one million for nearby receptors, which exceeds the individual-source significance threshold, to a probability of contracting cancer of 10 in one million, which is within the individual-source threshold.

Diesel PM is also the primary TAC associated with the major roadways and highways traversing Sunnyvale. Recent regulations imposed by CARB are anticipated to substantially reduce future diesel PM emissions. CARB has adopted the Diesel Risk Reduction Plan (DRRP), which recommends many control measures to reduce the risks associated with diesel PM and achieve a reduction goal of 85 percent by 2020. The DRRP incorporates measures to reduce emissions from diesel-fueled vehicles and stationary diesel-fueled engines. CARB's ongoing efforts to reduce diesel-exhaust emissions from these sources include the development of specific statewide regulations, which are designed to further reduce diesel PM emissions. The goal of each regulation is to make diesel engines as clean as possible by establishing state-of-the-art technology requirements or emission standards to reduce diesel PM emissions. Since the initial adoption of the DRRP in September 2000, CARB has adopted numerous rules related to the reduction of diesel PM from mobile sources, as well as the use of cleaner-burning fuels. (Transportation sources addressed by these rules that pertain to projects in Sunnyvale include public transit buses, school buses, on-road heavy-duty trucks, and off-road heavy-duty construction equipment.) For instance, CARB's On-Road Heavy-Duty Diesel Vehicles (In Use) Regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Heavier trucks were required to be retrofitted with particulate matter filters beginning January 1, 2012, and older trucks were required to be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent. The regulation applies to nearly all privately and federally-owned diesel-fueled trucks and buses, as well as to privately and publicly owned school buses with a gross vehicle weight rating greater than 14,000 pounds.

The City of Sunnyvale has numerous permitted stationary sources. These sources are located throughout the city but mostly in industrial and commercial areas. As previously stated, TACs within and adjacent to Sunnyvale predominately include gasoline stations, emergency backup generators, and dry cleaning facilities. In April 2005, CARB released the *Air Quality and Land Use Handbook: A Community Health Perspective*, which offers guidance on siting sensitive land uses in proximity to sources of air toxics. CARB recommends the avoidance of siting new sensitive

land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50-foot separation is recommended for typical gas dispensing facilities. According to the California Energy Commission (2015), a typical gas dispensing facility averages a throughput of 1.58 million gallons annually.

Electricity generators that are powered by diesel engines are common. They are typically located at facilities where uninterrupted electricity is necessary. Common facilities include fire and police stations, hospital or medical treatment facilities, pump stations, schools, offices, and data centers. Diesel engines powering these generators are regulated by the BAAQMD and CARB. CARB has established strict emissions limits and operating restrictions for engines larger than 50 horsepower. The BAAQMD has developed criteria (Regulation 2, Rule 5) for approval of projects with new or modified emission sources of TACs. As a result, all new engines have very localized impacts and would not be permitted if they would cause significant cancer risks or hazards. Existing engines are only permitted to operate for 50 hours per year for maintenance or routine testing. Furthermore, back-up generators only operate during a power outage.

Perchlorethylene (Perc) is the solvent used commonly in past dry cleaning operations. Perc is a TAC, because it has the potential to cause cancer. In 2005, CARB recommended setbacks of 300 feet between dry cleaning facilities that emit Perc and sensitive land uses. Since then, CARB has enacted new rules to substantially reduce Perc emissions and phase out the use of dry cleaning operations that produce these emissions. Cancer risks, on which CARB based their recommended buffers, are computed over a 70-year almost continuous exposure. The Perc exposures would be reduced by 80 percent or more as a result of the new ACTM amendments. As a result, siting of new sensitive receptors could be allowed within 100 feet of these operations.

Implementation of the following Draft LUTE policies and actions would further reduce the exposure of additional people to potential risks from TACs:

Policy 57: Limit the intrusion of incompatible uses and inappropriate development in and near residential neighborhoods, but allow transition areas at the edges of neighborhoods.

Policy 90: Use density and design principles, such as physical transitions, between different land uses and to buffer between sensitive uses and less compatible uses.

Policy 101: Action 2: During transition from industrial to residential uses, anticipate and monitor compatibility issues between residential and industrial uses (e.g., noise, odors, hazardous materials).

The BAAQMD CEQA Air Quality Guidelines consider exposure of sensitive receptors to air pollutant levels that result in an unacceptable cancer risk or hazard to be significant. Per BAAQMD guidance, all TAC sources within 1,000 feet of a proposed sensitive receptor need to be identified and analyzed. If emissions of TAC concentrations at a new sensitive receptor generated from all air toxics sources within a 1,000-foot radius result in the exceedance of an excess cancer risk level of more than 100 in one million, or a non-cancer hazard index greater than 10, the project would result in a significant impact.[3] The BAAQMD CEQA Guidelines also consider exposure to annual $PM_{2.5}$ concentrations that exceed 0.8 micrograms per cubic meter ($\mu g/m^3$) from all TAC sources within a 1,000-foot radius to be significant. Sensitive receptors can also be exposed to TAC concentrations from future nonresidential land uses allowed under the

[3] The Hazard Index is the ratio of the computed receptor exposure level to the level known to cause acute or chronic adverse health impacts, as identified by the BAAQMD.

LUTE. For example, development projects that involve gas stations, dry cleaners, and/or other point source emissions requiring a BAAQMD permit. Additionally, development projects that involve numerous heavy-duty truck trips on-site create substantial quantities of diesel PM emissions and therefore can negatively affect sensitive land uses. According to CAPCOA's (2009) Health Risk Assessments for Proposed Land Use Projects, operations that require more than 100 delivery trucks daily are considered a potential health risk.

The BAAQMD has developed health risk screening tools that are intended to assist with TAC-related air quality analyses. The BAAQMD health risk screening tools interface with Google Earth to allow a user to identify stationary, freeway, roadway, and train sources within 1,000 feet of a receptor (BAAQMD 2012a, 2012b, 2015b, 2015c). In addition to source identification, the tools identify conservative screening levels of cancer risk, hazards, and $PM_{2.5}$ concentrations. TAC sources that show the potential for significant community risk impacts after this first level of review are further analyzed by contacting the BAAQMD for additional information and applying distance adjustment factors. A refined modeling analysis would be required if there are sources that still have potentially significant impacts after this level of review. A refined analysis would include dispersion modeling of the source using emissions and source information provided by the BAAQMD. If the source still has significant community risk impacts following this level of effort, the development project would be required to implement risk reduction strategies on a case-by-case basis.

The proposed Draft LUTE would also allow for the potential development of nonresidential land uses that are TAC emissions sources. Typically, new TAC sources would be evaluated through the BAAQMD permit process or the CEQA process to identify and mitigate any significant exposures. As previously described, the BAAQMD has developed criteria (Regulation 2, Rule 5) for approval of projects with new or modified emission sources of TACs. Pursuant to BAAQMD Regulation 2, Rule 5, stationary sources having the potential to emit TACs are required to obtain permits from the BAAQMD. Permits may be granted to these operations provided they are operated in accordance with applicable BAAQMD rules and regulations. BAAQMD's permitting procedures require substantial control of emissions, and permits are not issued unless TAC risk screening or TAC risk assessment can show that risks are not significant. However, some new TAC sources, such as truck loading docks or truck parking areas, do not require a BAAQMD permit and would not be subject such a process, thereby resulting in the potential to cause significant increases in TAC exposure. Furthermore, the proposed LUTE would allow for the potential growth of new sensitive receptors in areas that might be exposed to substantial concentrations of air toxics. This impact would be **potentially significant**.

Mitigation Measures

**MM 3.5.6** The following will be added as policies to the Environmental Management Chapter of the General Plan:

NEW POLICY: The following measures shall be utilized in site planning and building designs to reduce TAC and $PM_{2.5}$ exposure where new receptors are located within 1,000 feet of emissions sources:

- Future development that includes sensitive receptors (such as residences, schools, hospitals, daycare centers, or retirement homes) located within 1,000 feet of Caltrain, Central Expressway, El Camino Real, Lawrence Expressway, Mathilda Avenue, Sunnyvale-Saratoga Road, US 101, State Route 237, State Route 85, and/or stationary sources shall require site-specific analysis to determine the level of health risk. This analysis shall be

conducted following procedures outlined by the BAAQMD. If the site-specific analysis reveals significant exposures from all sources (i.e., health risk in terms of excess cancer risk greater than 100 in one million, acute or chronic hazards with a hazard Index greater than 10, or annual $PM_{2.5}$ exposures greater than 0.8 $\mu g/m^3$) measures shall be employed to reduce the risk to below the threshold (e.g., electrostatic filtering systems or equivalent systems and location of vents away from TAC sources). If this is not possible, the sensitive receptors shall be relocated.

- Future nonresidential developments identified as a permitted stationary TAC source or projected to generate more than 100 heavy-duty truck trips daily will be evaluated through the CEQA process or BAAQMD permit process to ensure they do not cause a significant health risk in terms of excess cancer risk greater than 10 in one million, acute or chronic hazards with a hazard Index greater than 1.0, or annual $PM_{2.5}$ exposures greater than 0.3 $\mu g/m^3$ through source control measures.

- For significant cancer risk exposure, as defined by the BAAQMD, indoor air filtration systems shall be installed to effectively reduce particulate levels to avoid adverse public health impacts. Projects shall submit performance specifications and design details to demonstrate that lifetime residential exposures would not result in adverse public health impacts (less than 10 in one million chances).

Implementation of the above policy provisions in addition to BAAQMD permitting requirements would mitigate TAC-related impacts associated with the Draft LUTE by ensuring that adequate measures and associated performance standards are in place to mitigate this impact to a **less than significant** level.

### Creates Objectionable Odor Emissions Affecting a Substantial Number of People (Standard of Significance 4)

**Impact 3.5.7** Subsequent land use activities associated with implementation of the proposed Draft LUTE could include sources that could create objectionable odors affecting a substantial number of people or expose new residents to existing sources of odor. Thus, this impact is considered to be **potentially significant**.

The occurrence and severity of odor impacts depends on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the receptors. While offensive odors rarely cause any physical harm, they still can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and regulatory agencies. Projects with the potential to frequently expose members of the public to objectionable odors would be deemed to have a significant impact. Land uses commonly considered to be potential sources of odorous emissions include wastewater treatment plants, sanitary landfills, food processing facilities, chemical manufacturing plants, rendering plants, paint/coating operations, asphalt batch plants, agricultural feedlots, and dairies. Short-term construction activities may also result in localized increases of odorous emissions. Short- and long-term increases in localized concentrations of odors are discussed below.

### Short-Term Exposure to Odors

Construction within Sunnyvale under the proposed Draft LUTE is not anticipated to expose nearby receptors to objectionable odors. Construction-generated odors are typically associated with exhaust emissions from diesel-fueled equipment and the application of architectural coatings and paving materials, which may be considered objectionable to some individuals. However, because construction-related odors would be intermittent, temporary, and would disperse rapidly with distance from the source, construction-related odors would not result in the frequent exposure of a substantial number of individuals to objectionable odors. It is also important to note that projects developed under the LUTE would be required to comply with BAAQMD Regulation 8, Rule 3, Architectural Coatings, and Rule 15, Emulsified Asphalt, which establish volatile organic compound (VOC) content limits for these construction materials. VOCs are the main sources of odors from these sources. Therefore, compliance with these regulatory requirements would further reduce odor impacts associated with these sources. Short-term exposure to odorous emissions would therefore be considered **less than significant.**

### Long-Term Exposure to Odors

Subsequent land use activities associated with implementation of the proposed Draft LUTE could allow the development of uses that have the potential to produce odorous emissions during either construction or operation of future development. Additionally, subsequent land use activities may allow the construction of sensitive land uses (i.e., residential development, parks, offices, etc.) near existing or future sources of odorous emissions. Sunnyvale includes potential odor sources throughout the city that could affect new sensitive receptors. Most of these major existing sources are already buffered. However, due to the commercial or industrial nature of sections of Sunnyvale, odors may be present. Responses to odors are subjective and vary by individual and type of use. Sensitive land uses that include outdoor uses, such as residences and possibly daycare facilities, are likely to be affected most by existing odors. Implementation of the following Draft LUTE policies and actions would reduce the exposure of additional people to odors:

Policy 57: Limit the intrusion of incompatible uses and inappropriate development in and near residential neighborhoods, but allow transition areas at the edges of neighborhoods.

Policy 90: Use density and design principles, such as physical transitions, between different land uses and to buffer between sensitive uses and less compatible uses.

Policy 101: Action 2: During transition from industrial to residential uses, anticipate and monitor compatibility issues between residential and industrial uses (e.g., noise, odors, hazardous materials).

According to the BAAQMD, an odor source with five or more confirmed complaints per year averaged over three years is considered to have a significant impact. To avoid significant impacts, the BAAMQD recommends that buffer zones to avoid adverse impacts from odors should be reflected in local plan policies, land use maps, and implementing ordinances. The proposed Draft LUTE does not contain a policy provision that specifically addresses potential conflicts in land uses that could result in odor complaints. As a result, the impact would be considered **potentially significant**.

Mitigation Measures

**MM 3.5.7** The following will be added as a policy and actions to the Environmental Management Chapter of the General Plan:

NEW POLICY: Avoid Odor Conflicts. Coordinate land use planning to prevent new odor complaints.

NEW ACTION: Consult with the BAAQMD to identify the potential for odor complaints from various existing and planned or proposed land uses in Sunnyvale. Use BAAQMD odor screening distances or city-specific screening distances to identify odor potential.

NEW ACTION: Prohibit new sources of odors that have the potential to result in frequent odor complaints unless it can be shown that potential odor complaints can be mitigated.

NEW ACTION: Prohibit sensitive receptors from locating near odor sources where frequent odor complaints would occur, unless it can be shown that potential odor complaints can be mitigated.

Implementation of the above mitigation measure would ensure that adequate measures and associated performance standards are in place to mitigate potential odors impacts to **less than significant**.

## 3.5.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

### CUMULATIVE SETTING

The cumulative setting for air quality includes Sunnyvale and the San Francisco Bay Area Air Basin. The SFBAAB is designated as a nonattainment area related to the state standards for ozone, $PM_{10}$, and $PM_{2.5}$ in addition to federal ozone and $PM_{2.5}$ standards. The basin is designated as being unclassified and/or attainment for all other pollutants. Cumulative growth in population, vehicle use, and industrial activity could inhibit efforts to improve regional air quality and attain the ambient air quality standards. Thus, the setting for this cumulative analysis consists of the SFBAAB and associated growth and development anticipated in the air basin.

### CUMULATIVE IMPACTS AND MITIGATION MEASURES

**Cumulative Air Quality Impacts**

**Impact 3.5.8** Subsequent land use activities associated with implementation of the proposed Draft LUTE, in combination with cumulative development in the SFBAAB, could result in a cumulatively considerable net increase of criteria air pollutants for which the air basin is designated nonattainment. This would be a **cumulatively considerable** impact.

By its very nature, air pollution is largely a cumulative impact. According to the BAAQMD, no single project is sufficient in size, by itself, to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. In developing thresholds of significance for air pollutants, the BAAQMD considered the emission levels for which a project's individual emissions would be

cumulatively considerable. According to the BAAQMD, if a project exceeds its identified significance thresholds, the project's impact would be cumulatively considerable (BAAQMD 2011). As stated above, VMT would increase at a higher rate than service population growth in comparison to existing conditions under the proposed Draft LUTE. In addition, due to the programmatic and conceptual nature of the proposed Draft LUTE and uncertainties related to future individual projects, it cannot be guaranteed, despite mitigation, that construction of subsequent projects allowed under the Draft LUTE would generate air pollutant emissions below BAAQMD significance thresholds or that future projects would not result in the exposure of sensitive receptors to substantial concentrations of air toxics. Therefore, cumulative impacts would be **cumulatively considerable** and **significant and unavoidable**.

Mitigation Measures

Implementation of mitigation measures **MM 3.5.3** would likely mitigate most construction emissions from development under the Draft LUTE. However, the extent of construction that may occur at any specific period of time is currently unknown to determine whether the above mitigation measures would fully mitigate this temporary impact below BAAQMD thresholds. Similarly, mitigation measure **MM 3.5.6** would likely mitigate most TAC-related impacts associated with the Draft LUTE. However, the extent and/or type of development that may occur is currently unknown and therefore, it cannot be determined whether the above mitigation measures would fully mitigate this impact.

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# 3.6 Noise

This section provides background information concerning the methods and noise and vibration data utilized to assess the noise and vibration impacts resulting from the Draft LUTE. A brief summary of noise and vibration concepts is presented to assist the reader in understanding the discussion. Existing conditions were documented through noise monitoring surveys. The analysis of impacts focuses on the predominant sources of environmental noise or vibration that affect the city, including vehicular traffic, aircraft, and trains.

A summary of the impact conclusions related to noise is provided below.

| Impact Number | Impact Topic | Impact Significance |
|---|---|---|
| 3.6.1 | Expose People to or Generate Noise Levels in Excess of Standards | Less than significant |
| 3.6.2 | Substantial Increase in Ambient Noise Levels | Significant and unavoidable |
| 3.6.3 | Exposure to Groundborne Vibration | Less than significant with mitigation |
| 3.6.4 | Exposure to Short-Term Construction Noise Impacts | Less than significant with mitigation |
| 3.6.5 | Exposure to Noise from Airport Operations | Less than significant |
| 3.6.6 | Cumulative Traffic Noise Impacts | Significant and unavoidable and cumulatively considerable |

## 3.6.1 EXISTING SETTING

### FUNDAMENTALS OF SOUND AND ENVIRONMENTAL NOISE

Sound is technically described in terms of amplitude (loudness) and frequency (pitch). The standard unit of sound amplitude measurement is the decibel (dB). The decibel scale is a logarithmic scale that describes the physical intensity of the pressure vibrations which make up any sound. The pitch of the sound is related to the frequency of the pressure vibration. Because the human ear is not equally sensitive to a given sound level at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) provides this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Noise, on the other hand, is typically defined as unwanted sound because of its potential to disrupt sleep, to interfere with speech communication, and to damage hearing. A typical noise environment consists of a base of steady "background" noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources. These can vary from an occasional aircraft or train passing by to virtually continuous noise from, for example, traffic on a major highway.

### Amplitude

Amplitude is the difference between ambient air pressure and the peak pressure of the sound wave. Amplitude is measured in decibels on a logarithmic scale. Laboratory measurements correlate a 10 dB increase in amplitude with a perceived doubling of loudness and establish a 3 dB change in amplitude as the minimum audible difference perceptible to the average person.

### Frequency

Frequency is the number of fluctuations of the pressure wave per second. The unit of frequency is the Hertz (Hz). One Hertz equals one cycle per second. The human ear is not equally sensitive to sound of different frequencies. To approximate this sensitivity, environmental sound is usually measured in A-weighted decibels. On this scale, the normal range of human hearing extends from about 10 dBA to about 140 dBA. Common community noise sources and associated noise levels, in dBA, are depicted in **Figure 3.6-1**.

### Addition of Decibels

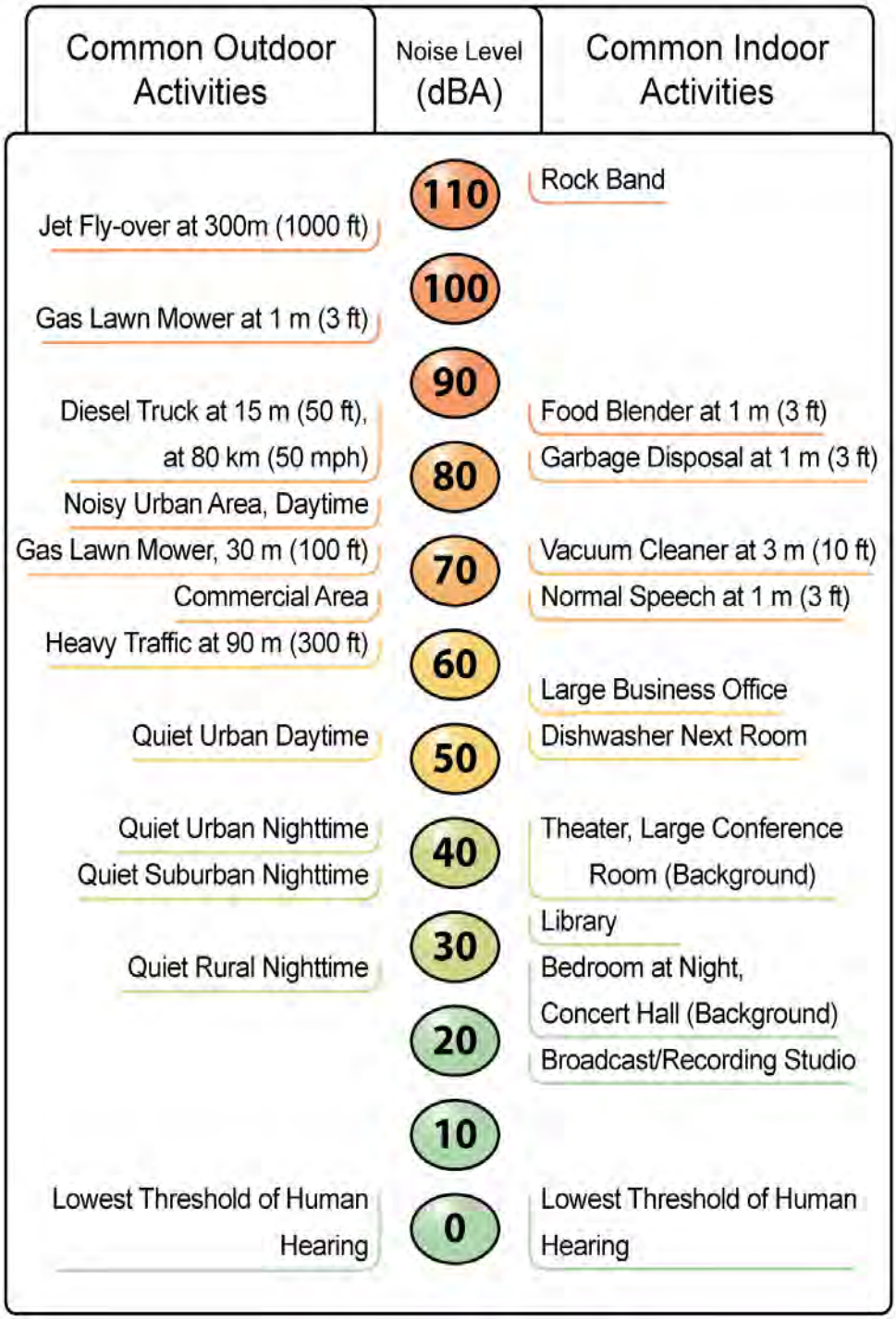
Because decibels are logarithmic units, sound levels cannot be added or subtracted using ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3 dB increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions. Under the decibel scale, three sources of equal loudness together would produce an increase of 5 dB.

### Sound Propagation and Attenuation

Sound spreads (propagates) uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of approximately 6 dB for each doubling of distance from a stationary or point source. Sound from a line source, such as a highway, propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of approximately 3 dB for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics. No excess attenuation is assumed for hard surfaces like a parking lot or a body of water. Soft surfaces, such soft dirt or grass, can absorb sound, so an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. For line sources, an overall attenuation rate of 3 dB per doubling of distance is assumed.

Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. The manner in which older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer residential units is generally 30 dBA or more.

**FIGURE 3.6-1**
**TYPICAL COMMUNITY NOISE LEVELS**




*Source: Caltrans 2012*

## NOISE DESCRIPTORS

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Several rating scales have been developed to analyze the adverse effect of community noise on people. Because environmental noise fluctuates over time, these scales consider that the effect of noise on people is largely dependent on the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The $L_{eq}$ is a measure of ambient noise, while the $L_{dn}$ and CNEL are measures of community noise. Each is applicable to this analysis and is defined in **Table 3.6-1**.

The A-weighted decibel sound level scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

**TABLE 3.6-1**
**DEFINITIONS OF ACOUSTICAL TERMS**

| Term | Definitions |
|---|---|
| Decibel, dB | A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20. |
| Sound Pressure Level | Sound pressure is the sound force per unit area, usually expressed in micropascals (or 20 micronewtons per square meter), where 1 pascal is the pressure resulting from a force of 1 newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micropascals). Sound pressure level is the quantity that is directly measured by a sound level meter. |
| Frequency, Hz | The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and ultrasonic sounds are above 20,000 Hz. |
| A-Weighted Sound Level, dBA | The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. |
| Equivalent Noise Level, $L_{eq}$ | $L_{eq}$, the equivalent energy noise level, is the average acoustic energy content of noise for a stated period of time. Thus, the $L_{eq}$ of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night. |
| $L_{max}$, $L_{min}$ | The maximum and minimum A-weighted noise level during the measurement period. |
| $L_{01}$, $L_{10}$, $L_{50}$, $L_{90}$ | The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period. |
| Day/Night Noise Level, $L_{dn}$ or DNL | $L_{dn}$, the Day-Night Average Level, is a 24-hour average $L_{eq}$ with a 10 dBA "weighting" added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour $L_{eq}$ would result in a measurement of 66.4 dBA $L_{dn}$. |
| Community Noise Equivalent Level, CNEL | CNEL, the Community Noise Equivalent Level, is a 24-hour average $L_{eq}$ with a 5 dBA "weighting" during the hours of 7:00 p.m. to 10:00 p.m. and a 10 dBA "weighting" added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively. The logarithmic effect of these additions is that a 60 dBA 24-hour $L_{eq}$ would result in a measurement of 66.7 dBA CNEL. |
| Ambient Noise Level | The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location. |
| Intrusive | That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends on its amplitude, duration, frequency, and time of occurrence and tonal or informational content, as well as the prevailing ambient noise level. |

## HUMAN RESPONSE TO NOISE

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day or night or over a 24-hour period. Environmental noise levels are generally considered low when the CNEL is below 60 dBA, moderate in the 60–70 dBA range, and high above 70 dBA. Examples of low daytime levels are isolated, natural settings that can provide noise levels as low as 20 dBA and quiet, suburban, residential streets that can provide noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate-level noise environments are urban residential or semi-commercial areas (typically 55–60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with more noisy urban residential or residential-commercial areas (60–75 dBA) or dense urban or industrial areas (65–80 dBA). Regarding increases in A-weighted noise levels (dBA), the following relationships should be noted for understanding this analysis:

- Except in carefully controlled laboratory experiments, a change of 1 dB cannot be perceived by humans.
- Outside of the laboratory, a 3 dB change is considered a just-perceivable difference.
- A change in level of at least 5 dB is required before any noticeable change in community response would be expected. An increase of 5 dB is typically considered substantial.
- A 10 dB change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

## EFFECTS OF NOISE ON PEOPLE

### Hearing Loss

While physical damage to the ear from an intense noise impulse is rare, a degradation of auditory acuity can occur even within a community noise environment. Hearing loss occurs mainly due to chronic exposure to excessive noise, but may be due to a single event such as an explosion. Natural hearing loss associated with aging may also be accelerated from chronic exposure to loud noise.

The Occupational Safety and Health Administration (OSHA) has a noise exposure standard which is set at the noise threshold where hearing loss may occur from long-term exposures. The maximum allowable level is 90 dBA averaged over 8 hours. If the noise is above 90 dBA, the allowable exposure time is correspondingly shorter.

### Sleep and Speech Interference

The thresholds for speech interference indoors are about 45 dBA if the noise is steady and above 55 dBA if the noise is fluctuating. Outdoors, the thresholds are about 15 dBA higher. Steady noise of sufficient intensity (above 35 dBA) and fluctuating noise levels above about 45 dBA have been shown to affect sleep. Interior residential standards for multi-family dwellings are set by the State of California at 45 dBA $L_{dn}$. Typically, the highest steady traffic noise level during the daytime is roughly equal to the $L_{dn}$ and nighttime levels are 10 dBA lower. The standard is designed for sleep and speech protection, and most jurisdictions apply the same criterion for all residential uses. Typical structural attenuation is 12–17 dBA with open windows. With closed windows in good condition, the noise attenuation factor is around 20 dBA for an older structure and 25 dBA for a newer dwelling. Sleep and speech interference is therefore possible when exterior noise levels are about 57–62 dBA $L_{dn}$ with open windows and 65–70 dBA $L_{dn}$ if the windows are closed. Levels of 55–60 dBA are common along collector streets and secondary arterials, while 65–70 dBA is a typical value for a primary/major arterial. Levels of 75–80 dBA are normal noise levels at the first row of development outside a freeway right-of-way. In order to achieve an acceptable interior noise environment, bedrooms facing secondary roadways need to be able to have their windows closed; those facing major roadways and freeways typically need special glass windows with Sound Transmission Class (STC) ratings greater than 30 STC.

### Annoyance

Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The $L_{dn}$ as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources. When measuring the percentage of the population highly annoyed, the threshold for ground vehicle noise is about 55 dBA $L_{dn}$. At an $L_{dn}$ of about 60 dBA, approximately 2 percent of the population is highly annoyed. When the $L_{dn}$ increases to 70 dBA, the percentage of the population highly annoyed increases to about 12 percent. There is an increase in annoyance due to ground vehicle noise of approximately 1 percent per dBA for an $L_{dn}$ of 60–70 dBA. For an $L_{dn}$ of 70–80 dBA, each decibel increase increases the percentage of the population highly annoyed by about 2 percent. People appear to respond more adversely to aircraft noise. When the $L_{dn}$ due to aircraft noise is 60 dBA, approximately 10 percent of the population is believed to be highly annoyed. Each decibel increase up to 70 dBA adds about 2 percentage points to the number of people highly annoyed. Above 70 dBA, each decibel increase in aircraft noise results in about a 3 percent increase in the percentage of the population highly annoyed.

## FUNDAMENTALS OF ENVIRONMENTAL GROUNDBORNE VIBRATION

Vibration is sound radiated through the ground. The rumbling sound caused by the vibration of room surfaces is called groundborne noise. The ground motion caused by vibration is measured as particle velocity in inches per second and in the United States is referenced as vibration decibels (VdB).

The background vibration velocity level in residential areas is usually around 50 VdB. The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Most perceptible indoor vibration is caused by

sources within buildings, such as operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is rarely perceptible. Groundborne vibration is almost never annoying to people who are outdoors. Although the motion of the ground may be perceived, without the effects associated with the shaking of a building, the motion does not provoke the same adverse human reaction. In addition, the rumble noise that usually accompanies building vibration is perceptible only inside buildings (FTA 2006). As such, the range of interest is from approximately 50 VdB, which is the typical background vibration velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings.

The general human response to different levels of groundborne vibration velocity levels is described in **Table 3.6-2.**

**TABLE 3.6-2**
**HUMAN RESPONSE TO DIFFERENT LEVELS OF GROUNDBORNE VIBRATION**

| Vibration Velocity Level | Human Reaction |
|---|---|
| 65 VdB | Approximate threshold of perception for many people. |
| 75 VdB | Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable. |
| 85 VdB | Vibration acceptable only if there are an infrequent number of events per day. |

*Source: FTA 2006*

In urban environments, such as Sunnyvale, sources of groundborne vibration include construction activities, light and heavy rail transit, and heavy trucks and buses. Construction activities can cause vibration that varies in intensity depending on several factors. The use of pile driving and vibratory compaction equipment typically generates the highest construction-related groundborne vibration levels. Rail operations are potential sources of substantial groundborne vibration depending on distance, the type and speed of trains, and the type of railroad track. People's response to groundborne vibration has been correlated best with the velocity of the ground. The velocity of the ground is expressed on the decibel scale. The reference velocity is 1 x 10-6 inches per second (in/sec). RMS, which equals 0 VdB and 1 in/sec, equals 120 VdB. Groundborne vibration levels from heavy trucks and buses are not normally perceptible, especially if roadway surfaces are smooth. Buses and trucks typically generate groundborne vibration levels of about 63 VdB at a distance of 25 feet when traveling at a speed of 30 mph. Higher vibration levels can occur when buses or trucks travel at higher rates of speed or when the pavement is in poor condition. Vibration levels below 65 VdB are below the threshold for human perception.

### NOISE-SENSITIVE RECEPTORS

Noise-sensitive land uses are those that may be subject to stress and/or interference from excessive noise. Noise-sensitive land uses include public schools, hospitals, and institutional uses such as churches, museums, and private schools. Typically, residential uses are also considered noise-sensitive receptors. Industrial and commercial land uses are generally not considered sensitive to noise.

## EXISTING NOISE CONDITIONS IN SUNNYVALE

According to the Safety and Noise chapter of the City's (2011) General Plan, noise is a significant and inherent part of Sunnyvale's environment. The noise environment is a result of historical land use decisions, competing regional and community goals, geographic factors, and limited local controls. Major noise sources in the city consist of transportation sources and community sources. Major roadways cause most of the ambient noise in Sunnyvale. Highways include US Highway 101 (US 101), Interstate 280, State Route (SR) 85, and SR 237. Major local roadways include Mathilda Avenue, Wolfe Road, Lawrence Expressway, El Camino Real (SR 82), and Homestead Road. Mary Avenue, Hollenbeck Road, Fremont Avenue, and Remington Drive generate less noise than area highways, but they are adjoined by a large number of residences and therefore contribute to residential noise exposure in Sunnyvale.

Aircraft operations at Moffett Federal Airfield will continue to contribute to the noise environment in northwest Sunnyvale. Northeast Sunnyvale is also affected by San Jose International Airport flight patterns. Commuter and freight train operations affect noise levels in central Sunnyvale. Light rail trains now operate in Sunnyvale along the Tasman Drive corridor. Stationary noise sources in the city include light industrial and manufacturing facilities generally located in an area between the East Evelyn Avenue/Caltrain rail corridor and Central Expressway.

### Community Noise Survey

Existing noise conditions in Sunnyvale were documented during a noise monitoring survey completed in late May and early June 2012. A sampling of several individual noise monitoring locations were resurveyed in late July and early August 2015 in order to confirm that the previously documented noise monitoring survey was still representative of existing conditions. As shown in **Tables 3.6-3** and **3.6-4**, the decibel differences between the 2012 noise measurements and 2015 measurements are similar, deviating by 7 dB at most.

The noise survey established representative noise levels along the major ground transportation corridors in Sunnyvale and also quantified ambient background noise levels in residential neighborhoods away from these noise sources.

Both unattended noise measurements and attended short-term noise measurements were conducted. Daily unattended noise measurements were conducted at 16 locations throughout the community in 2012. Seven of these locations were resurveyed in 2015. Unattended noise measurements were measured over a period of approximately 24 hours in order to characterize local noise sources. Short-term attended noise measurements spanning 15 minutes were also conducted, primarily along roadways in the community to record traffic-generated noise. Short-term measurements were conducted at 18 locations throughout the city, and 16 of these locations were resurveyed in 2015. Measurement locations are shown in **Figures 3.6-2** and **3.6-3**. The results at the unattended 24-hour average noise level measurement locations are summarized in **Tables 3.6-3** and **3.6-4**. The results at the short-term attended noise measurement locations are reported in **Table 3.6-5**. Charts showing the complete results of the measurements are included in **Appendix D**.

**FIGURE 3.6-2**
**NOISE MEASUREMENT LOCATIONS IN SUNNYVALE (NORTH)**

**FIGURE 3.6-3**
**NOISE MEASUREMENT LOCATIONS IN SUNNYVALE (SOUTH)**

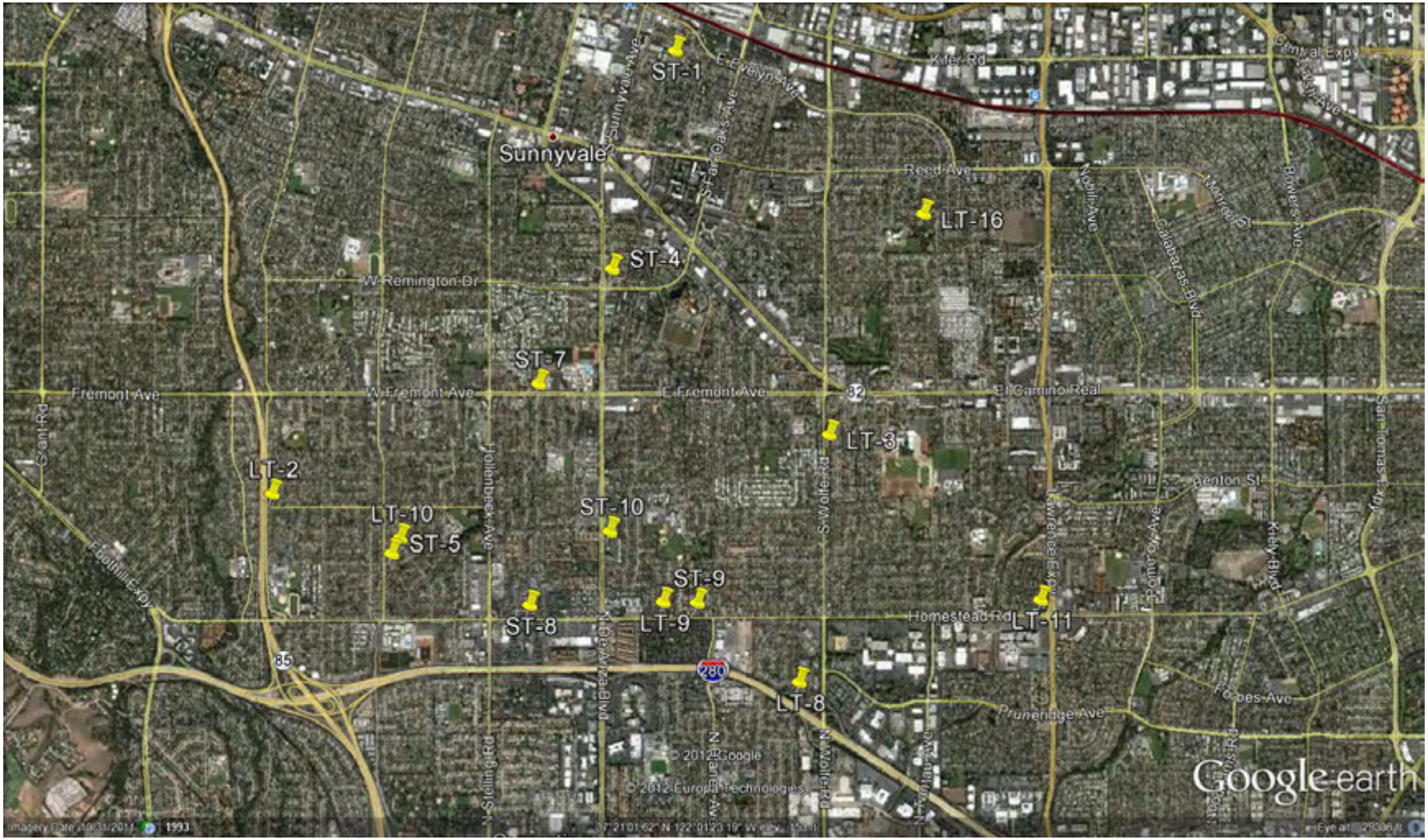


**TABLE 3.6-3**
**NOISE MEASUREMENTS AT LONG-TERM (LT) LOCATIONS, EXISTING CONDITIONS**

| Site | Location | Date/Time | A-Weighted Noise Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | $L_{max}$ | $L_1$ | $L_{10}$ | $L_{50}$ | $L_{90}$ | $L_{eq}$ | $L_{dn}$ |
| LT-1 | Evelyn Avenue at Sunset Avenue – 120 feet from Caltrain track | 5/29/12 – 5/30/12 | — | — | — | — | — | — | 73 |
| | | 5/29/12 12:46 pm | 79 | 77 | 74 | 63 | 50 | 68 | — |
| LT-2 | The Dalles Avenue at S. Bernardo Avenue – 100 feet from SR 85 sound wall | 5/29/12 – 5/30/12 | — | — | — | — | — | — | 66 |
| | | 5/29/12 1:58 pm | 74 | 71 | 66 | 65 | 63 | 65 | — |
| LT-3 | S. Wolfe Road, 35 feet from centerline – near Elizabeth Way | 5/29/12 – 5/30/12 | — | — | — | — | — | — | 72 |
| | | 5/29/12 2:54 pm | 81 | 78 | 74 | 70 | 57 | 71 | — |
| LT-4 | Lawrence Expressway, 70 feet from centerline – near Sandia Avenue | 5/30/12 – 5/31/12 | — | — | — | — | — | — | 70 |
| | | 5/30/12 2:29 pm | 77 | 75 | 71 | 65 | 60 | 68 | — |
| LT-5 | Central Expressway, 170 feet to centerline – Murphy Avenue at Arques Avenue | 5/30/12 – 5/31/12 | — | — | — | — | — | — | 61 |
| | | 5/31/12 1:46 pm | 70 | 66 | 58 | 55 | 51 | 56 | — |
| LT-6 | Martin Murphy Park along Sunnyvale Avenue, 50 feet from roadway centerline | 5/30/12 – 5/31/12 | — | — | — | — | — | — | 63 |
| | | 5/31/12 12:36 pm | 78 | 74 | 67 | 58 | 52 | 63 | — |
| LT-7 | Tasman Drive, 70 feet from LRT tracks centerline – 500 feet east of Lawrence Expressway | 6/5/12 – 6/6/12 | — | — | — | — | — | — | 69 |
| | | 6/13/12 10:30 am | 91 | 81 | 74 | 61 | 54 | 71 | — |
| LT-8 | I-280, 275 feet from centerline – Parkview Court at Linnet Lane | 6/5/12 – 6/6/12 | — | — | — | — | — | — | 68 |
| | | 6/13/12 11:20 am | 79 | 66 | 64 | 62 | 60 | 63 | — |
| LT-9 | Homestead Road, 75 feet to centerline – at Canary Drive | 6/5/12 – 6/6/12 | — | — | — | — | — | — | 62 |
| | | 6/13/12 11:50 am | 72 | 69 | 65 | 60 | 49 | 62 | — |
| LT-10 | End of Kennewick Court | 6/6/12 – 6/7/12 | — | — | — | — | — | — | 59 |
| | | 6/13/12 1:30 pm | 70 | 68 | 61 | 48 | 41 | 57 | — |
| LT-11 | Homestead Road, 60 feet from centerline – across from Kaiser Hospital | 6/6/12 – 6/7/12 | — | — | — | — | — | — | 73 |
| | | 6/13/12 12:20 pm | 80 | 76 | 73 | 67 | 58 | 69 | — |

| Site | Location | Date/Time | A-Weighted Noise Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | $L_{max}$ | $L_1$ | $L_{10}$ | $L_{50}$ | $L_{90}$ | $L_{eq}$ | $L_{dn}$ |
| LT-12 | Caltrain Station on Frances Street, 150 feet from tracks centerline | 6/6/12 | — | — | — | — | — | — | 70 |
| | | 6/18/12 4:30 pm | 89 | 82 | 55 | 52 | 51 | 68 | — |
| LT-13 | E. Duane Avenue, 50 feet from centerline – near Deguigne Drive | 6/12/12 – 6/13/12 | — | — | — | — | — | — | 69 |
| | | 6/13/22 2:30 pm | 77 | 75 | 69 | 60 | 55 | 65 | — |
| LT-14 | East of Morse Avenue, 180 feet from centerline – in John W. Christian Greenbelt | 6/12/12 – 6/13/12 | — | — | — | — | — | — | 60 |
| | | 6/15/12 12:20 pm | 86 | 82 | 66 | 54 | 52 | 66 | — |
| LT-15 | SR 237, 330 feet from centerline – Plaza Drive at Borregas Drive | 6/12/12 – 6/13/12 | — | — | — | — | — | — | 57 |
| | | 6/15/12 12:40 pm | 86 | 82 | 64 | 54 | 52 | 67 | — |
| LT-16 | In Ponderosa Park along Iris Avenue, 35 feet from centerline | 6/12/12 – 6/13/12 | — | — | — | — | — | — | 62 |
| | | 6/18/12 5:00 pm | 67 | 65 | 60 | 51 | 46 | 56 | — |

**TABLE 3.6-4**
**RESURVEYED NOISE MEASUREMENTS AT SELECT LONG-TERM (LT) LOCATIONS, EXISTING CONDITIONS**

| Site | Location | Date/Time | A-Weighted Noise Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | $L_{max}$ | $L_1$ | $L_{10}$ | $L_{50}$ | $L_{90}$ | $L_{eq}$ | $L_{dn}$ |
| LT-1 | Evelyn Avenue at Sunset Avenue – 120 feet from Caltrain track | 7/21/15 – 7/22/15 | — | — | — | — | — | — | 71 |
| | | 7/22/15 12:10 pm | 102 | 72 | 68 | 57 | 40 | 68 | — |
| LT-2 | The Dalles Avenue at S. Bernardo Avenue – 100 feet from SR 85 sound wall | 7/27/15 – 7/28/15 | — | — | — | — | — | — | 65 |
| | | 7/27/15 5:14 pm | 90 | 65 | 64 | 61 | 51 | 61 | — |
| LT-3 | S. Wolfe Road, 35 feet from centerline – near Elizabeth Way | 7/23/15 – 7/24/15 | — | — | — | — | — | — | 74 |
| | | 7/24/15 1:57p m | 93 | 77 | 76 | 68 | 41 | 71 | – |
| LT-5 | Central Expressway, 170 feet to centerline – Murphy Avenue at Arques Avenue | 7/20/15 – 7/21/15 | — | — | — | — | — | — | 55 |
| | | 7/20/15 12:22 pm | 61 | 60 | 59 | 51 | 50 | 55 | — |
| LT-9 | Homestead Road, 75 feet to centerline – at Canary Drive | 7/29/15 – 7/30/15 | — | — | — | — | — | — | 69 |
| | | 7/30/15 9:39 am | 97 | 72 | 71 | 62 | 39 | 67 | — |
| LT-13 | E. Duane Avenue, 50 feet from centerline – near Deguigne Drive | 8/03/15 – 8/04/15 | — | — | — | — | — | — | 62 |
| | | 8/03/15 11:54 am | 84 | 66 | 63 | 53 | 43 | 59 | — |
| LT-15 | SR 237, 330 feet from centerline – Plaza Drive at Borregas Drive | 7/16/15 – 7/17/15 | — | — | — | — | — | — | 62 |
| | | 7/16/15 11:48 pm | 102 | 61 | 57 | 49 | 41 | 62 | — |

**TABLE 3.6-5**
**NOISE MEASUREMENTS AT SHORT-TERM (ST) LOCATIONS, EXISTING CONDITIONS**

| Site | Location | Date/Time | A-Weighted Noise Level | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | $L_{max}$ | $L_1$ | $L_{10}$ | $L_{50}$ | $L_{90}$ | $L_{dn}$ |
| ST-1 | Corner of Bayview Avenue and Bryan Avenue | 8/07/2015 4:26 pm | 75 | 62 | 57 | 49 | 47 | 56 |
| ST-2 | Arques Avenue at St. Mark Lutheran Church | 8/07/2015 5:21 pm | 70 | 64 | 63 | 60 | 58 | 61 |
| ST-3 | Front of 1001 W. McKinley Avenue at S. Mary Avenue | 8/07/2015 4:49 pm | 77 | 69 | 68 | 61 | 50 | 64 |
| ST-4 | Sunnyvale Saratoga Road, 135 feet to centerline at Remington Drive | 6/13/2012 1:47 pm | 67 | 66 | 63 | 59 | 54 | 60 |
| ST-5 | 1604 S. Mary Avenue, 100 feet to center | 8/07/2015 2:37 pm | 80 | 64 | 63 | 51 | 42 | 59 |
| ST-6 | Replaced by LT-10 | 8/07/2015 | N/A | N/A | N/A | N/A | N/A | N/A |
| ST-7 | Fremont Avenue, 100 feet to center at Bella Avenue | 8/07/2015 2:11 pm | 74 | 67 | 66 | 58 | 46 | 62 |
| ST-8 | Homestead Road east of Ontario Road | 8/07/2015 2:59 pm | 77 | 63 | 61 | 54 | 49 | 58 |
| ST-9 | Homestead Road, 50 feet to center, at Langport Way | 8/07/2015 3:22 pm | 73 | 67 | 66 | 60 | 51 | 62 |
| ST-10 | Southwest corner of Sunnyvale Saratoga Road and Alberta Avenue | 8/07/2015 4:01 pm | 83 | 71 | 70 | 65 | 57 | 67 |
| ST-11 | Lakewood Park at 50 feet to centerline of Silverlake Drive | 6/13/2012 10:45 am | 76 | 73 | 65 | 61 | 58 | 63 |
| ST-12 | Lawrence Expressway at 1099 Lakedale Way | 8/10/2015 12:35 am | 68 | 64 | 63 | 59 | 53 | 60 |
| ST-13 | Front of 827 Lakewood Drive | 8/10/2015 11:57 am | 66 | 60 | 58 | 53 | 51 | 55 |
| ST-14 | 75 feet from centerline of Caribbean at Borregas Avenue | 8/10/2015 11:30 am | 85 | 76 | 73 | 67 | 57 | 70 |
| ST-15 | Front of 1399 Sandia Avenue at Wildwood Avenue | 8/10/2015 1:06 pm | 94 | 68 | 66 | 54 | 50 | 68 |
| ST-16 | Southeast corner of San Rafael Avenue and Ahwanee Avenue; 55 feet to US 101 sound wall | 8/07/2015 6:11 pm | 73 | 67 | 65 | 63 | 62 | 64 |
| ST-17 | Borregas Drive at Persian Drive | 8/16/2015 1:41 pm | 77 | 64 | 60 | 54 | 52 | 60 |
| ST-18 | Borregas Drive at Moffett Park Road | 8/16/2015 2:10 pm | 81 | 72 | 70 | 62 | 58 | 66 |

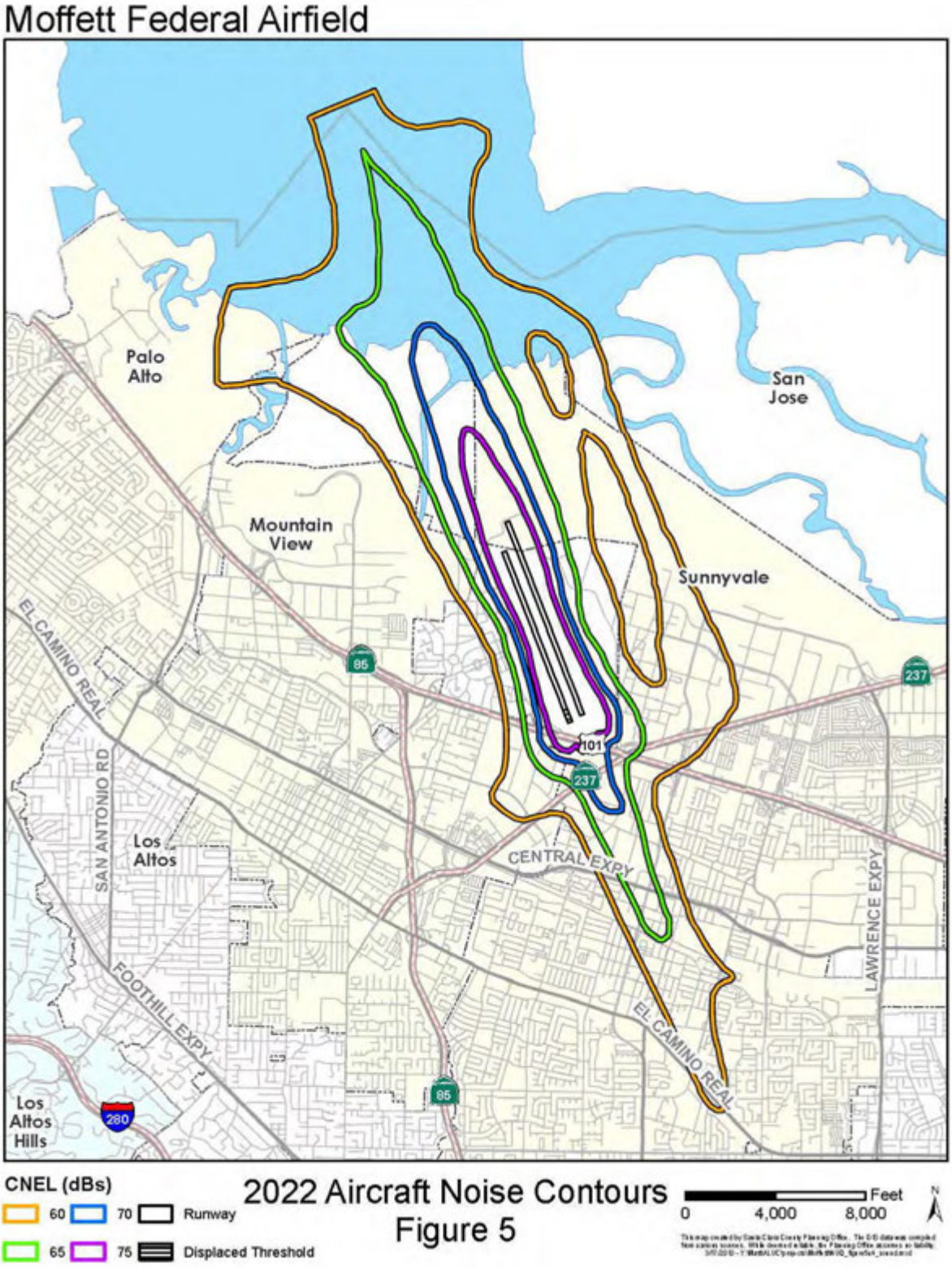
As shown in **Tables 3.6-3** and **3.6-4**, the unattended 24-hour average noise level measurements range from 55 to 74 dBA $L_{dn}$. As previously stated, 24-hour average noise level measurements characterize the local community noise sources. As shown in **Table 3.6-5**, the short-term attended noise measurements, which characterize the average noise levels along city roadways, ranged from 56 to 70 dBA $L_{dn}$.

### Moffett Federal Airfield

In 2012, Santa Clara County completed a Comprehensive Land Use Plan (CLUP) for Moffett Federal Airfield (Santa Clara County Airport Land Use Commission 2012). Moffett Federal Airfield was a US Naval Air Station until it was transferred to NASA in 1994. The California Air National Guard is based at and operating from the airport. The remainder of airport operation includes NASA test flights and US government personnel and air cargo flights. There are a limited number of civilian operations at the airport, which are anticipated to remain the same throughout the study period. Because Moffett Federal Airfield is a US government airport, it is not included in many of the other Federal Aviation Administration regulations.

The CLUP is a 20-year planning document. The original base year for aviation activity was 1992, and existing projections were made up to the year 2010. The document forecast that there will be no significant changes in activity at the airport through the CLUP period to the year 2022. That is, no significant changes in airport activity are forecast. The CLUP includes aircraft noise contours that represent the current level of activity through the year 2022. Airport noise contours are shown on **Figure 3.6-4**. The 75 dBA CNEL contour is completely contained within the airport boundaries. The 70 dBA CNEL contour is generally contained within NASA-owned property but overlays a small area of industrial land use in the vicinity of Clyde Avenue west of the Sunnyvale Golf Course and north of the West Maude Avenue and Mary Avenue intersection. The 65 dBA CNEL noise contour is generally contained within the area bounded by the intersections of Mary Avenue and West Maude Avenue, Mathilda Avenue and Evelyn Avenue, Evelyn Avenue and Sunnyvale Avenue, and the US 101/SR 237 interchange. The majority of this area is commercial and industrial, but the area principally southeast of Central Expressway is predominantly single- and multi-family residential. The 60 dBA CNEL contour principally affects commercial and industrial areas, with the exception of the area southeast of Central Expressway, which comprises predominantly single- and multi-family residences.

**FIGURE 3.6-4**
**MOFFETT FEDERAL AIRFIELD NOISE CONTOURS**



### Stationary Noise Sources

Industrial operations are the primary stationary noise sources that make a significant local contribution to community noise levels. In general, these stationary noise sources (e.g., fabrication, large mechanical equipment, and loading areas) are often located in primarily commercial and industrial areas and are isolated from noise-sensitive land uses. However, noise-sensitive uses have encroached on some of these stationary noise sources, resulting in some land use conflicts. Noise sources that affect sensitive receptors in the community would also include commercial land uses or those normally associated with and/or secondary to residential development. These noise sources include nightclubs, outdoor dining areas, gas stations, car washes, fire stations, drive-throughs, air conditioning units, swimming pool pumps, school playgrounds, athletic and music events, and public parks.

### Existing Caltrain Noise and Vibration Levels

There are two main sources of train noise—engine noise and train horn noise. Train horns blow at the Lawrence Station. According to the Safety and Noise Chapter of the City's General Plan (2011), the areas affected by train noise had an $L_{dn}$ of 71–73 dBA at 50 feet from the tracks. Maximum noise events can reach 90 dBA (engines) and 105 dBA (horns). All residences in the city experience "acceptable" train-generated noise levels, with the exception of approximately 80 homes near the tracks, which experience "conditionally acceptable" noise levels as a result of train operations. Train-generated noise levels are considered to be generally acceptable for all nonresidential uses (Sunnyvale 2011).

Caltrain trains presently consist of diesel locomotive-hauled, bi-level passenger cars. As of mid-2013, Caltrain operates 46 northbound and 46 southbound (for a total of 92) trains per day between San Jose and San Francisco during the week (PCJPB 2014). According to the Caltrain Electrification Project Draft Environmental Impact Report (PCJPB 2014), which contains ground vibration measurements conducted in Sunnyvale in 2010, the highest groundborne vibration velocity levels (VdB) reach 77 VdB at 50 feet from the tracks, which is a perceptible level (see **Table 3.6-2**). The measured VdB is below 75 at all other distances measured in Sunnyvale (65 to 215 feet away from the tracks).

Electrification of the rail line is scheduled to be operational by 2019, and approximately 75 percent of Caltrain trains would be powered by electricity (PCJPB 2014). Operational train noise impacts would include both a decrease in train noise, because electrified trains are quieter than diesel locomotives, and an increase in train noise, primarily during peak hours due to a future projected increase in Caltrain service. In Sunnyvale, the positive effect of quieter trains would be offset by the increase in horn noise such that noise conditions would not change (PCJPB 2014).

### Temporary Noise Sources

Construction is a temporary source of noise for residences and businesses located near construction sites. Construction noise can be significant for short periods of time at any particular location as a result of public improvement projects, private development projects, remodeling, etc. The highest construction noise levels are normally generated during grading and excavation, with lower noise levels occurring during building construction. Large pieces of earth-moving equipment, such as graders, scrapers, and bulldozers, generate maximum noise levels of 85–90 dBA at a distance of 50 feet. Typical hourly average construction-generated noise levels are about 80–85 dBA measured at a distance of 50 feet from the site during busy construction periods. Some construction techniques, such as impact pile driving, can generate very high

levels of noise (105 dBA $L_{max}$ at 50 feet) that are difficult to control. Construction activities can elevate noise levels at adjacent businesses and residences by 15 to 20 dBA or more.

## VIBRATION CONDITIONS

### Transportation-Related Vibration Sources

Groundborne vibration occurs in areas adjacent to fixed rail lines when trains pass through Sunnyvale. Ground vibration levels along the railroad corridors are proportional to the speed and weight of the trains as well as the condition of the tracks and train engine and car wheels. Vibration levels resulting from railroad trains vary by site, but are generally perceptible within 100 feet of the tracks. Light rail operations generate less vibration than heavy rail trains, and normally vibration levels generated by light rail trains are barely perceptible just outside the common light rail/roadway right-of-way.

### Temporary Vibration Sources

Construction activities such as demolition, site preparation work, excavation, and foundation work can generate groundborne vibration at land uses adjoining construction sites. Impact pile driving has the potential of generating the highest ground vibration levels and is of primary concern related to structural damage. Other project construction activities, such as caisson drilling, the use of jackhammers, rock drills and other high-power or vibratory tools, and rolling stock equipment (tracked vehicles, compactors, etc.), can generate substantial vibration levels in the immediate vicinity.

### Planned High-Speed Rail

Currently, the State of California is planning on the construction of a high-speed train system that would link the San Francisco Bay Area and Los Angeles. The plan would be for high-speed trains to operate through Sunnyvale on or near the existing Caltrain right-of-way. High-speed trains would operate on dedicated tracks. Numerous at-grade crossings would need to be eliminated or a grade-separated track would be necessary to facilitate the high-speed trains. This may reduce noise from the sounding of traditional train horns. The high-speed trains would likely use electric power cars, which would minimize the low frequency rumble associated with diesel-powered locomotives. At speeds higher than conventional trains, high-speed train noise levels would increase over conventional trains due to the aerodynamic effects. Ground vibration caused by the passby of high-speed trains is similar to that caused by conventional steel wheel/steel rail trains. At comparable speeds, vibration levels associated with high-speed trains are relatively lower than conventional passenger and freight trains due to advanced track technology, smooth track and wheel surfaces, and high maintenance standards required for high-speed operation. Conversely, vibration levels increase with increasing speed, so the previously described benefits would be at least partially offset by higher operating speeds.

### Noise Exposure Map

SoundPLAN Version V7.0, a three-dimensional ray-tracing computer program, was used to calculate existing traffic noise levels along major roadways, expressways, highways, and Caltrain routes throughout Sunnyvale. The noise map prepared based on existing conditions is shown on **Figure 3.6-5**. Calculations took into account the noise source, the frequency spectra of the noise source, and the area's topography. The geometric data used to create the model was based on GIS information provided by the City of Sunnyvale. Existing average daily trip (ADT) data and observed vehicle mix data and travel speeds were also input into the model. For highways and

expressways, traffic volume and truck mix data input into the model was based on information published by the California Department of Transportation (Caltrans). The predicted noise levels were then compared to measured noise levels for calibration purposes and adjustments were made as necessary to create an accurate model. **Table 3.6-6** presents existing day-night average noise levels calculated at a reference distance of 75 feet from the center of the near travel lane for highways and expressways in Sunnyvale.

**FIGURE 3.6-5**
**EXISTING NOISE EXPOSURE IN SUNNYVALE**

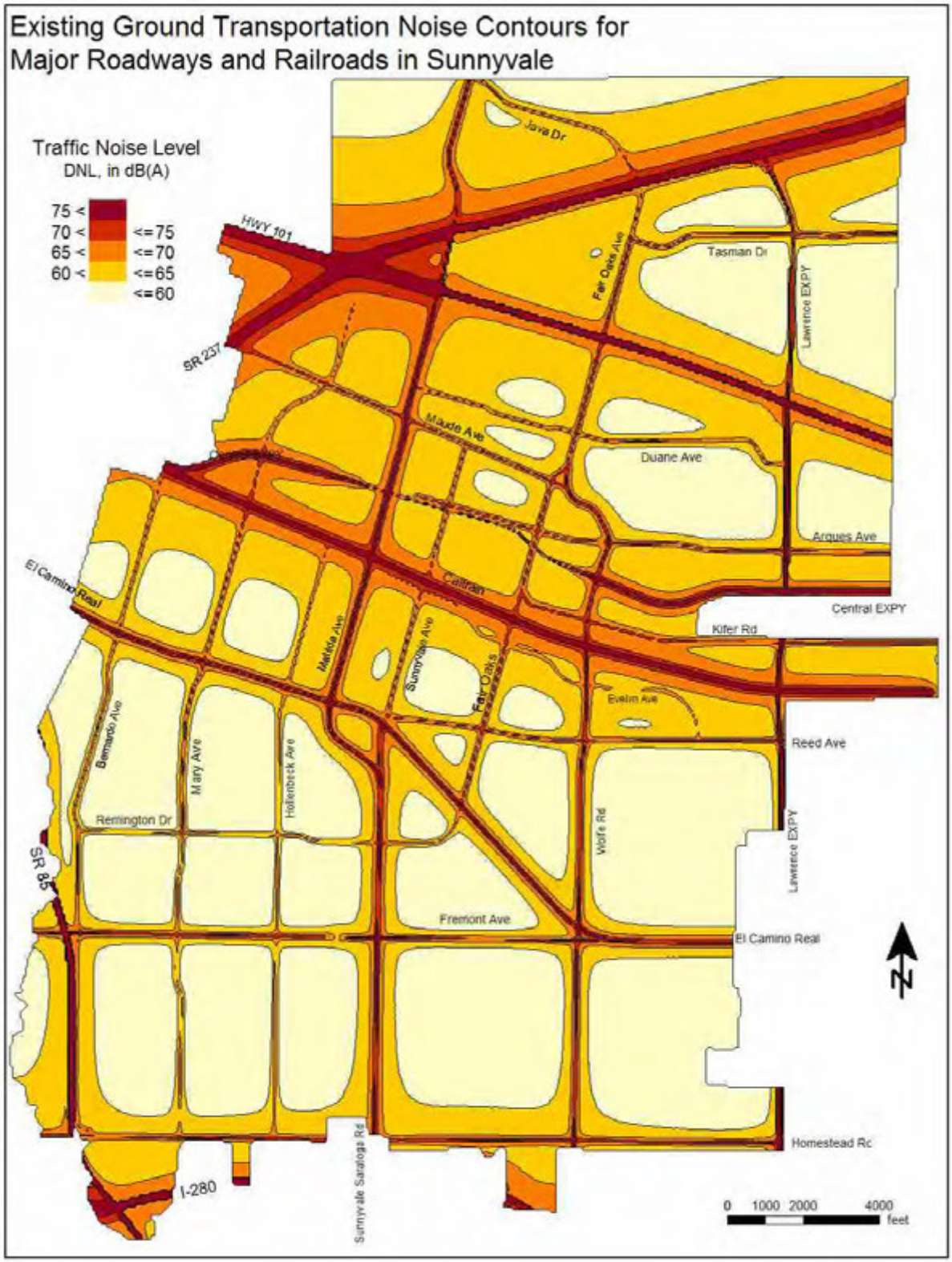


**TABLE 3.6-6**
**EXISTING NOISE LEVELS ALONG SUNNYVALE ROADWAYS**

| Roadway Segment | Surrounding Uses | $L_{dn}$ at 75 Feet, dBA* |
|---|---|---|
| US 101, Mathilda Avenue to Fair Oaks Avenue, 75 feet from sound wall | Residential, Commercial & Warehousing | 77.4 |
| SR 237, Mathilda Avenue to Fair Oaks Avenue, 75 feet from sound wall | Residential & Industrial | 75.2 |
| I-280 near SR 85, just east of interchange | Residential | 77.4 |
| I-280 near Wolfe Road, just west of interchange | Residential | 77.4 |
| SR 85, Fremont Avenue to Homestead Road, 75 feet from sound wall | Residential & Educational | 75.8 |
| Arques Avenue, Lawrence Expressway to Wolfe Road | Commercial & Health Services | 64.3 |
| Bernardo Avenue, El Camino Real to Remington Avenue | Residential, Commercial & Educational | 59.4 |
| Bernardo Avenue, Evelyn Avenue to El Camino Real | Residential, Commercial & Industrial | 61.4 |
| Central Expressway, just west of Lawrence Expressway | Commercial & Industrial | 72.2 |
| Central Expressway, Mary Avenue to Mathilda Avenue | Residential, Commercial & Office | 72.1 |
| Duane Avenue, Mathilda Avenue to Fair Oaks Avenue | Residential | 60.2 |
| El Camino Real, southeast of Fair Oaks Avenue | Commercial | 70.5 |
| El Camino Real, Wolfe Road to Lawrence Expressway | Commercial | 71.9 |
| Evelyn Avenue, Reed Avenue to Wolfe Road | Residential | 61.6 |
| Fair Oaks Avenue, Central Expressway to Kifer Road | Residential & Commercial | 64.9 |
| Fair Oaks Avenue, Tasman Drive to SR 237 | Residential & Commercial | 64.4 |
| Fremont Avenue, Bernardo Avenue to Mary Avenue | Residential & Commercial | 64.4 |
| Fremont Avenue, Sunnyvale Avenue to Wolfe Road | Residential & Commercial | 64.5 |
| Hollenbeck Avenue, El Camino Real to Remington Avenue | Residential & Commercial | 60.9 |
| Hollenbeck Avenue, Evelyn Avenue to El Camino Real | Residential, Parkland & Institutional | 61.2 |
| Hollenbeck Avenue, Fremont Avenue to Homestead Road | Residential, Educational & Commercial | 63.2 |
| Homestead Road, Wolfe Road to Lawrence Expressway | Residential, Commercial & Health Services | 65.2 |
| Homestead Road, Mary Avenue to Hollenbeck Avenue | Residential, Educational & Commercial | 65.8 |
| Java Drive, Mathilda Avenue to SR 237 | Commercial & Office | 63.0 |
| Kifer Road, Lawrence Expressway to Wolfe Road | Office & Industrial | 62.5 |
| Lawrence Expressway, Reed Avenue to El Camino Real | Residential & Commercial | 73.3 |
| Lawrence Expressway, Tasman Drive to SR 237 | Residential, Commercial & Industrial | 71.4 |
| Mary Avenue, El Camino Real to Remington Avenue | Residential, Educational & Commercial | 63.1 |

| Roadway Segment | Surrounding Uses | $L_{dn}$ at 75 Feet, dBA* |
|---|---|---|
| Mary Avenue, Evelyn Avenue to El Camino Real | Residential, Educational & Commercial | 65.9 |
| Mary Avenue, Fremont Avenue to Homestead Road | Residential & Educational | 61.2 |
| Mathilda Avenue, Evelyn Avenue to El Camino Real | Residential & Commercial | 67.3 |
| Mathilda Avenue, Java Drive to SR 237 | Commercial & Industrial | 65.7 |
| Maude Avenue, Mary Avenue to Mathilda Avenue | Office & Industrial | 64.6 |
| Reed Avenue, Lawrence Expressway to Evelyn Avenue | Residential & Commercial | 65.1 |
| Remington Avenue, Hollenbeck Avenue to Sunnyvale Avenue | Residential & Commercial | 61.8 |
| Sunnyvale Avenue, Fremont Avenue to Homestead Road | Residential & Commercial | 68.5 |
| Sunnyvale Avenue, El Camino Real to Remington Avenue | Residential & Commercial | 67.0 |
| Sunnyvale Avenue, Evelyn Avenue to Reed Avenue | Residential & Commercial | 62.4 |
| Tasman Drive, Java Drive to Lawrence Expressway | Residential | 62.9 |
| Wolfe Road, Homestead Road to Fremont Avenue | Residential & Commercial | 65.6 |
| Wolfe Road, Arques Avenue to Stewart Avenue | Residential & Commercial | 63.7 |

** Noise levels for highways and expressways are given at a distance of 75 feet from the center of the near direction of travel.*

## 3.6.2 REGULATORY FRAMEWORK

### FEDERAL

#### Department of Housing and Urban Development

The US Department of Housing and Urban Development (HUD) environmental criteria and standards are presented in 24 Code of Federal Regulations (CFR) Part 51. New residential construction qualifying for HUD financing proposed in high noise areas (exceeding 65 dBA $L_{dn}$) must incorporate noise attenuation features to maintain acceptable interior noise levels. A goal of 45 dBA $L_{dn}$ is set for interior noise levels, and attenuation requirements are geared toward achieving that goal. It is assumed that with standard construction any building will provide sufficient attenuation to achieve an interior level of 45 dBA $L_{dn}$ or less if the exterior level is 65 dBA $L_{dn}$ or less. Approvals in a normally unacceptable noise zone (exceeding 65 decibels but not exceeding 75 decibels) require a minimum of 5 decibels additional noise attenuation for buildings if the day-night average is greater than 65 decibels but does not exceed 70 decibels, or a minimum of 10 decibels of additional noise attenuation if the day-night average is greater than 70 decibels but does not exceed 75 decibels.

#### Federal Highway Administration

Proposed federal or federal-aid highway construction projects at a new location, or the physical alteration of an existing highway that significantly changes either the horizontal or vertical alignment, or increases the number of through-traffic lanes, requires an assessment of noise and consideration of noise abatement per 23 CFR Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise. The Federal Highway Administration (FHWA) has adopted noise abatement criteria (NAC) for sensitive receivers such as picnic areas, recreation areas,

playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals when "worst-hour" noise levels approach or exceed 67 dBA $L_{eq}$. Caltrans has further defined approaching the NAC to be 1 dBA below the NAC for noise-sensitive receivers identified as Category B activity areas (e.g., 66 dBA $L_{eq}$ is considered approaching the NAC) (Caltrans 2011).

### Federal Transit Administration

The Federal Transit Administration (FTA) has identified vibration impact criteria for sensitive buildings, residences, and institutional land uses near rail transit and railroads. The thresholds for residences and buildings where people normally sleep (e.g., nearby residences) are 72 VdB for frequent events (more than 70 events of the same source per day), 75 VdB for occasional events (30 to 70 vibration events of the same source per day), and 85 VdB for infrequent events (less than 30 vibration events of the same source per day).

### Federal Aviation Regulations, Part 150 – Airport Noise Compatibility and Land Use Planning

The Federal Aviation Administration (FAA) has established the Federal Aviation Regulations (FAR) Part 150 to address noise at civilian airports. FAR Part 150 specifically addresses airport noise compatibility planning. These regulations prescribe the procedures, standards, and methodology governing the development, submission, and review of airport noise exposure maps and airport noise compatibility programs, including the process for evaluating and approving projects related to those programs. FAR Part 150 directs that noise contours for airports be developed using the FAA's Integrated Noise Model for developing standardized noise exposure maps and predicting noise impacts. The agency must identify incompatible land uses within the noise contours. FAR Part 150 review often leads to operational changes in a project to minimize or mitigate impacts.

## STATE

### California Noise Insulation Standards

The State of California establishes minimum noise insulation performance standards for hotels, motels, dormitories, apartment houses, and dwellings other than detached single-family dwellings as set forth in the 2010 California Building Code (Chapter 12, Appendix Section 1207.11). The noise limit is a maximum interior noise level of 45 dBA $L_{dn}$. Where exterior noise levels exceed 60 dBA $L_{dn}$, a report must be submitted with the building plans describing the noise control measures that have been incorporated into project design to meet the noise limit. General plans facilitate the implementation of the Building Code noise insulation standards.

### California Government Code Section 65302(f)

California Government Code Section 65302(f) requires that all general plans include a noise element to address noise problems in the community. The noise element is required to analyze and quantify, to the extent practicable, as determined by the legislative body, current and projected noise levels for all of the following sources:

- Highways and freeways
- Primary arterials and major local streets
- Passenger and freight online railroad operations and ground rapid transit systems

- Commercial, general aviation, heliport, and military airport operations, aircraft flyovers, jet engine tests, and all other ground facilities and maintenance functions related to airport operation
- Local industrial plants, including but not limited to railroad classification yards
- Other stationary ground noise sources identified by local agencies as contributing to the community noise environment

Noise contours are to be shown for all of these sources and stated in terms of community noise equivalent level (CNEL) or day-night average level ($L_{dn}$). The noise contours must be prepared on the basis of noise monitoring or following generally accepted noise modeling techniques for the various sources identified above.

The noise contours are used as a guide for establishing a pattern of land uses in the land use element that minimizes the exposure of community residents to excessive noise. The noise element is required to include implementation measures and possible solutions that address existing and foreseeable noise problems, if any. The Safety and Noise chapter of the Sunnyvale General Plan addresses state's noise standards.

### Division of Aeronautics Noise Standards

Title 21 of the California Code of Regulations sets forth the state's airport noise standards. In the findings described in Section 5006, the standard states the following: "A level of noise acceptable to a reasonable person residing in the vicinity of an airport is established as a community noise equivalent level (CNEL) value of 65 dB for purposes of these regulations. This criterion level has been chosen for reasonable persons residing in urban residential areas where houses are of typical California construction and may have windows partially open. It has been selected with reference to speech, sleep, and community reaction." Based on this finding, the airport noise standard as defined in Section 5012 is set at a CNEL of 65 dB.

## LOCAL

### Santa Clara County

#### Airport Land Use Commission

The Santa Clara County Airport Land Use Commission (ALUC) consists of seven members, seven alternates, and two ex-officio members. Commissioners are appointed by the legislative bodies of the cities in Santa Clara County (including Sunnyvale) and by the County of Santa Clara. The ALUC prepares a comprehensive airport land use plan that provides for the orderly growth of the area surrounding each public airport in the county (Moffett Federal Airfield, San Jose International Airport, Palo Alto Airport, Reid-Hillview Airport, and South County Airport). The plan is intended to minimize the public's exposure to excessive noise and safety hazards. The ALUC has established provisions for regulating land use, building height, safety, and noise insulation in areas adjacent to each of the airports ("referral boundaries").

The ALUC also reviews the general and specific plans prepared by local agencies (including the City of Sunnyvale) for consistency with the airport land use plan. Recommendations made by the ALUC are advisory in nature to the local jurisdictions, not mandatory.

## City of Sunnyvale General Plan

The City has established noise standards in its General Plan intended to protect community residents from harmful and annoying noise levels. These policies identify permissible maximum average-daily noise standards for determination of land use compatibility. The City's General Plan noise standards are summarized in **Table 3.6-7**. For instance, the land use compatibility noise standard for residential land uses is 60 dBA $L_{dn}$, though noise levels up to 75 dBA are conditionally acceptable (Sunnyvale 2011). It is important to note that these noise criteria apply to newly proposed land uses and are based on average-daily noise levels. The land use compatibility standards mean that the proposed new land use cannot be sited in a location where it would be exposed to exterior and interior noise above the maximum levels specified, unless adequate noise reduction measures have been incorporated to reduce noise to acceptable levels.

**TABLE 3.6-7**
**CITY OF SUNNYVALE MAXIMUM PERMISSIBLE NOISE CRITERIA FOR DETERMINATION OF LAND USE COMPATIBILITY**

| Land Use | Maximum $L_{dn}$ (dBA) | | |
|---|---|---|---|
| | Normally Acceptable | Conditionally Acceptable | Unacceptable |
| Residential, Hotels, and Motels | ≤60 | 61–75 | >75 |
| Outdoor Sports and Recreation, Neighborhood Park and Playground | ≤65 | 66–80 | >80 |
| Schools, Libraries, Museums, Hospitals, Personal Care, Meeting Halls, and Churches | ≤60 | 61–75 | >75 |
| Office Buildings, Commercial and Professional Businesses | ≤70 | 71–80 | >80 |
| Auditoriums, Concert Halls, Amphitheaters | — | 55–70 | >70 |
| Industrial, Manufacturing, Utilities, and Agriculture | 55–70 | 71–80 | — |

*Source: Sunnyvale 2011*

**Table 3.6-8** shows General Plan standards for evaluating a project's contribution to ambient noise level increases.

**TABLE 3.6-8**
**SIGNIFICANT NOISE IMPACTS FROM NEW DEVELOPMENT ON EXISTING LAND USE**

| $L_{dn}$ Category for Existing Development | Noise Increase Considered "Significant" over Existing Noise Levels |
|---|---|
| Normally Acceptable | An increase of more than 3 dBA and the total $L_{dn}$ exceeds the "normally acceptable" category |
| Normally Acceptable | An increase of more than 5 dBA |
| Conditionally Acceptable | An increase of more than 3 dBA |
| Unacceptable | An increase of more than 3 dBA |

*Source: Sunnyvale 2011*

As depicted in **Table 3.6-8**, a noise level increase of 5.1 dBA or greater would typically be considered to result in increased levels of annoyance where existing ambient noise levels are normally acceptable. A noise level increase of 3.1 dBA or greater would be considered to result in increased levels of annoyance where existing ambient noise levels are normally acceptable but the increased noise level as a result of the project pushes noise levels beyond the normally acceptable threshold. Additionally, an increase of 3.1 dBA or greater would be considered to result in increased levels of annoyance where existing ambient noise levels are conditionally acceptable or unacceptable.

### City of Sunnyvale Municipal Code

Municipal Code Title 19, Chapter 19.42, presents operational noise standards that would be enforced on residentially zoned property. Operational noise cannot exceed 75 dBA at any point on the property line of the premises upon which the noise or sound is generated or produced; provided, however, that the noise or sound level is not to exceed 50 dBA during nighttime or 60 dBA during daytime hours at any point on adjacent residentially zoned property. If the noise occurs during nighttime hours and the enforcing officer has determined that the noise involves a steady, audible tone such as a whine, screech, or hum, or is a staccato or intermittent noise (e.g., hammering), or includes music or speech, the allowable noise or sound level cannot exceed 45 dBA.

Municipal Code Title 16, Chapter 16.08, presents construction noise regulations. Construction activity is permitted between the hours of 7:00 a.m. and 6:00 p.m. daily Monday through Friday. Saturday hours of operation are between 8:00 a.m. and 5:00 p.m. No construction activity is allowed on Sundays or national holidays when City offices are closed.

## 3.6.3 IMPACTS AND MITIGATION MEASURES

### STANDARDS OF SIGNIFICANCE

Based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines, noise impacts are considered to be significant if the following could result from the implementation of the Draft LUTE:

1) Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or of applicable standards of other agencies.

2) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

3) Exposure of persons to or generation of an excessive groundborne vibration or groundborne noise level.

4) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

5) For a project located within an airport land use plan area or, where such a plan has not been adopted, within 2 miles of a public airport or a public use airport, exposure of people residing or working in the project area to excessive noise levels.

6) For a project in the vicinity of a private airstrip, exposure of people residing or working in the project area to excessive noise levels.

Since no private airfields are located near the city, there would be **no impact** associated with standard of significance 6. No further discussion of this standard is required.

Criteria for determining the significance of noise impacts were developed based on information contained in CEQA Guidelines Appendix G and the City's noise standards and guidelines. Sunnyvale's land use compatibility noise standards for various land uses are shown in **Table 3.6-7**. In addition to reviewing proposed development for compliance with these noise standards, the analysis takes into account the increases in noise levels over pre-project noise conditions.

**Table 3.6-8** shows General Plan standards for evaluating a project's contribution to ambient noise level increases.

### METHODOLOGY

This analysis of the existing and future noise environments is based on noise prediction modeling and empirical observations. Policies contained in the Sunnyvale General Plan and regulations set forth in the City's Municipal Code summarized in the Regulatory Framework subsection above establish local noise standards. Vibration guidelines are established by state and federal agencies. Future noise levels resulting from development facilitated by the Draft LUTE were modeled and used to evaluate the significance of impacts assessed with respect to the applicable criteria. The compatibility of new development was evaluated with respect to the future (2035) noise environment, assuming the buildout under the Draft LUTE because this condition corresponds to the highest expected noise environment. The impact of increased traffic noise was assessed for the project's future (2035) condition assuming buildout under the Draft LUTE.

### PROJECT IMPACTS AND MITIGATION MEASURES

#### Expose People to or Generate Noise Levels in Excess of Standards (Standard of Significance 1)

**Impact 3.6.1** New development under the Draft LUTE would include noise-sensitive land uses that would be located in varying noise environments. New development would be required to comply with City noise standards set forth in the General Plan and the Municipal Code and would not change those standards. The proposed project would not expose new residents to traffic noise or stationary sources of noise in excess of established standards. This impact is considered **less than significant**.

New development under the Draft LUTE would include noise-sensitive land uses that would be located in varying noise environments. New noise-sensitive uses are planned along major transportation corridors and along railroad and light rail corridors, as well as near existing commercial and industrial uses. Single-family residential uses, schools, libraries, hospitals, convalescent homes, and places of worship are considered the most noise-sensitive land uses. Residential uses are sensitive to community noise both outdoors and indoors during the daytime and nighttime. High-density/mixed-use residential, commercial, and office uses are less noise sensitive because activities occur primarily indoors and noise levels are mitigated with building design and construction. However, noise exposures along many roadways and rail and transit corridors, and near Moffett Federal Airfield, could exceed the 45 dBA $L_{dn}$ interior compatibility level and the 60 dBA $L_{dn}$ exterior compatibility level for sensitive uses.

Where exterior noise levels exceed 60 dBA $L_{dn}$ at new residential uses, interior levels may exceed 45 dBA $L_{dn}$. Interior noise levels are a function of the space but should generally be limited to 45 dBA $L_{dn}$ or less. Interior noise levels are about 15 dBA lower than exterior levels in residential units with the windows partially open, and approximately 20 to 25 decibels lower than exterior noise levels with the windows closed, assuming typical California construction methods. Where exterior day-night average noise levels are 60 to 70 dBA $L_{dn}$, interior noise levels can typically be maintained below 45 dBA $L_{dn}$ with the incorporation of an adequate forced air mechanical ventilation system in the residential units to allow residents the option of controlling noise by keeping the windows closed. Standard office construction methods typically provide about 25 to 30 decibels of noise reduction in interior spaces. The need for noise attenuation measures in building construction and project design for non-sensitive land uses (e.g., commercial, industrial, and institutional) will be determined on a project-by-project basis at the time a specific project is proposed. In all areas exceeding 70 dBA $L_{dn}$, the inclusion of windows and doors with high Sound Transmission Class (STC) ratings, and the incorporation of forced-air mechanical ventilation systems, may be necessary to meet 45 dBA $L_{dn}$. Municipal Code Title 19, Chapter 19.42 also requires that the allowable noise or sound level cannot exceed 45 dBA for residential areas.

New residential and mixed-use residential development along the Caltrain line could potentially result with implementation of the proposed Draft LUTE. For the purposes of this assessment, noise levels along the existing railroad and light rail corridors are estimated to remain similar to existing conditions. According to the Caltrain Electrification Project Draft Environmental Impact Report (PCJPB 2014), the positive effect of quieter electric trains would be offset by the increase in horn noise such that noise conditions would not change. Furthermore, General Plan Policy SN-10.4a requires the City to monitor plans and projects that would increase the number of commuter or freight trains and evaluate their noise impacts and to seek mitigation for any change that worsens local conditions. According to the General Plan, the areas in Sunnyvale affected by train noise had an $L_{dn}$ of 71–73 dBA at 50 feet from the tracks. City General Plan Policy SN-8.8 seeks to avoid the construction of new residential uses where the outdoor $L_{dn}$ is greater than 70 dBA as a result of train noise, thus protecting future residences from excessive noise levels.

Future traffic noise levels throughout Sunnyvale were modeled based on the traffic volumes identified by Hexagon Transportation Consultants (2015) to determine the noise level contours along major roadways. **Table 3.6-9** shows the calculated roadway noise levels under existing traffic levels compared to the condition of future 2035 cumulative buildout under the Draft LUTE. The future 2035 cumulative noise exposure is used for noise and land use planning and is shown in **Figure 3.6-6**.

**TABLE 3.6-9**
**PROJECT CONDITIONS NOISE LEVELS ALONG SUNNYVALE ROADWAYS**

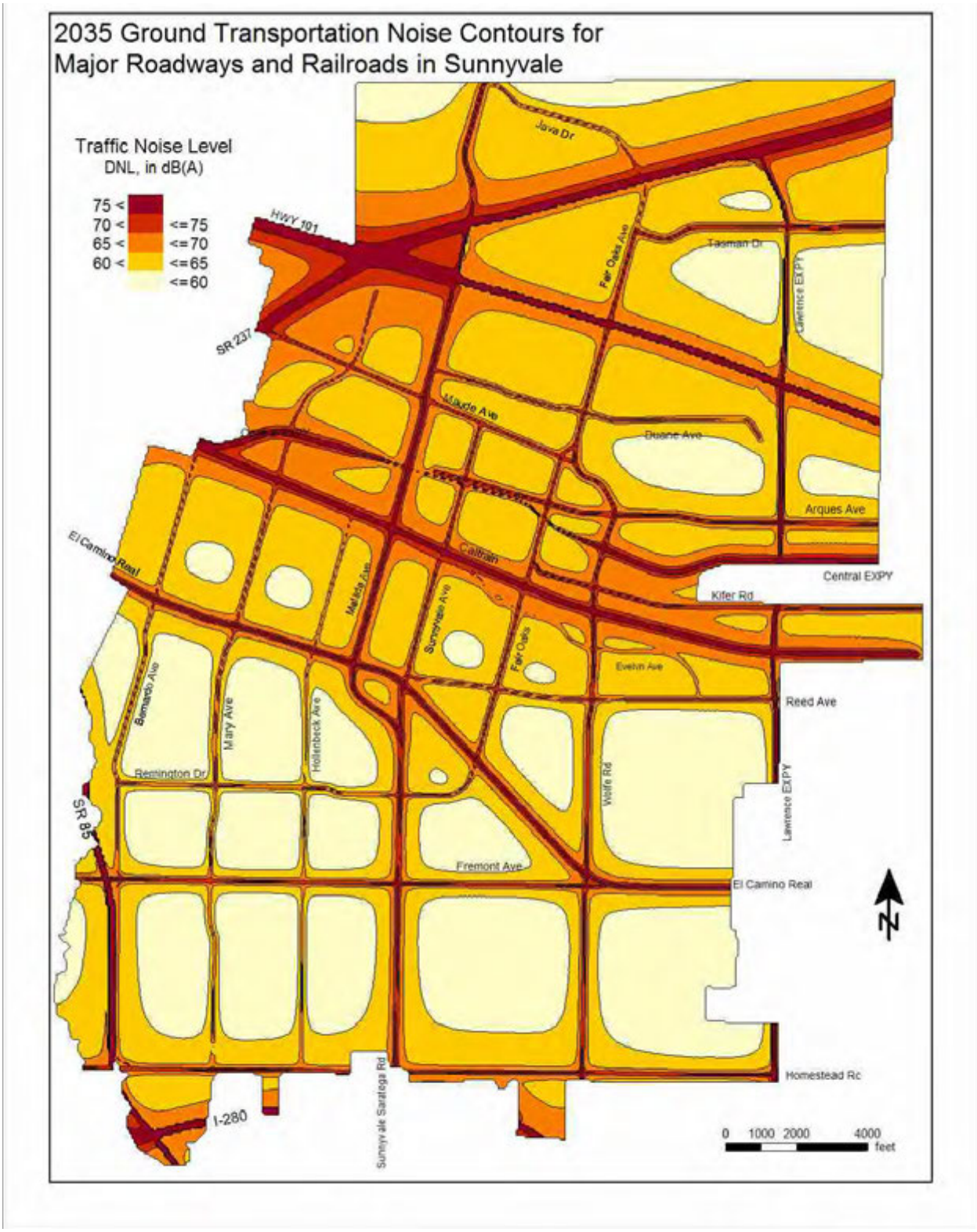
| Roadway Segment | $L_{dn}$ at 75 Feet, dBA* | |
|---|---|---|
| | Existing Conditions | Plus LUTE in 2035 |
| US 101, Mathilda Avenue to Fair Oaks Avenue, 75 feet from sound wall | 77.4 | 77.8 |
| SR 237, Mathilda Avenue to Fair Oaks Avenue, 75 feet from sound wall | 75.2 | 76.8 |
| I-280 near SR 85, just east of interchange | 77.4 | 77.8 |
| I-280 near Wolfe Road, just west of interchange | 77.4 | 77.8 |
| SR 85, Fremont Avenue to Homestead Road, 75 feet from sound wall | 75.8 | 76.7 |
| Arques Avenue, Lawrence Expressway to Wolfe Road | 64.3 | 67.3 |
| Bernardo Avenue, El Camino Real to Remington Avenue | 59.4 | 61.6 |
| Bernardo Avenue, Evelyn Avenue to El Camino Real | 61.4 | 62.1 |
| Central Expressway, just west of Lawrence Expressway | 72.2 | 74.3 |
| Central Expressway, Mary Avenue to Mathilda Avenue | 72.1 | 73.4 |
| Duane Avenue, Mathilda Avenue to Fair Oaks Avenue | 60.2 | 60.5 |
| El Camino Real, southeast of Fair Oaks Avenue | 70.5 | 73.0 |
| El Camino Real, Wolfe Road to Lawrence Expressway | 71.9 | 73.5 |
| Evelyn Avenue, Reed Avenue to Wolfe Road | 61.6 | 62.9 |
| Fair Oaks Avenue, Central Expressway to Kifer Road | 64.9 | 66.8 |
| Fair Oaks Avenue, Tasman Drive to SR 237 | 64.4 | 66.1 |
| Fremont Avenue, Bernardo Avenue to Mary Avenue | 64.4 | 67.4 |
| Fremont Avenue, Sunnyvale Avenue to Wolfe Road | 64.5 | 67.0 |
| Hollenbeck Avenue, El Camino Real to Remington Avenue | 60.9 | 63.8 |
| Hollenbeck Avenue, Evelyn Avenue to El Camino Real | 61.2 | 64.7 |
| Hollenbeck Avenue, Fremont Avenue to Homestead Road | 63.2 | 63.6 |
| Homestead Road, Wolfe Road to Lawrence Expressway | 65.2 | 67.2 |
| Homestead Road, Mary Avenue to Hollenbeck Avenue | 65.8 | 66.5 |
| Java Drive, Mathilda Avenue to SR 237 | 63.0 | 64.5 |
| Kifer Road, Lawrence Expressway to Wolfe Road | 62.5 | 64.9 |
| Lawrence Expressway, Reed Avenue to El Camino Real | 73.3 | 74.5 |
| Lawrence Expressway, Tasman Drive to SR 237 | 71.4 | 73.1 |
| Mary Avenue, El Camino Real to Remington Avenue | 63.1 | 65.9 |
| Mary Avenue, Evelyn Avenue to El Camino Real | 65.9 | 66.5 |
| Mary Avenue, Fremont Avenue to Homestead Road | 61.2 | 63.5 |

| Roadway Segment | $L_{dn}$ at 75 Feet, dBA* | |
|---|---|---|
| | Existing Conditions | Plus LUTE in 2035 |
| Mathilda Avenue, Evelyn Avenue to El Camino Real | 67.3 | 68.5 |
| Mathilda Avenue, Java Drive to SR 237 | 65.7 | 67.4 |
| Maude Avenue, Mary Avenue to Mathilda Avenue | 64.6 | 66.4 |
| Reed Avenue, Lawrence Expressway to Evelyn Avenue | 65.1 | 66.9 |
| Remington Avenue, Hollenbeck Avenue to Sunnyvale Avenue | 61.8 | 65.7 |
| Sunnyvale Avenue, Fremont Avenue to Homestead Road | 68.5 | 69.1 |
| Sunnyvale Avenue, El Camino Real to Remington Avenue | 67.0 | 68.2 |
| Sunnyvale Avenue, Evelyn Avenue to Reed Avenue | 62.4 | 64.5 |
| Tasman Drive, Java Drive to Lawrence Expressway | 62.9 | 65.5 |
| Wolfe Road, Homestead Road to Fremont Avenue | 65.6 | 67.2 |
| Wolfe Road, Arques Avenue to Stewart Avenue | 63.7 | 65.8 |

* *Noise levels for highways and expressways are given at a distance of 75 feet from the center of the near direction of travel.*

The Draft LUTE provides for residential and mixed-use residential development along major roadways. Noise levels in these areas currently range from 59.4 to 77.4 dBA $L_{dn}$ and are expected to range from 60.5 to 77.8 dBA $L_{dn}$ in 2035 under the Draft LUTE.

**FIGURE 3.6-6**
**FUTURE (2035) NOISE EXPOSURE IN SUNNYVALE**



The need for noise attenuation measures in building construction and project design from any noise source and for all land uses will be determined on a project-by-project basis at the time development is proposed. The City land use compatibility noise standard for all sensitive receptors in the city is 60 dBA $L_{dn}$, though noise levels up to 75 dBA are conditionally acceptable (General Plan noise standards for all land uses are summarized in **Table 3.6-7**). The Draft LUTE does not propose any change to current City noise standards in the General Plan or in Chapter 19.42 of the Municipal Code that regulates stationary noise sources. Required compliance with existing regulations would ensure that future land uses are not exposed to noise source in excess of acceptable noise levels identified by the City.

As previously stated, in addition to reviewing proposed development for compliance with City noise standards, the analysis takes into account the increases in noise levels over the pre-project noise conditions. Refer to Impact 3.6.2 for an evaluation of increases in traffic noise levels over the pre-project noise conditions.

Additionally, implementation of the following Draft LUTE policies and actions would reduce exposure of noise-sensitive land uses to excessive noise levels:

Policy 57: Limit the intrusion of incompatible uses and inappropriate development in and near residential neighborhoods, but allow transition areas at the edges of neighborhoods.

Action 2: Require appropriate noise attenuation, visual screening, landscape buffers, or setbacks between residential areas and dissimilar land uses.

Policy 90: Use density and design principles, such as physical transitions, between different land uses and to buffer between sensitive uses and less compatible uses.

Policy 95: Require high design standards for office, industrial, and research and development (R&D) buildings in all business districts.

Action 3: Carefully review the impacts, such as noise, odors, and facility operations, of commercial, office, and industrial uses and development adjacent to residential areas.

Policy 101: Use the Industrial-to-Residential (ITR) combining district to help meet the community's housing needs for all ages and economic sectors and balance its use with maintaining a healthy economy and employment base. ITR zoning allows industrial/commercial/office uses to continue as conforming uses while an area transitions to residential uses. ITR areas include Tasman Crossing, East Sunnyvale, Futures 4a, Futures 4b, and Futures 6a.

Action 2: During the transition from industrial to residential uses, anticipate and monitor compatibility issues between residential and industrial uses (e.g., noise, odors, hazardous materials).

Policy 108: Recognize child care and places of assembly as essential services and land uses that support the diverse needs of the community. Avoid locating these sensitive uses near hazardous materials, noise, dust, etc.

City, state, and federal (HUD) guidelines and regulations previously identified in the Regulatory Framework subsection above establish a framework to evaluate and implement noise control measures for future development in the city. Where exterior day-night average noise levels are 60 to 70 dBA $L_{dn}$, interior noise levels can typically be maintained below 45 dBA $L_{dn}$ with the incorporation of an adequate forced air mechanical ventilation system in residential units to allow residents the option of controlling noise by keeping the windows closed. Standard office construction methods typically provide about 25 to 30 decibels of noise reduction in interior spaces. The need for noise attenuation measures in building construction and project design for non-sensitive land uses (e.g., commercial, industrial, and institutional) will be determined on a project-by-project basis at the time specific projects are proposed. In all areas exceeding 70 dBA $L_{dn}$, the inclusion of windows and doors with high Sound Transmission Class (STC) ratings, and the incorporation of forced-air mechanical ventilation systems, may be necessary to meet 45 dBA $L_{dn}$ and the $L_{max}$ noise limits. Noise barriers may be necessary to shield outdoor activity areas at multi-family residential uses facilitated by the Draft LUTE.

The Draft LUTE does not make any changes to current City noise standards. Compliance with existing regulations would address noise impacts. For the reasons described, the proposed project would not expose residents to traffic noise or stationary sources of noise in excess of established standards. Impacts would be **less than significant.**

Mitigation Measures

None required.

### Result in a Substantial Permanent Increase in Ambient Noise Levels Above Levels Existing Without the Project (Standard of Significance 2)

**Impact 3.6.2** New development under the Draft LUTE would generate increased local traffic volumes that could cause a substantial permanent increase in ambient noise levels for existing noise-sensitive receptors. This impact would be **significant and unavoidable**.

As previously described, in addition to requiring the review of proposed development for compliance with specific noise thresholds, the General Plan requires that analyses account for the increases in noise levels over pre-project noise conditions. **Table 3.6-8** shows General Plan standards for evaluating a project's contribution to ambient noise level increases. The primary factor contributing to the ambient noise environment as a result of the Draft LUTE would be an increase in vehicular traffic from proposed new land uses. **Table 3.6-10** shows a comparison between calculated roadway noise levels with existing traffic and levels with the Draft LUTE.

**TABLE 3.6-10**
**PREDICTED INCREASES IN TRAFFIC NOISE LEVELS**
**EXISTING PLUS PROJECT CONDITIONS**

| Roadway Segment | $L_{dn}$ at 75 Feet from Near-Travel-Lane Centerline[1] | | Increase | Threshold | Impact | Affected Land Use |
|---|---|---|---|---|---|---|
| | Existing Conditions | Plus LUTE in 2035 | | | | |
| US 101, Mathilda Avenue to Fair Oaks Avenue, 75 feet from sound wall | 77.4 | 77.8 | **0.4** | >3.0 | No | Residential, Commercial & Warehousing |
| SR 237, Mathilda Avenue to Fair Oaks Avenue, 75 feet from sound wall | 75.2 | 76.8 | **1.6** | >3.0 | No | Residential & Industrial |
| I-280 near SR 85, just east of interchange | 77.4 | 77.8 | **0.4** | >3.0 | No | Residential |
| I-280 near Wolfe Road, just west of interchange | 77.4 | 77.8 | **0.4** | >3.0 | No | Residential |
| SR 85, Fremont Avenue to Homestead Road, 75 feet from sound wall | 75.8 | 76.7 | **0.9** | >3.0 | No | Residential & Educational |
| Arques Avenue, Lawrence Expressway to Wolfe Road | 64.3 | 67.3 | **3.0** | >3.0 | No | Commercial & Health Services |
| Bernardo Avenue, El Camino Real to Remington Avenue | 59.4 | 61.6 | **2.2** | >3.0 | No | Residential, Commercial & Educational |
| Bernardo Avenue, Evelyn Avenue to El Camino Real | 61.4 | 62.1 | **0.7** | >3.0 | No | Residential, Commercial & Industrial |
| Central Expressway, just west of Lawrence Expressway | 72.2 | 74.3 | **2.1** | >3.0 | No | Commercial & Industrial |
| Central Expressway, Mary Avenue to Mathilda Avenue | 72.1 | 73.4 | **1.3** | >3.0 | No | Residential, Commercial & Office |
| Duane Avenue, Mathilda Avenue to Fair Oaks Avenue | 60.2 | 60.5 | **0.3** | >3.0 | No | Residential |
| El Camino Real, southeast of Fair Oaks Avenue | 70.5 | 73.0 | **2.5** | >3.0 | No | Commercial |
| El Camino Real, Wolfe Road to Lawrence Expressway | 71.9 | 73.5 | **1.6** | >3.0 | No | Commercial |
| Evelyn Avenue, Reed Avenue to Wolfe Road | 61.6 | 62.9 | **1.3** | >3.0 | No | Residential |
| Fair Oaks Avenue, Central Expressway to Kifer Road | 64.9 | 66.8 | **1.9** | >3.0 | No | Residential & Commercial |
| Fair Oaks Avenue, Tasman Drive to SR 237 | 64.4 | 66.1 | **1.7** | >3.0 | No | Residential & Commercial |

| Roadway Segment | $L_{dn}$ at 75 Feet from Near-Travel-Lane Centerline[1] | | Increase | Threshold | Impact | Affected Land Use |
|---|---|---|---|---|---|---|
| | Existing Conditions | Plus LUTE in 2035 | | | | |
| Fremont Avenue, Bernardo Avenue to Mary Avenue | 64.4 | 67.4 | **3.0** | >3.0 | No | Residential & Commercial |
| Fremont Avenue, Sunnyvale Avenue to Wolfe Road | 64.5 | 67.0 | **2.5** | >3.0 | No | Residential & Commercial |
| Hollenbeck Avenue, El Camino Real to Remington Avenue | 60.9 | 63.8 | **2.9** | >3.0 | No | Residential & Commercial |
| Hollenbeck Avenue, Evelyn Avenue to El Camino Real | 61.2 | 64.7 | **3.5** | >3.0 | **Yes** | Residential, Parkland & Institutional |
| Hollenbeck Avenue, Fremont Avenue to Homestead Road | 63.2 | 63.6 | **0.4** | >3.0 | No | Residential, Educational & Commercial |
| Homestead Road, Wolfe Road to Lawrence Expressway | 65.2 | 67.2 | **2.0** | >3.0 | No | Residential, Commercial & Health Services |
| Homestead Road, Mary Avenue to Hollenbeck Avenue | 65.8 | 66.5 | **0.7** | >3.0 | No | Residential, Educational & Commercial |
| Java Drive, Mathilda Avenue to SR 237 | 63.0 | 64.5 | **1.5** | >5.0 | No | Commercial & Office |
| Kifer Road, Lawrence Expressway to Wolfe Road | 62.5 | 64.9 | **2.4** | >5.0 | No | Office & Industrial |
| Lawrence Expressway, Reed Avenue to El Camino Real | 73.3 | 74.5 | **1.2** | >3.0 | No | Residential & Commercial |
| Lawrence Expressway, Tasman Drive to SR 237 | 71.4 | 73.1 | **1.7** | >3.0 | No | Residential, Commercial & Industrial |
| Mary Avenue, El Camino Real to Remington Avenue | 63.1 | 65.9 | **2.8** | >3.0 | No | Residential, Educational & Commercial |
| Mary Avenue, Evelyn Avenue to El Camino Real | 65.9 | 66.5 | **0.6** | >3.0 | No | Residential, Educational & Commercial |
| Mary Avenue, Fremont Avenue to Homestead Road | 61.2 | 63.5 | **2.3** | >3.0 | No | Residential & Educational |
| Mathilda Avenue, Evelyn Avenue to El Camino Real | 67.3 | 68.5 | **1.2** | >3.0 | No | Residential & Commercial |
| Mathilda Avenue, Java Drive to SR 237 | 65.7 | 67.4 | **1.7** | >5.0 | No | Commercial & Industrial |
| Maude Avenue, Mary Avenue to Mathilda Avenue | 64.6 | 66.4 | **1.8** | >5.0 | No | Office & Industrial |
| Reed Avenue, Lawrence Expressway to Evelyn Avenue | 65.1 | 66.9 | **1.8** | >3.0 | No | Residential & Commercial |

| Roadway Segment | $L_{dn}$ at 75 Feet from Near-Travel-Lane Centerline[1] | | Increase | Threshold | Impact | Affected Land Use |
|---|---|---|---|---|---|---|
| | Existing Conditions | Plus LUTE in 2035 | | | | |
| Remington Avenue, Hollenbeck Avenue to Sunnyvale Avenue | 61.8 | 65.7 | **3.9** | >3.0 | **Yes** | Residential & Commercial |
| Sunnyvale Avenue, Fremont Avenue to Homestead Road | 68.5 | 69.1 | **0.6** | >3.0 | No | Residential & Commercial |
| Sunnyvale Avenue, El Camino Real to Remington Avenue | 67.0 | 68.2 | **1.2** | >3.0 | No | Residential & Commercial |
| Sunnyvale Avenue, Evelyn Avenue to Reed Avenue | 62.4 | 64.5 | **2.1** | >3.0 | No | Residential & Commercial |
| Tasman Drive, Java Drive to Lawrence Expressway | 62.9 | 65.5 | **2.6** | >3.0 | No | Residential |
| Wolfe Road, Homestead Road to Fremont Avenue | 65.6 | 67.2 | **1.6** | >3.0 | No | Residential & Commercial |
| Wolfe Road, Arques Avenue to Stewart Avenue | 63.7 | 65.8 | **2.1** | >3.0 | No | Residential & Commercial |

*Notes:*

*1. Traffic noise levels were calculated using the FHWA roadway noise prediction model based on data obtained from the traffic analysis prepared for this project (Hexagon 2015; **Appendix D**).*

*2. For purposes of this analysis, a noise level increase of 5.1 or greater would typically be considered to result in increased levels of annoyance where existing ambient noise levels are normally acceptable. A noise level increase of 3.1 or greater would be considered to result in increased levels of annoyance where existing ambient noise levels are normally acceptable but the increased noise level as a result of the project pushes noise levels beyond the normally acceptable threshold. Additionally, an increase of 3.1 or greater would be considered to result in increased levels of annoyance where existing ambient noise levels are conditionally acceptable or unacceptable.*

*3. Areas where the noise threshold is >5.0 are commercial/industrial areas without residential land uses, currently within the normally acceptable noise level range, and less than 5.1 dBA from exceeding the normally acceptable noise threshold.*

As shown in **Table 3.6-10**, predicted increases in traffic noise levels associated with the project would not be greater than the applicable noise level thresholds along most roadway segments, with the exception of Hollenbeck Avenue between Evelyn Avenue and El Camino Real, and Remington Avenue between Hollenbeck Avenue and Sunnyvale Avenue. This impact would be considered **significant**.

### Mitigation Measures

While the need for site-specific noise attenuation measures from any noise source will be determined on a project-by-project basis at the time development is proposed, it is infeasible to ensure that existing residential uses along these portions of Hollenbeck Avenue and Remington Avenue would not be exposed to future traffic noise levels exceeding the City's noise standards or significantly exceeding the levels to which they are currently exposed. For example, it may not be possible to construct a noise barrier at an existing residence due to engineering constraints (utility easements or driveway openings), and building façade sound insulation would only benefit interior spaces, so outdoor activity areas may still be affected. It may also be infeasible to reduce speed limits in areas where speed surveys would not safely support the reduction. In addition, busy streets tend to also serve commercial uses, so restricting trucks on the busier streets would be impractical.

Although a combination of various noise reduction measures could be highly effective in reducing traffic noise levels on a citywide basis, it is not possible to state with absolute certainty that feasible mitigation measures are available to mitigate this impact at every existing noise-sensitive use. As a result, this impact would remain **significant and unavoidable**.

### Exposure to Groundborne Vibration (Standard of Significance 3)

**Impact 3.6.3** The Draft LUTE would provide for development of sensitive land uses in areas of the city adjacent to the existing Caltrain and light rail corridors. Groundborne vibration from construction activities could be substantial. Implementation of the Draft LUTE would not result in excessive operational vibration but does not address construction vibration. This impact is considered **potentially significant**.

*Operations*

The Draft LUTE would provide for development of sensitive land uses in areas of the city adjacent to the existing Caltrain and light rail corridors. Ground vibration from conventional railroad trains or light rail trains could exceed the guidelines set forth by the Federal Transit Administration (FTA) if new buildings containing sensitive uses (e.g., residences) are constructed within approximately 100 feet of the tracks. Employment areas (e.g., offices, research and development facilities) can also be sensitive to groundborne vibration. The specific locations of new buildings and their sensitivities to vibration levels are not known at this time; however, such uses located in areas within or near Caltrain and light rail corridors could be exposed to ground vibration levels exceeding FTA guidelines.

As previously described, measured groundborne VdB levels in Sunnyvale have reached as high as 77 VdB at 50 feet from the tracks, which is a perceptible level (see **Table 3.6-2**). The FTA considers the 85 VdB level acceptable, though only if there are an infrequent number of events per day.

The General Plan contains policies and guidelines intended to highlight overall design considerations and address potential noise impacts at a programmatic level. For instance, General Plan Safety and Noise Element Policy SN-8.9a requires the use of a combination of barriers, setbacks, site planning, and building design techniques to reduce such impacts, keeping in mind their benefits and shortcomings. Policy SN-10.4a requires the City to monitor plans and projects which would increase the number of commuter or freight trains, evaluate their impacts, and seek mitigation for any change that worsens local conditions. Policy SN-10.4e requires the City to monitor regional plans for light rail facilities in Sunnyvale to ensure that noise-related impacts are identified and mitigated.

*Construction*

Construction activities would require the use of off-road equipment such as tractors, jackhammers, and haul trucks. The FTA vibration impact threshold of 85 VdB for construction, which is the vibration level that the FTA considers acceptable if there are an infrequent number of events per day, can be applied to construction activities. Groundborne vibration levels associated with common construction equipment are summarized in **Table 3.6-11**. Based on the information presented in the table, ground vibration generated by construction equipment would not be anticipated to exceed 85 VdB at 50 feet.

**TABLE 3.6-11**
**REPRESENTATIVE VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT**

| Equipment | Approximate VdB | |
|---|---|---|
| | 50 Feet | 100 Feet |
| Large Bulldozer | 81 | 75 |
| Caisson Drilling | 81 | 75 |
| Loaded Trucks | 80 | 74 |
| Jackhammer | 73 | 67 |
| Small Bulldozer | 52 | 46 |

*Source: FTA 2006*

*Notes: The vibration levels at the off-site sensitive uses are determined with the following equation from the FTA Transit Noise and Vibration Impact Assessment, Final Report: Lv(D)=Lv(25 ft)–20log(D/25), where Lv = vibration level of equipment, D = distance from the equipment to the receiver, Lv(25 ft) = vibration level of equipment at 25 feet*

The majority of construction equipment does not result in VdB in excess of FTA thresholds, even at 50 feet. However, pile driving (not a frequent construction method) can generate peak particle velocity (PPVs) of up to 1.5 inches per second at a distance of 25 feet. Caltrans identifies that damage to older buildings can occur at 0.25 inches per second of PPV and at 0.5 for conventional buildings. This would be **potentially significant** depending on whether pile driving was used on future construction activities.

The Sunnyvale Municipal Code Chapter 16.08, the legal hours of construction are between 7:00 a.m. and 6:00 p.m. Monday through Friday and between 8:00 a.m. and 5:00 p.m. on Saturdays. Restricting construction to these hours is intended to mitigate temporary noise impacts, including groundborne vibration impacts, by avoiding construction during nighttime periods that would disturb noise-sensitive land uses (residential).

Mitigation Measures

**MM 3.6.3** The following will be included as a policy or implementation measure to the Safety and Noise Chapter of the General Plan:

New development and public projects shall employ site-specific noise attenuation measures during construction to reduce the generation of construction noise and vibration. These measures shall be included in a Noise Control Plan that shall be submitted for review and approval by the City. Measures specified in the Noise Control Plan and implemented during construction shall include, at a minimum, the following noise control strategies:

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

- Impact tools (e.g., jackhammers, pavement breakers, and rock drills) used for construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools; and

- Stationary noise sources shall be located as far from adjacent receptors as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or include other measures.

- Noise and vibration reducing pile-driving techniques shall be employed during construction and will be monitored to ensure no damage to nearby structures occurs (i.e., vibrations above peak particle velocity (PPVs) of 0.25 inches per second at nearby structures). These techniques shall include:

  - Installing intake and exhaust mufflers on pile-driving equipment;

  - Vibrating piles into place when feasible, and installing shrouds around the pile-driving hammer where feasible;

  - Implementing "quiet" pile-driving technology (such as pre-drilling of piles and the use of more than one pile driver to shorten the total pile driving duration), where feasible, in consideration of geotechnical and structural requirements and conditions;

  - Use cushion blocks to dampen impact noise, if feasible based on soil conditions. Cushion blocks are blocks of material that are used with impact hammer pile drivers. They consist of blocks of material placed atop a piling during installation to minimize noise generated when driving the pile. Materials typically used for cushion blocks include wood, nylon and micarta (a composite material); and

  - At least 48 hours prior to pile-driving activities, notifying building owners and occupants within 600 feet of the project area of the dates, hours, and expected duration of such activities.

Implementation of the above mitigation measure would ensure that construction vibrations do not result in building damage and would mitigate this impact to **less than significant**.

### Exposure to Short-Term Construction Noise (Standard of Significance 4)

**Impact 3.6.4** New development provided for by the Draft LUTE could result in the exposure of persons to or generation of noise levels in excess of City noise standards. This impact would be **potentially significant.**

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. Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (early morning, evening, or nighttime hours), when construction occurs in areas immediately adjoining noise-sensitive land uses, or when construction lasts for extended periods of time.

Major noise-generating construction activities associated with new projects would include removal of existing pavement and structures, site grading and excavation, installation of utilities, construction of building foundations, cores, and shells, paving, and landscaping. The highest noise levels would be generated during demolition of existing structures when impact tools are used (e.g., jackhammers, hoe rams) and during the construction of building foundations when impact pile driving is required to support the structure. Site grading and excavation activities

would also generate high noise levels, as these phases often require the simultaneous use of multiple pieces of heavy equipment such as dozers, excavators, scrapers, and loaders. Lower noise levels result from building construction activities when these activities move indoors and less heavy equipment is required to complete the tasks. Construction equipment would typically include but would not be limited to earth-moving equipment and trucks, pile driving rigs, mobile cranes, compressors, pumps, generators, paving equipment, and pneumatic, hydraulic, and electric tools. Noise levels associated with individual construction equipment are summarized in **Table 3.6-12.**

**TABLE 3.6-12**
**TYPICAL CONSTRUCTION EQUIPMENT NOISE LEVELS**

| Equipment | Typical Noise Level (dBA $L_{max}$) 50 Feet from Source |
|---|---|
| Air Compressor | 81 |
| Backhoe | 80 |
| Compactor | 82 |
| Concrete Mixer | 85 |
| Concrete Vibrator | 76 |
| Crane, Mobile | 83 |
| Dozer | 85 |
| Generator | 81 |
| Grader | 85 |
| Impact Wrench | 85 |
| Jackhammer | 88 |
| Loader | 85 |
| Truck | 88 |
| Paver | 89 |
| Pneumatic Tool | 85 |
| Roller | 74 |
| Saw | 76 |

*Source: FTA 2006*

As depicted in **Table 3.6-12**, noise levels generated by individual pieces of construction equipment typically range from approximately 74 dBA to 89 dBA $L_{max}$ at 50 feet (FTA 2006). Average-hourly noise levels associated with construction projects can vary, depending on the activities performed, reaching levels of up to approximately 83 dBA $L_{eq}$ at 50 feet. Short-term increases in vehicle traffic, including worker commute trips and haul truck trips, may also result in temporary increases in ambient noise levels at nearby receptors. During each stage of construction, a different mix of equipment would operate, and noise levels would vary based on the amount of equipment on-site and the location of the activity. Construction noise levels drop off at a rate of about 6 dBA per doubling of distance between the noise source and the receptor. Intervening structures or terrain would result in lower noise levels at distant receivers.

The City of Sunnyvale does not establish quantitative noise limits for demolition or construction activities occurring in the city. According to Municipal Code Chapter 16.08, the legal hours of construction are between 7:00 a.m. and 6:00 p.m. Monday through Friday and between 8:00 a.m. and 5:00 p.m. on Saturdays. These hours are intended to mitigate temporary noise impacts by avoiding construction during noise-sensitive periods that would disturb noise-sensitive land uses (residential). Noise generated by small infill projects would likely have relatively short overall construction durations, with the noisiest phases of construction (e.g., demolition, foundations, project infrastructure, building core and shell) limited to a time frame of one year or less. These phases of construction are not anticipated to generate noise levels in excess of 60 dBA $L_{eq}$ and would not increase the ambient noise environment by 5 dBA $L_{eq}$ or more at sensitive land uses in the area over extended periods of time (beyond one construction season). Interior construction, landscaping, and finishing activities would not be expected to result in noise levels in excess of 60 dBA $L_{eq}$. Because construction noise would be intermittent, short in duration, and would take place during legal hours of construction, increases in noise due to construction activities would not be typically considered substantial. However, there may be circumstances where temporary construction noise levels are substantial and would cause substantial annoyance to residents during the daytime hours. This impact would be **potentially significant**.

Mitigation Measures

Implementation of mitigation measure **MM 3.6.3** would require the development of a Noise Control Plan for construction activities would ensure that construction noise attenuation is being provided to minimize this temporary noise impact in combination with the time restrictions for construction activities. This would reduce this impact to **less than significant**.

### Exposure to Noise from Airport Operations (Standard of Significance 5)

**Impact 3.6.5** Development pursuant to the Draft LUTE would include noise-sensitive land uses in the vicinity of Moffett Federal Airfield. However, with compliance with ALUC and City noise and land use policies and standards, new development would not expose new residents and uses to substantial airport noise impacts. This impact is **less than significant**.

Development pursuant to the Draft LUTE would include noise-sensitive land uses in the vicinity of Moffett Federal Airfield. A significant noise impact would be identified where noise-sensitive land uses are proposed in areas where existing or future noise levels would exceed the noise and land use compatibility standards established by the Santa Clara County Airport Land Use Commission (ALUC).

The Santa Clara County ALUC has advisory powers over new land uses in the vicinity of airports and establishes 65 dBA CNEL as the maximum allowable noise level considered compatible with residential uses. As previously stated, the 75 dBA contour for Moffett Federal Airfield is completely contained within the airport boundaries. The 70 dBA contour is generally contained within NASA-owned property but overlies a small area of industrial use in the vicinity of Clyde Avenue west of the Sunnyvale Golf Course and north of the West Maude Avenue and Mary Avenue intersection. The 65 dBA noise contour is generally contained within the area bounded by the intersections of Mary Avenue and West Maude Avenue, Mathilda Avenue and Evelyn Avenue, Evelyn Avenue and Sunnyvale Avenue, and the US 101/SR 237 interchange. These noise levels would be within the City's noise standards for office and commercial uses (see **Table 3.6-7**).

The 60 dBA contour principally affects commercial and industrial areas, with the exception of the area southeast of Central Expressway, which comprises predominantly single- and multi-family residences. Therefore, all of the unacceptable noise areas resulting from Moffett Federal Airfield are contained within the airport itself. Since the proposed Draft LUTE would not provide for new sensitive receptors on the airfield property, it would not result in the exposure of sensitive receptors to unacceptable noise levels or conflicts with City noise standards for nonresidential uses.

Continued compliance with the Comprehensive Land Use Plan for Moffett Field Airfield and with the City's normally acceptable noise level standards effectively reduces potential program-level aircraft noise impacts to a **less than significant** level.

Mitigation Measures

None required.

## 3.6.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

### CUMULATIVE SETTING

The geographic extent of the cumulative setting for noise consists of the Sunnyvale Planning Area, but factors cumulative traffic conditions that would be generated by land use activities in the region in the year 2035. Based on the noise measurement surveys conducted, ambient noise levels in Sunnyvale are primarily affected by vehicle traffic on nearby area roadways. As a result, the primary factor for cumulative noise impact analysis is the consideration of future traffic noise levels along area roadways.

Construction, vibration, and stationary noise impacts in the city are considered site-specific impacts and are not considered cumulative impacts in this EIR.

### CUMULATIVE IMPACTS AND MITIGATION MEASURES

**Cumulative Traffic Noise Levels**

**Impact 3.6.6** New development pursuant to the Draft LUTE would contribute to a substantial increase in permanent traffic noise levels on area roadways. The Draft LUTE's contribution to this **significant and unavoidable** impact is **cumulatively considerable**.

Noise levels along highways, expressways, and other roadways in Sunnyvale were calculated for cumulative year 2035 conditions with implementation of the Draft LUTE and compared to existing conditions to quantify the noise increase. As described above, the City land use compatibility noise standard for all sensitive receptors in the city is 60 dBA $L_{dn}$, though noise levels up to 75 dBA are conditionally acceptable (General Plan noise standards for all land uses are summarized in **Table 3.6-7**). Adherence to this standard would address noise compliance impacts, and the Draft LUTE does not propose any change to current City noise standards. However, as described under Impact 3.6.2, increases in noise levels over the pre-project noise conditions with implementation of the Draft LUTE would be greater than the applicable noise level thresholds on Remington Avenue between Hollenbeck Avenue and Sunnyvale Avenue, and on Hollenbeck Avenue between Evelyn Avenue and El Camino Real. As shown in **Table 3.6-10**, residents along Remington Avenue between Hollenbeck Avenue and Sunnyvale

Avenue, and on Hollenbeck Avenue between Evelyn Avenue and El Camino Real would be exposed to excessive noise levels in year 2035 that cannot be feasibly mitigated (see discussion under Impact 3.6.2). Therefore, this impact is **significant and unavoidable,** and the Draft LUTE's contribution to the impact is **cumulatively considerable**.

Mitigation Measures

None available.

## REFERENCES

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# 3.7 Geology and Soils

This section describes geologic and seismic hazards, such as ground shaking and liquefaction, and soil-related hazards, such as expansive soils and evaluates the potential for the Draft LUTE to affect or be affected by geologic and soil hazards. Paleontological resources impacts are also evaluated in this section.

A summary of the impact conclusions related to geology, soils, and paleontological resources is provided below.

| Impact Number | Impact Topic | Impact Significance |
|---|---|---|
| 3.7.1 | Seismic Hazards | Less than significant |
| 3.7.2 | Potential Increase in Erosion and the Loss of Topsoil | Less than significant |
| 3.7.3 | Potential Development on Unstable Soils | Less than significant |
| 3.7.4 | Paleontological Resources | Less than significant |
| 3.7.5 | Cumulative Geologic, Seismic, and Soils Hazards | Less than cumulatively considerable |
| 3.7.6 | Cumulative Impacts to Paleontological Resources | Less than cumulatively considerable |

## 3.7.1 EXISTING SETTING

### REGIONAL GEOLOGIC SETTING

The San Francisco Bay region is located along the boundary between the Pacific and North American plates, two large crustal plates that are separated by the north–northwest-trending San Andreas fault, in the California Coast Ranges Geomorphic Province. The geomorphology of the region includes parts of three prominent, northwest-trending geologic/geomorphic features, which include from west to east the Santa Cruz Mountains, the Santa Clara Valley, and the Diablo Range. The Santa Clara Valley forms part of an elongated structural block (the San Francisco Bay block) in the central Coast Ranges that contains San Francisco Bay and its surrounding alluvial margins. This structural block is bounded by the San Andreas fault to the southwest and by the Hayward-Calaveras fault zone to the northeast. Sunnyvale is in the Santa Clara Valley.

### LOCAL GEOLOGY AND TOPOGRAPHY

Sunnyvale is located at the southern end of San Francisco Bay and is built atop the generally Holocene-age alluvial deposits that surround the margins of the bay. Near the immediate vicinity of San Francisco Bay (roughly 1,000 feet), Bay mud deposits are present. Generally, alluvial deposits increase in age toward the south where locally Late Pleistocene-age alluvial deposits occur (**Figure 3.7-1**). Sunnyvale's topography is generally flat, gradually dropping in a northerly direction from an elevation of 300 feet to sea level.

### FAULTS AND SEISMICITY

Faults are classified as "active" and "potentially active." An active fault is one that has had surface displacement within Holocene time (about the last 11,000 years), while a potentially active fault is one that has been active during Quaternary time (last 1,600,000 years). These definitions are used in delineating Earthquake Fault Zones as mandated by the Alquist-Priolo Earthquake Fault Zoning Act of 1972. The intent of this act is to ensure that development does not occur across the traces of active faults.

There are no Alquist-Priolo Earthquake Fault Zones in Sunnyvale. Three active faults are located near Sunnyvale: the Hayward fault (11.7 miles east), the San Andreas fault (7.5 miles west), and the Monte Vista-Shannon fault (4.3 miles west). There are also three potentially active faults in the city—the San Jose fault, the Stanford fault, and the Cascade fault (CGS 2010), which cross the city in a northwesterly-southeasterly direction (**Figure 3.7-2**). The San Jose fault is a concealed fault (i.e., it does not have a surface trace).

In a study completed in 2014, the US Geological Survey Working Group on California Earthquake Probabilities estimated there is a 72 percent probability between 2014 and 2044 that an M6.7 or greater magnitude earthquake will occur in the San Francisco Bay Region (USGS 2015).

### Ground Shaking

Ground shaking is the most widespread effect of an earthquake. The sudden release of energy in an earthquake causes waves to travel through the earth. These waves shake structures to the breaking point and can trigger secondary effects such as landslides or other types of ground failure.

The strength of an earthquake is generally expressed in two ways: magnitude and intensity. The magnitude is a measure that depends on the seismic energy radiated by the earthquake as recorded on seismographs. The intensity at a specific location is a measure that depends on the effects of the earthquake on people or buildings and is used to express the severity of ground shaking. There may be many values of intensity (damage) for a specific earthquake at different sites, depending on the underlying soil conditions.

The most commonly used magnitude scale today is the moment magnitude (Mw) scale. Moment magnitude is related to the physical size of fault rupture and the movement (displacement) across the fault, and it is therefore a more uniform measure of the strength of an earthquake. Earthquake intensities (ground shaking and damage) are estimated by the Modified Mercalli Intensity Scale, which characterizes the intensity of an earthquake's effects in a given locality and is based on observations of earthquake effects in specific places. On the Modified Mercalli Intensity Scale, values range from I to XII (see **Table 3.7-1**). While an earthquake has only one magnitude, it can have various intensities, which decrease with distance from the epicenter (CGS 2002a).

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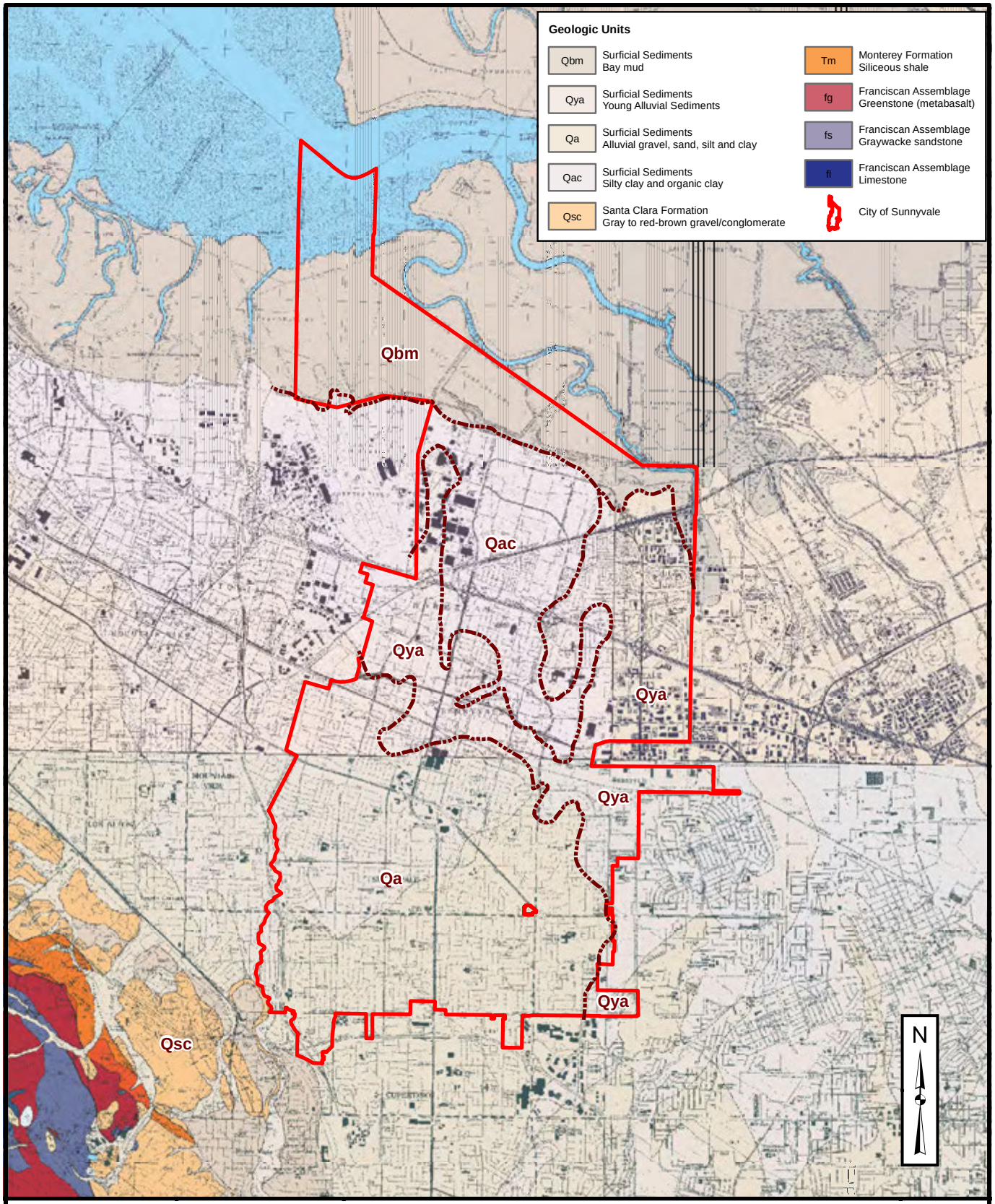


Source: Leighton, 2012

0 3,200 6,400
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**FIGURE 3.7-1**
Regional Geologic Map

Michael Baker
INTERNATIONAL

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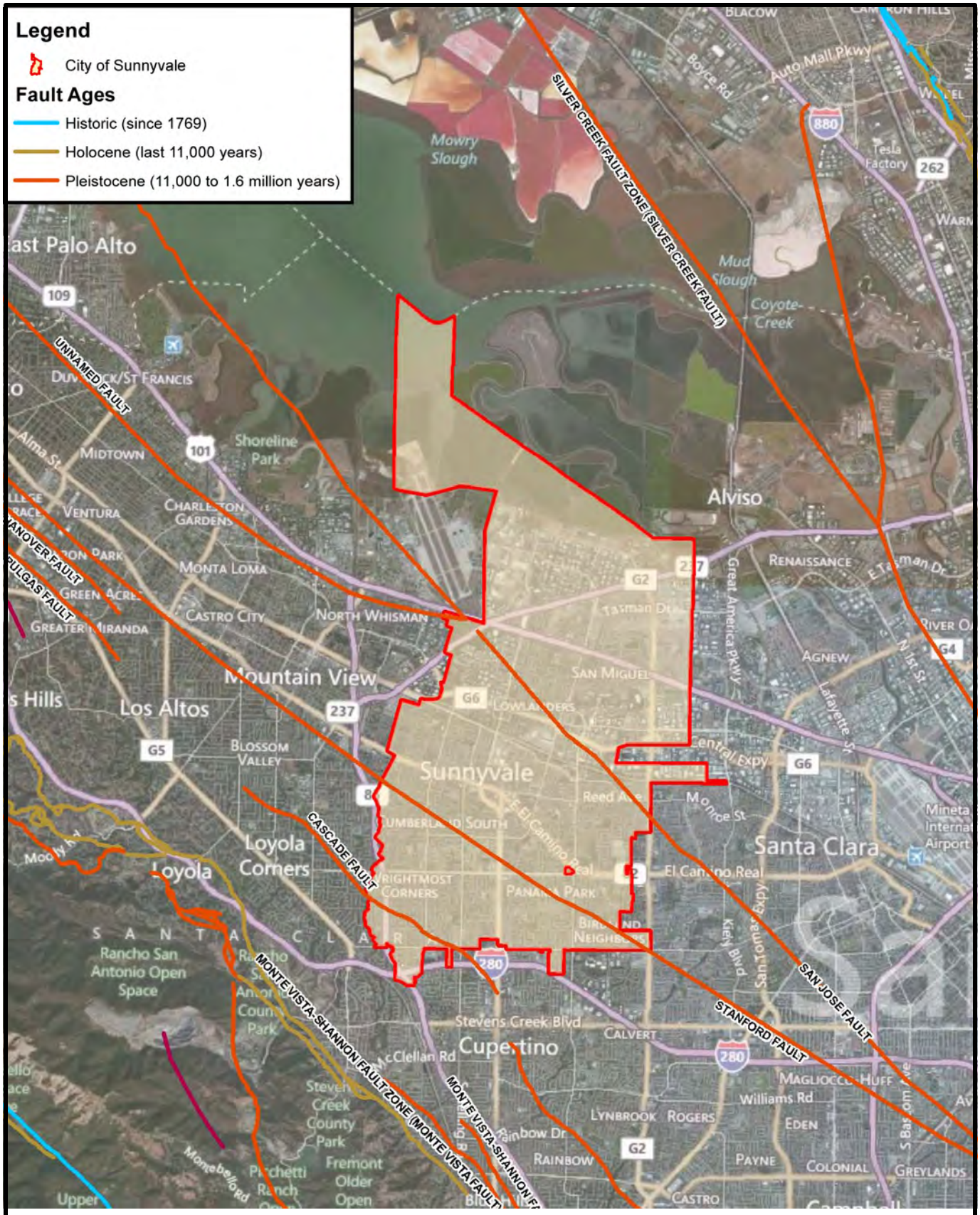



Source: Leighton, 2012

**FIGURE 3.7-2**
Regional Fault Map

Michael Baker
INTERNATIONAL

**TABLE 3.7-1**
**MODIFIED MERCALLI INTENSITY SCALE**

| Modified Mercalli Scale | Effects of Intensity |
|---|---|
| I | I. Not felt except by a very few under especially favorable conditions. |
| II–III | II. Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.<br>III. Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated. |
| IV–V | IV. Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.<br>V. Felt by nearly everyone, many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop. |
| VI–VII | VI. Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.<br>VII. Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars. |
| VIII–IX | VIII. Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motor cars disturbed.<br>IX. Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken. |
| X or higher | X. Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from river banks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.<br>XI. Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.<br>XII. Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air. |

*Source: CGS 2002a*

Strong ground shaking can be expected in the LUTE Planning Area during moderate to severe earthquakes. The USGS has developed maps of earthquake ground shaking intensity for major regional faults. For a large earthquake on the San Andreas fault (Mw 7.9), Sunnyvale could be susceptible to very strong ground shaking effects (VIII on the Modified Mercalli Intensity Scale) (ABAG 2013).

### Liquefaction

Liquefaction occurs when loose sand and silt that is saturated with water behaves like a liquid when shaken by an earthquake. The soil can lose its ability to support structures, flow down even very gentle slopes, and erupt to the ground surface to form sand boils. Many of these

phenomena are accompanied by settlement of the ground surface, usually in uneven patterns that damage buildings, roads, and pipelines. Most ground failure from earthquake shaking results in displacement at the surface due to the loss of strength of the underlying materials. The various types of ground failure include landsliding, liquefaction, lateral spreading, lurching, and differential settlement.

These effects usually occur in soft, fine-grained, water-saturated alluvium, as generally found in the Santa Clara Valley. Portions of Sunnyvale are designated as Liquefaction Hazard Zones (Sunnyvale 2011; CGS 2002b, 2006). In particular, the northern half of Sunnyvale starting at roughly Washington Avenue and Central Expressway northward is considered susceptible to liquefaction (**Figure 3.7-3**). The liquefaction probability for the city is between 0 and 10 percent (USGS 2008).

### Earthquake-Induced Settlement

Settlement of the ground surface can be accelerated and accentuated by earthquakes. During an earthquake, settlement can occur as a result of the relatively rapid compaction and settling of subsurface materials (particularly loose, non-compacted, and variable sandy sediments) due to the rearrangement of soil particles during prolonged ground shaking. Settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different rates). In general, areas are susceptible to earthquake-induced settlement if underlain by compressible sediments, such as poorly engineered artificial fill or young unconsolidated sediments.

## SOILS

There is little native soil exposed at the surface in Sunnyvale. Nearly all parcels in the city have development on them; only 0.5 percent of parcels are vacant. There are some small pockets of remaining orchards but no sources of topsoil in the Planning Area. The primary soil types in the city are Urban Land–Hangerone, Flaskan, Elpaloalto, Botella, and Campbell Complex (NRCS 2012).

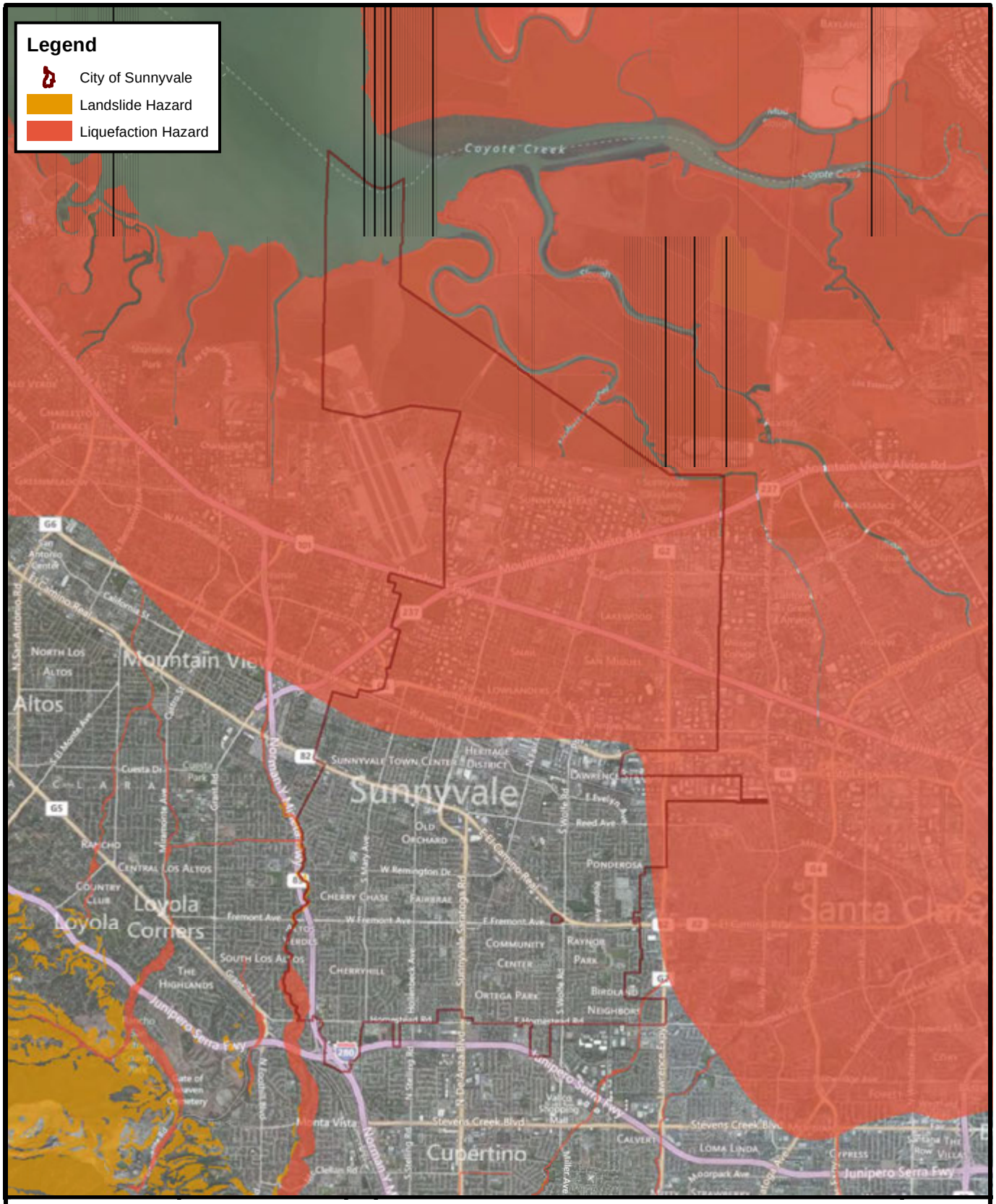
### Erosion

Soil with high amounts of silt can be easily eroded, while sandy soils are less susceptible to erosion. Erosion is most likely on sloped areas with exposed soil, especially where unnatural slopes are created by cut-and-fill activities. Typically, the soil erosion potential is reduced once the soil is graded and covered with concrete, structures, or asphalt. Most of Sunnyvale has been developed and is covered with impervious surfaces; therefore, erosion potential is low.

### Settlement

Surface settlement can occur due to immediate settlement of coarse-grained soils or consolidation of fine-grained soils under increased loading. Immediate settlement occurs when a load from a structure or placement of new fill material is applied, causing distortion in the underlying materials. This settlement occurs relatively quickly and is typically substantially complete within several hours or days after placement of the final load. Consolidation settlement occurs in saturated or near-saturated fine-grained (clay) soil due to volume change caused by load-induced squeezing of water from the pore spaces. Consolidation occurs over a relatively long period of time (often years or even decades) and is followed by secondary compression, which is a continued change in void ratio under the continued application of the load from the pore water to the soil grains. Total settlements can vary over an area, referred to

T:_CS\Work\Santa Clara, County of\Sunnyvale figures 10-0040_002_2.28




Source: Leighton, 2012

0 3,200 6,400
FEET

**FIGURE 3.7-3**
Liquefaction Hazard Map

Michael Baker
INTERNATIONAL

as differential settlement, because of variations in loading, soil characteristics, and thickness of compressible layers. Areas are generally susceptible to differential settlement if underlain by compressible sediments, such as poorly engineered artificial fill or young unconsolidated sediments. Sunnyvale is underlain by young alluvial sediments that can be susceptible to settlement, and sediments located immediately adjacent to San Francisco Bay consisting of Bay muds are generally very susceptible to settlement.

### Expansive Soils

Expansive soils are soils that tend to shrink or swell depending on their moisture content. As expansive soils get wet, the clay minerals absorb water molecules and expand; conversely, as they dry they shrink. When structures are located on expansive soils, foundations have the tendency to rise during the wet season and shrink during the dry season. This movement can create new stresses on various sections of the foundation and connected utilities and can lead to structural failure and damage to infrastructure. Cracked foundations, floors, and basement walls are typical types of damage created by expansive soils. Damage to the upper floors of the building can occur when differential movement of the structure is significant. Surficial soils in Sunnyvale are largely composed of expansive clays. Bay mud and clayey alluvium located generally in the northern half of the city have the potential for expansive movement. However, locally expansive soils may occur wherever clayey soils exist (Sunnyvale 2011).

## SUBSIDENCE

Land subsidence results in a slow-to-rapid downward movement of the ground surface as a result of the vertical displacement of the ground surface, usually resulting from groundwater withdrawal. Periodic surveys of land elevation have been conducted in Santa Clara County since 1934. The lowest historical water levels were generally observed in the 1960s and 1970s. Since then, groundwater levels have recovered, primarily due to the Santa Clara Valley Water District's (SCVWD) managed recharge and in-lieu recharge programs. The SCVWD measures water levels at ten subsidence index wells on a regular basis (daily to quarterly) to ensure they remain above established thresholds. Measured groundwater levels have been consistently above subsidence thresholds from 2003 to 2013 at all index wells. Although human-caused subsidence has been minimal since 1967, a certain amount of subsidence is continuing to occur naturally because of regional tectonic movements, peat decay, and a 3-inch rise in the sea level during the last 50 years (Sunnyvale 2011).

## PALEONTOLOGICAL RESOURCES

Paleontological resources include fossil remains of vertebrate and invertebrate organisms, fossil tracks, and plant fossils, as well as fossil localities and formations that have produced fossil material. A unique paleontological site would include a known area of fossil-bearing rock strata. Such locations and specimens are important nonrenewable resources. The California Environmental Quality Act (CEQA) offers protection for these sensitive resources and requires that they be addressed during the environmental review process.

The Society for Vertebrate Paleontologists has developed criteria for screening the paleontological potential of rock units. High-potential units are geologic units for which vertebrate or significant invertebrate or plant fossils have been recovered. Only invertebrate fossils that provide new information on existing flora or fauna on the age of a rock unit would be considered significant. Geologic units for which little to no information is available are considered to have undetermined sensitivity. A low-sensitivity unit is a geologic unit that is not known to have produced a substantial body of significant paleontological material.

The University of California Museum of Paleontology (UCMP) collections database contains two records for Holocene-age invertebrate fossils in Sunnyvale (UCMP 2015). The specific locations are not identified, but known fossils from the Holocene in the greater Bay Area are sparse and represent common taxa. The Holocene-age sediments have low potential to yield fossil resources or to contain significant nonrenewable paleontological resources. However, remains of a Rancholabrean Columbian mammoth (*Mammuthus columbi*) were found along the Guadalupe River in San Jose, in a strata identified as Holocene on published geologic maps. Either the mammoth remains were reworked from older deposits or some strata identified as Holocene in the Santa Clara Valley are actually of Pleistocene age. In either case, Holocene materials in the valley may have some level of sensitivity for paleontological resources. The younger Holocene-age deposits may also overlie older Pleistocene sediments, depending on location. These older sediments, often found at depths of greater than 10 feet below the ground surface, have yielded the fossil remains of plants and extinct terrestrial Pleistocene vertebrates (Sunnyvale 2015). Because of their vertebrate content, Pleistocene alluvial strata are considered highly sensitive for paleontological resources (Santa Clara 2011; Sunnyvale 2015).

## 3.7.2 REGULATORY FRAMEWORK

### STATE

#### Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. The act's main purpose is to prevent the construction of buildings used for human occupancy on the surface of active faults. The act requires the State Geologist to establish regulatory zones known as earthquake fault zones around the surface traces of active faults and to issue appropriate maps. The State Geologist has delineated earthquake fault zones in Santa Clara County, but none are located in Sunnyvale.

#### Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 directs the Department of Conservation, California Geological Survey (CGS) to identify and map areas prone to liquefaction, earthquake-induced landslides, and amplified ground shaking. The purpose of the act is to minimize loss of life and property through the identification, evaluation, and mitigation of seismic hazards. The CGS has published regulatory maps identifying areas that require special evaluation.

#### California Building Code

The State of California provides minimum standards for building design through the California Code of Regulations, Title 24, also known as the California Building Standards Code or the California Building Code (CBC). The CBC is based on the Uniform Building Code (UBC) but modifies UBC regulations for specific conditions found in California and includes a large number of more detailed and/or more restrictive regulations.

For example, the CBC includes common engineering practices requiring special design and construction methods that reduce or eliminate potential expansive soil–related impacts. The CBC requires structures to be built to withstand ground shaking in areas of high earthquake hazards and the placement of strong motion instruments in larger buildings to monitor and record the response of the structure and the site of seismic activity. Compliance with CBC regulations ensures the adequate design and construction of building foundations to resist soil

movement. In addition, the CBC contains drainage requirements in order to control surface drainage and to reduce seasonal fluctuations in soil moisture content.

### Paleontological Resources

Paleontological resources are classified as nonrenewable scientific resources and are protected by state statute (Public Resources Code Chapter 1.7, Section 5097.5). No state or local agencies have specific jurisdiction over paleontological resources, nor do they require a paleontological collecting permit to allow the recovery of fossil remains discovered as a result of construction-related earth moving on state or private land on a project site.

#### LOCAL

### City of Sunnyvale Municipal Code

Sunnyvale adopted the California Building Code in Chapter 16.16.020 of the City's Municipal Code. In addition, the City's grading standards (Municipal Code Chapter 18.12.110) specify that when grading will create a nuisance or hazard to other properties, public way, or public facilities due to erosion from storm runoff or rainfall, no grading may commence or continue without specific consent in writing from the Director of Public Works or the Director of Community Development. The grading standards also regulate gradients for cut-and-fill slopes.

### Hazard Mitigation Plans

In March 2005, the Association of Bay Area Governments (ABAG) adopted a multi-jurisdictional Hazard Mitigation Plan for the Bay Area. Participating local county and city governments in the Bay Area prepare an annex to this plan to explain how the plan specifically applies to that agency. Sunnyvale has established a Local Hazard Mitigation Plan (LHMP) as an annex to the ABAG regional Hazard Mitigation Plan.

## 3.7.3 IMPACTS AND MITIGATION MEASURES

#### STANDARDS OF SIGNIFICANCE

This analysis evaluates the Draft LUTE's impacts on geology, soils, and paleontological resources based on the standards identified in State CEQA Guidelines Appendix G. A geology, soils, or paleontological resources impact is considered significant if implementation of the project would:

1) 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 or other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42.

    ii) Strong seismic ground shaking.

    iii) Seismic-related ground failure, including liquefaction.

    iv) Landslides.

2) Result in substantial soil erosion or the loss of topsoil.

3) 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; be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994) and in ASTM D4829-11, creating substantial risks to life or property.

4) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

5) 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, or 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.

6) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature.

Sunnyvale is not within an Alquist-Priolo Earthquake Fault Zone and would not be subject to hazards associated with significant fault surface rupture. Therefore, no impact would result, and Standard of Significance 1(i) is not discussed further in this Draft EIR.

Section 12.08.010 of the City's Municipal Code requires sewer connections for all new development. Septic tanks would not be used for new development. Therefore, no impact would result, and Standard of Significance 4 is not discussed further in this Draft EIR.

There are no active mines and no known areas with mineral resource deposits in the city. No minerals or aggregate resources of statewide importance are located in Sunnyvale (DOC 1996). Therefore, no impact to availability of a known mineral resource would result, and Standard of Significance 5 is not evaluated further in this Draft EIR.

## METHODOLOGY

The geology and soils analysis is based on a review of published information, surveys, and reports regarding regional geology and soils. Information was obtained from private and governmental agencies and Internet websites, including the US Department of Agriculture Natural Resources Conservation Service, the California Geological Survey (formerly the California Department of Mines and Geology), and the US Geological Survey.

Paleontological resources were evaluated based on a review of geologic information for Sunnyvale and a search of the database at the Museum of Paleontology at the University of California, Berkeley.

## PROJECT IMPACTS AND MITIGATION MEASURES

### Seismic Hazards (Standard of Significance 1)

**Impact 3.7.1** Future development associated with implementation of the Draft LUTE would result in the exposure of people, structures, and infrastructure to strong seismic ground shaking. However, California Building Code standards, as implemented by the City through Chapter 16.16 of the Municipal Code, would address seismic hazards. This impact is **less than significant**.

Sunnyvale is located in a seismically active area and could experience strong seismic ground shaking and seismic-related ground failure (e.g., liquefaction and settlement) from earthquakes on active faults located outside of the city. Anticipated increases in population and development with implementation of the Draft LUTE could expose more people, structures, and infrastructure to seismic hazards as a result of seismic activity.

All new development and redevelopment would be required to comply with the current adopted CBC, which includes design criteria for seismic loading and other geologic hazards, including design criteria for geologically induced loading that govern sizing of structural members and provide calculation methods to assist in the design process. While shaking impacts could be potentially damaging, they would also tend to be reduced in their structural effects due to CBC criteria that recognize this potential. The CBC includes provisions for buildings to structurally survive an earthquake without collapsing and includes measures such as anchoring to the foundation and structural frame design.

Thus, while future development associated with implementation of the Draft LUTE would inherently result in the exposure of people, structures, and infrastructure to dangers associated with earthquakes because of the city's location in a seismically active region, continued implementation of the City's Municipal Code (Chapter 16.16) would help minimize these dangers by requiring seismic building design, engineering, and construction techniques. No aspects of the Draft LUTE would increase the potential for seismic activity or the inherent risks associated with such activity. Therefore, this is considered a **less than significant** impact.

Mitigation Measures

None required.

### Potential Increase in Erosion and the Loss of Topsoil (Standard of Significance 2)

**Impact 3.7.2** Implementation of the Draft LUTE would allow intensification of some land uses that could involve construction and grading activities, which could increase soil erosion. However, continued implementation of the City's Municipal Code and state Construction General Permit requirements would ensure that there are no adverse impacts from erosion. This impact is **less than significant.**

Implementation of the Draft LUTE could result in roadway improvements and modifications to existing utility infrastructure (water and sanitary sewer facilities) and the potential for additional commercial, residential, and industrial development in the city. The grading and site preparation activities associated with such development would remove soil, disturbing and potentially exposing the underlying soils to erosion from a variety of sources, including wind and water. In addition, construction activities may involve the use of water, which may further erode the soil as the water moves across the ground.

All demolition and construction activities in the city would be required to comply with CBC Chapter 70 standards, which would ensure implementation of appropriate measures during grading activities to reduce soil erosion. Additionally, any development involving clearing, grading, or excavation that causes soil disturbance of 1 or more acres would be required to prepare and comply with a stormwater pollution prevention plan (SWPPP) that provides a schedule for the implementation and maintenance of erosion control measures and a description of applicable erosion control practices, including appropriate design details and a time schedule.

The SWPPP would consider a full range of erosion control best management practices, including any additional site-specific and seasonal conditions. As further discussed in Section 3.8, Hydrology and Water Quality, the State Water Resources Control Board has adopted a Construction General Permit (CGP) (Order No. 2009-0009DWQ, as amended by Order No. 2010-0014-DWQ and Order 2012-0006-DWQ) that provides additional standards and requirements to avoid soil erosion.

In addition, the City's grading standards (Municipal Code Chapter 18.12.110) specify that when grading would create a nuisance or hazard to other properties, public ways, or public facilities due to erosion from storm runoff or rainfall, no grading may commence or continue without specific consent in writing from the Director of Public Works or the Director of Community Development.

The grading standards also regulate gradients for cut-and-fill slopes. The City's grading regulations would further ensure that all public and private development projects would include control measures for erosion and sediment control as well as permanent features to minimize stormwater pollution. The City's current development review process also ensures that construction projects have the required permits and that on-site regional control measures are considered for new development projects.

In addition, the following Draft LUTE policy would reduce potential for erosion to increase:

Policy 72: Protect creeks and wetlands as important parts of the community's natural environment and open space and for their contribution to flood control.

Action 3: Minimize or divert pollutants from draining into creeks and wetlands by enforcing best management practices during construction and site development.

Because erosion impacts would depend on the type of development, intensity of development, and amount of lot coverage of a particular project site, impacts can vary. However, compliance with adopted City grading regulations and SWPPP requirements, as well as implementation of Draft LUTE Policy 72 requiring implementation of stormwater best management practices to reduce erosion potential, would ensure that soil erosion and related impacts would be **less than significant**.

Mitigation Measures

None required.

### Potential Development on Unstable Soils (Standard of Significance 3)

**Impact 3.7.3** Implementation of the Draft LUTE could allow development on a geologic unit or soil that is unstable, thus creating risks to life and property. However, continued adherence to the City's Municipal Code and compliance with the CBC would ensure that potential development is not adversely impacted by unstable soils. This impact is considered to be **less than significant**.

Sunnyvale's surficial soils are largely composed of expansive clays, which swell when wet and shrink when dry, producing ground surface desiccation cracks. Many of the soils found in areas identified for future development within the Draft LUTE have a slight to moderate shrink-swell potential. Future structures and improvements could experience stresses on various sections of foundations and connected utilities, as well as structural failure and damage to infrastructure if located on expansive or unstable soils.

To improve the structural safety of buildings in the less stable soil areas of Sunnyvale, the City requires the preparation and submittal of geotechnical reports for all developments in the city. Furthermore, the CBC and other related construction standards apply seismic requirements and address certain grading activities. The CBC includes common engineering practices requiring special design and construction methods that reduce potential expansive soil–related impacts. Compliance with CBC regulations would ensure the adequate design and construction of building foundations to resist soil movement.

The City requires all new development to prepare geotechnical soils reports under Municipal Code Chapter 18.20.100. Such a report is a tool used by public agencies and developers to identify specific site conditions and to develop design and construction recommendations for infrastructure improvements and commercial and residential development projects. Geotechnical reports generally contain a summary of all subsurface exploration data, including a subsurface soil profile, exploration logs, laboratory or on-site test results, and groundwater information. The reports also interpret and analyze the subsurface data, recommend specific engineering design elements, provide a discussion of conditions for the solution of anticipated geotechnical problems, and recommend geotechnical special provisions. These studies recommend mitigation techniques for any site-specific expansive soil conditions, compressive (settlement) soil conditions, and seismic hazards such as strong ground motion and liquefaction hazard for future development under the Draft LUTE.

Adherence to the City's Municipal Code and compliance with the CBC would reduce potential impacts associated with developing on unstable soils to a **less than significant** level.

Mitigation Measures

None required.

### Paleontological Resources (Standard of Significance 6)

**Impact 3.7.4** Implementation of the Draft LUTE could indirectly result in the potential disturbance of previously unknown paleontological resources (i.e., fossils and fossil formations) in Sunnyvale. This impact would be **less than significant**.

Sunnyvale's underlying geology consists of basin and alluvial deposits that have the potential to contain fossils, based on previously reported finds in similar materials in other locations in the Bay Area. New development and redevelopment activities under the Draft LUTE could involve the

installation of footings and foundations and/or excavations. Because Sunnyvale is largely developed, it is likely there has been a substantial amount of ground disturbance and placement of fill that has altered the subsurface soils and underlying geologic materials at varying depths. However, if a large area were excavated to depths greater than 10 feet, it is possible the excavation could be within Holocene-age deposits or older Pleistocene alluvial materials, which could contain fossils. Paleontological resources are classified as nonrenewable scientific resources. Their inadvertent damage or destruction during excavation and grading activities at construction sites could further reduce this finite resource base.

Draft LUTE Policy 10, Action 6 (noted below) addresses this impact by work stoppage during construction of subsequent projects if archaeological or paleontological resources are discovered, investigation by a qualified professional, and implementation of measures to protect the resource(s).

> *Continue to condition projects to halt all ground-disturbing activities when unusual amounts of shell or bone, isolated artifacts, or other similar features are discovered. Retain an archaeologist or paleontologist to determine the significance of the discovery. Mitigation of discovered significant cultural resources shall be consistent with Public Resources Code Section 21083.2 to ensure protection of the resource.*

Mitigation Measures

None required.

## 3.7.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

### CUMULATIVE SETTING

The cumulative setting for geology, soils, and paleontological resources impacts is the city of Sunnyvale.

### CUMULATIVE IMPACTS AND MITIGATION MEASURES

**Cumulative Geologic, Seismic, and Soils Hazards**

**Impact 3.7.5** Subsequent land use activities associated with implementation of the Draft LUTE, in combination with other existing, planned, proposed, and reasonably foreseeable development in the city, may result in cumulative geologic and soil hazards. However, adherence to the City's Municipal Code would ensure that potential future development is not adversely impacted by cumulative geologic and seismic hazards. The Draft LUTE's contribution to this impact is considered **less than cumulatively considerable**.

Geologic impacts tend to be site-specific rather than cumulative in nature. For example, seismic events may damage or destroy a building on a project site, but the construction of a development project on one site would not cause any adjacent parcels to become more susceptible to seismic events, nor can a project affect local seismicity in such a manner as to increase risks regionally. Similarly, hazards associated with development on unstable soils would also be site-specific. Because Sunnyvale is built out and generally flat, potential erosion effects would be limited to construction periods only and would not be cumulatively considerable.

The City requires preparation of geotechnical reports for all development projects, as do adjoining local jurisdictions. The reports provide recommendations for design and construction methods to reduce potential seismic hazard and soils impacts in order to ensure compliance with the California Building Code. The Draft LUTE's contribution to this impact is **less than cumulatively considerable**.

Mitigation Measures

None required.

### Cumulative Impacts to Paleontological Resources

**Impact 3.7.6** Subsequent land use activities associated with implementation of the Draft LUTE, in combination with other existing, planned, proposed, and reasonably foreseeable development in Santa Clara County, may result in potentially significant cumulative impacts to paleontological resources. Draft LUTE Policy 10, Action 6 would reduce the contribution to this impact to **less than cumulatively considerable**.

Development projects in Sunnyvale and neighboring jurisdictions such as Mountain View and the city of Santa Clara, which are generally underlain by the same geologic materials as Sunnyvale, have the potential to encounter fossil-bearing materials. These fossils include plants, microfossils, and vertebrates. Large development projects that involve a substantial amount of excavation, in particular, have a greater potential to damage or destroy paleontological resources unless properly managed. This represents a potentially significant cumulative impact. Proper planning and appropriate mitigation can provide opportunities for increasing the understanding of the past environmental conditions by recording data about sites discovered and preserving fossils, if any are found.

Draft LUTE Policy 10, Action 6 addresses this impact by work stoppage during construction of subsequent projects if archaeological or paleontological resources are discovered, investigation by a qualified professional, and implementation of measures to protect the resource(s). Thus, the Draft LUTE's contribution to this impact is **less than cumulatively considerable**.

Mitigation Measures

None required.

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# 3.8 Hydrology and Water Quality

This section identifies the hydrological resources, existing drainage conditions, and surface water and groundwater quality in Sunnyvale and the surrounding area. The section also evaluates the potential impacts of the Draft LUTE with respect to flooding, drainage, erosion, and water quality, and identifies the appropriate LUTE policies and actions that would lessen the identified impacts. The reader is referred to Section 3.11, Utilities and Service Systems, regarding further analysis of the groundwater and water supply impacts of the Draft LUTE.

A summary of the impact conclusions related to hydrology and water quality is provided below.

| Impact Number | Impact Topic | Impact Significance |
|---|---|---|
| 3.8.1 | Construction and Operational Water Quality Impacts | Less than significant |
| 3.8.2 | Flood Hazards | Less than significant |
| 3.8.3 | Inundation Hazards | Less than significant |
| 3.8.4 | Cumulative Water Quality Impacts | Less than cumulatively considerable |
| 3.8.5 | Cumulative Flood Hazards | Less than cumulatively considerable |

## 3.8.1 EXISTING SETTING

### REGIONAL HYDROLOGY AND DRAINAGE

#### San Francisco Bay

The northern tip of Sunnyvale is located along the southern shoreline of San Francisco Bay. The entire San Francisco Bay comprises a group of interconnecting bays and rivers including the Sacramento River, San Joaquin River, and Napa River; Suisun Bay, San Pablo Bay, and the main San Francisco Bay; and the Carquinez Strait. The main part of San Francisco Bay measures between 3 and 12 miles wide from east to west and 48 to 60 miles long north to south. However, San Francisco Bay has been deliberately filled in since the mid-1800s by as much as a third, making the actual size difficult to accurately measure. The areas that were filled were primarily wetlands, which once consisted of many thousands of acres that formed the edges of San Francisco Bay.

#### Regional Drainage

Sunnyvale is within the boundaries of the following four Santa Clara Basin watersheds:

- Sunnyvale West Channel watershed, which drains 7.5 square miles and is entirely located on the alluvial plain of the Santa Clara Valley. The channel originates in the urbanized sections of Sunnyvale and Mountain View. The channel is approximately 3 miles in length, extending from Guadalupe Slough to Maude Avenue.

- Sunnyvale East Channel watershed, which covers 7.1 square miles extending from central Cupertino northeastward through Sunnyvale. The watershed draining to the channel is located entirely on the alluvial plain of the Santa Clara Valley. The channel is approximately 6 miles in length and extends from Interstate 280 in the south to Guadalupe Slough in the north.

- Calabazas Creek watershed, which covers an area of approximately 20 square miles. This 13.3-mile-long creek originates from the northeast-facing slopes of the Santa Cruz Mountains and flows into the Lower South San Francisco Bay via Guadalupe Slough. The creek traverses a small portion of unincorporated county land and flows through Saratoga, Cupertino, Sunnyvale, San Jose, and Santa Clara.

- Stevens Creek watershed, which covers an area of approximately 29 square miles. In the upper watershed, the mainstem flows southeast for about 5 miles along the San Andreas fault and another 3 miles northeast to Stevens Creek Reservoir. From the reservoir, the creek flows northward for a total of 12.5 miles through the foothills in Cupertino and Los Altos and across the alluvial plain through Sunnyvale and Mountain View, finally draining into the Lower South San Francisco Bay.

### Local Drainage

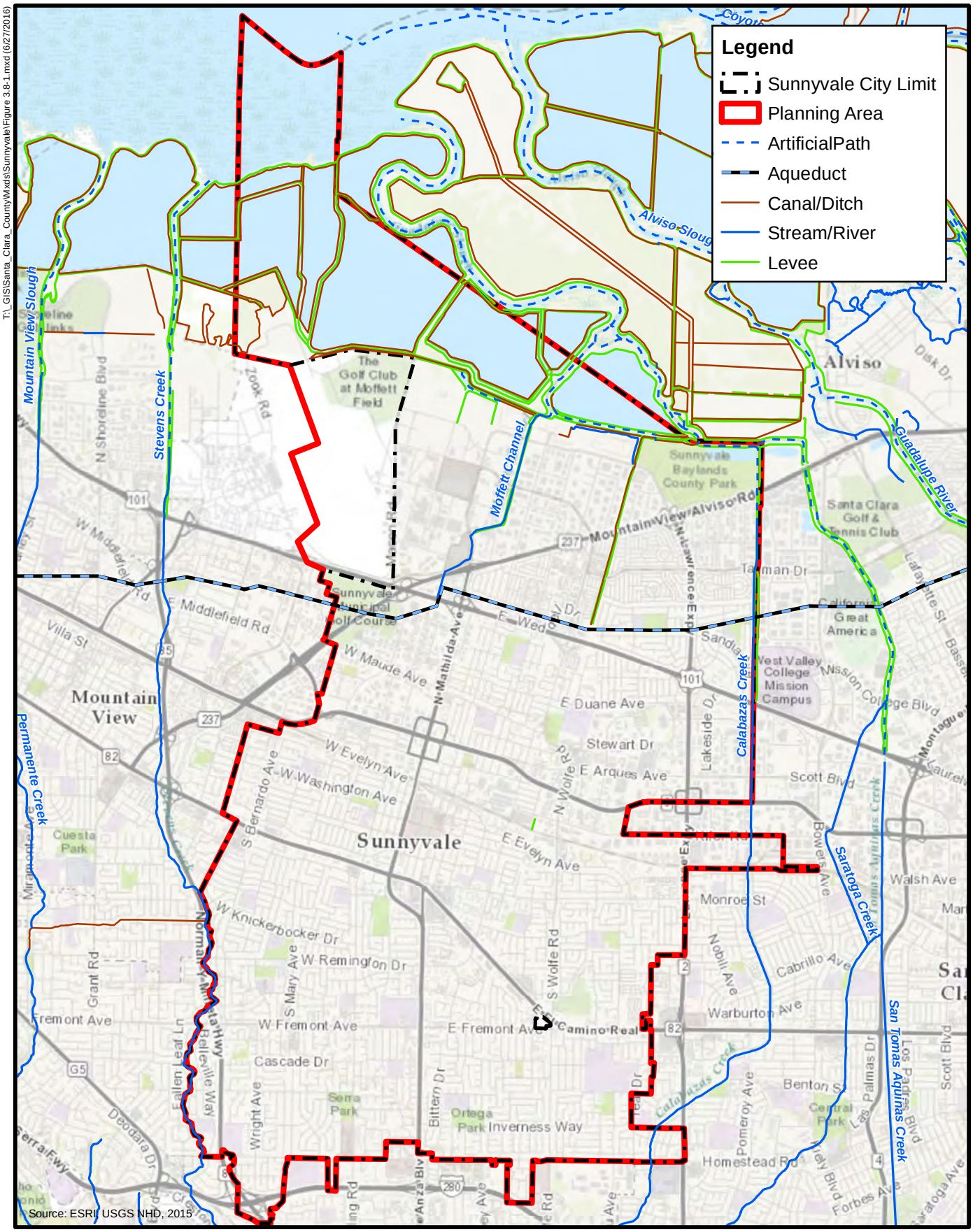
Natural regional drainage courses convey rainfall runoff from the southwest portion of Sunnyvale to Stevens Creek and in the east to Calabazas Creek (see **Figure 3.8-1**). The regional flood control agency is the Santa Clara Valley Water District (SCVWD). The SCVWD provides flood control protection throughout Santa Clara County, including Sunnyvale. To provide flood protection of urbanized areas, the SCVWD constructed three open channels (Sunnyvale West, Sunnyvale East, and El Camino) to increase drainage capacity to San Francisco Bay.

A system of levees protects Sunnyvale at its northern border from encroachment of San Francisco Bay waters. Some of these levees were constructed and remain in the ownership and operation of the Cargill Salt Company. Stormwater runoff in low-lying portions of the city is pumped out over the levees for discharge into San Francisco Bay by Sunnyvale-owned and operated pump stations.

### Local Storm Drainage System

The SCVWD, which provides flood control protection throughout Santa Clara County, owns and operates all channels and creeks in Sunnyvale, including Stevens Creek, Calabazas Creek, the Sunnyvale East and West channels, and the El Camino Channel.

The City of Sunnyvale owns and operates approximately 3,200 storm drain inlets, two pump stations, and 145 to 150 miles of storm drains. Two pump stations collect runoff from low-lying urban areas and discharge to creeks and sloughs that are at a higher elevation. Levees were constructed in the northern portion of the city to control flooding and saltwater intrusion from San Francisco Bay.




0 0.5 1
Miles

**FIGURE 3.8-1**
Waterways in Sunnyvale

Michael Baker INTERNATIONAL

T:_GIS\Santa_Clara_County\Mxds\Sunnyvale\Figure 3.8-1.mxd (6/27/2016)

## WATER QUALITY

The water quality of streams, creeks, ponds, and other surface water bodies can be greatly affected by pollution carried in contaminated surface water runoff. Pollutants from unidentified sources, known as "non-point" source pollutants, are washed from streets, construction sites, parking lots, and other exposed impervious surfaces into storm drains. Stormwater runoff from the road is collected by storm drains and discharged into Stevens Creek, Calabazas Creek, and the Moffett Channel, which meets with San Francisco Bay. The runoff often contains contaminants such as oil and grease, plant and animal debris (leaves, dust, animal feces, etc.), pesticides, litter, and heavy metals. In sufficient concentration, these pollutants have been found to adversely affect the aquatic habitats to which they drain.

### Impaired Water Bodies

Stevens Creek and lower San Francisco Bay are listed on the Clean Water Act Section 303(d) List of Limited Water Quality Segments (see Regulatory Framework subsection below). Stevens Creek is listed for the pollutant diazinon, trash from urban runoff/storm sewers, and toxicity (source unknown). Diazinon is being addressed by a total maximum daily load (TMDL), approved by the US Environmental Protection Agency (EPA) in 2007. TMDLs identify the total pollutant loading that a water body can receive and still meet water quality standards, and specifies a pollutant allocation to specific point and non-point sources. Stevens Creek is also listed for toxicity from unknown sources. This issue also requires a TMDL, the completion of which is set for 2019. See the TMDL discussion in the Regulatory Framework subsection below.

Lower San Francisco Bay is listed for multiple pollutants. Chlordane, dichlorodiphenyltrichloroethane (DDT), and dieldrin, all from non-point sources, require TMDLs. Dioxin and furan compounds, due to atmospheric deposition, require TMDLs with completion dates of 2019, as do exotic species pollutants from ballast water. Polychlorinated biphenyls (PCBs) from unknown point and non-point sources and mercury from atmospheric deposition, industrial and municipal point sources, natural sources, non-point sources, and resource extraction are associated with TMDLs, which are addressed through implementation of the National Pollutant Discharge Elimination System (NPDES) permits for stormwater and wastewater.

### Flood Hazards and Flood Control

Flooding has plagued Santa Clara County since the earliest settlement of the valley floor. Much of the valley is susceptible to flooding (approximately 60 out of 300 square miles), and despite efforts to provide adequate flood control (as described in the discussion of regional hydrology and drainage above), many of the streams, rivers, and creeks that flow through the City are still incapable of carrying flows from a 100-year storm event without flooding issues involving Calabazas Creek. Furthermore, the increased amount of impervious area as a result of urban development has amplified the volume of stormwater runoff, thereby increasing flooding potential in the valley.

The Santa Clara Valley is essentially an active floodplain that has been severely altered by human activity and is subject to periodic flooding from storm events. Flooding may also occur in the event of tidal flooding (dike and levee failure), dam failure, tsunamis, or a combination of these events. Areas of Sunnyvale that are located in the Federal Emergency Management Agency (FEMA) 100-year and 500-year flood zones are depicted on **Figure 3.8-2.**

FEMA maps show that portions of Sunnyvale are in flood zones A, AO, AE, and X. These zones are defined as follows:

- A: Areas subject to inundation by the 1 percent annual chance flood event. Base Flood Elevations (BFEs) or flood depths are not shown.
- AO: Areas subject to inundation by 1 percent annual chance shallow flooding where average depths are between 1 and 3 feet. Average flood depths are shown.
- AE: Areas subject to inundation by the 1 percent annual chance flood event. BFEs or flood depths are not shown.
- X: Areas of minimal flood hazard.

The City of Sunnyvale maintains an extensive storm drain system, which provides flood control protection, and the SCVWD maintains the channels of Calabazas Creek, Stevens Creek, and the Sunnyvale East, Sunnyvale West, and El Camino flood control channels. SCVWD channels, as well as Sunnyvale's storm drain system, convey the majority of surface runoff to San Francisco Bay.

For a discussion of the areas of Sunnyvale that could be inundated due to anticipated sea level rise, see Section 3.13, Greenhouse Gases and Climate Change Adaptation, and Section 6.0.

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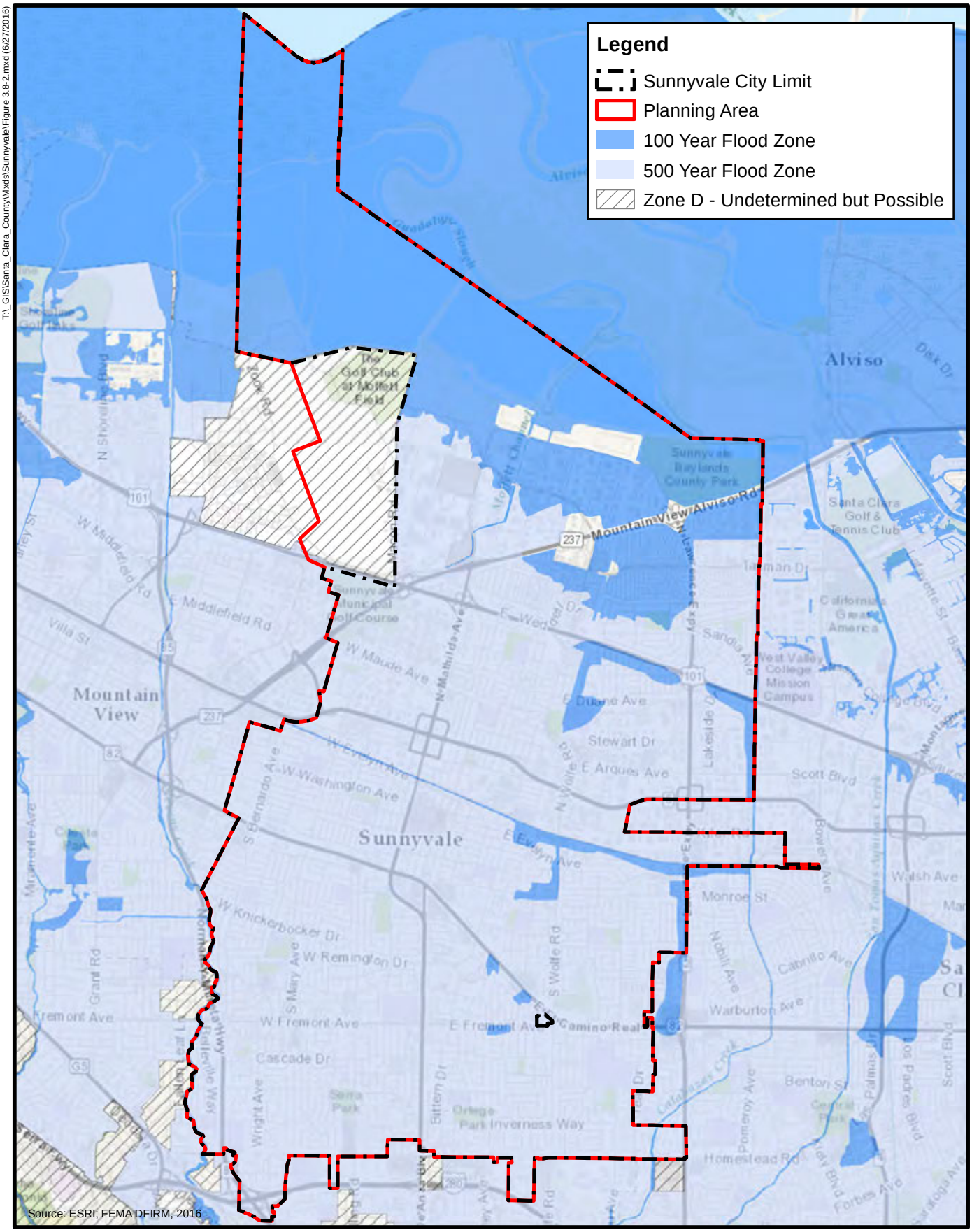


0 0.5 1
Miles

**FIGURE 3.8-2**
Flood Hazard in Sunnyvale

Michael Baker INTERNATIONAL

## Inundation Hazards

### Seiche

A seiche is a rhythmic motion of water in a partially or completely landlocked water body caused by landslides, earthquake-induced ground accelerations, or ground offset. Seiches occur most frequently in enclosed or semi-enclosed basins such as lakes, bays, or harbors and may be triggered by strong winds, changes in atmospheric pressure, earthquakes, tsunamis, or tides. Triggering forces that set off a seiche are most effective if they operate at specific frequencies relative to the size of an enclosed basin.

Coastal measurements of sea level often show seiches with amplitudes of about an inch and periods of a few minutes due to oscillations of the local harbor, estuary, or bay, superimposed on the normal tidal changes. Tidal records for San Francisco Bay have been maintained for over 100 years; during that time, a damaging seiche has not occurred. A seiche of about 4 inches occurred during the 1906 earthquake, an earthquake of magnitude 8.3 on the Richter scale. It is probable that an earthquake similar to the 1906 earthquake would be the largest to occur in the Bay Area; consequently, seiches with an increase in water elevation of more than 4 inches would be considered unlikely. There are no published maps or hazard information on seiche hazards in the Bay Area (Mountain View 2011).

### Tsunami

Tsunamis are long period water waves caused by underwater seismic events, volcanic eruptions, or undersea landslides. Tsunamis affecting the San Francisco Bay Area would originate west of the bay in the Pacific Ocean. Areas that are highly susceptible to tsunami inundation tend to be low-lying coastal areas, such as tidal flats, marshlands, and former bay margins that have been artificially filled.

A tsunami entering San Francisco Bay through the relatively narrow Golden Gate would tend to dissipate as the wave energy spreads out as the bay becomes wider and shallower. A tsunami inundation map prepared as part of a statewide multi-agency effort shows that the bay shoreline and areas along sloughs up to approximately 1 mile inland could be affected in the region during an extreme but realistic tsunami. Mapped potential inundation areas are limited to marshy, undeveloped areas along the bay shore and portions of salt evaporation ponds adjacent to sloughs and do not include currently developed portions of Sunnyvale (Cal EMA, CGS, and USC 2009).

### Dam Failure

Failure of the Stevens Creek Reservoir dam caused by an earthquake could also affect Sunnyvale. Most significantly affected would be the southwest part of the city south of Remington Drive and west of Sunnyvale-Saratoga Road. This estimated flood inundation area is based on the maximum storage capacity of the reservoir at 3,700 acre-feet. Depending on the quantity of water released, the depth of flooding could vary from several inches to several feet. For any large release of water, Interstate 280 would act as a barrier to keep some water out of the city (Sunnyvale 2011).

Safety improvements to the reservoir and the dam were made in the mid-2000s. The reservoir and the dam were engineered to withstand an earthquake on the San Andreas fault of magnitude 8.25 on the Richter scale. Upstream and downstream berms were built and the dam was raised 10 feet. The contour of gentle slopes surrounding the dam, plus the compacted earth

along the sides and the face of the dam, were designed to encourage runoff and the collection of water and to discourage landslides. The spillway was also upgraded to be capable of withstanding a flow of 15,600 cubic feet per second. As an added precaution, safety inspections are done after all earthquakes of 5.0 or greater magnitude (Sunnyvale 2011).

## 3.8.2 REGULATORY FRAMEWORK

### FEDERAL

#### Clean Water Act

The Clean Water Act (CWA) regulates the water quality of all discharges into waters of the United States, including wetlands and perennial and intermittent stream channels. Section 401, Title 33, Section 1341 of the CWA sets forth water quality certification requirements for "any applicant applying for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters." Section 404, Title 33, Section 1344 of the CWA in part authorizes the US Army Corps of Engineers to:

- Set requirements and standards pertaining to such discharges: subparagraph (e);
- Issue permits "for the discharge of dredged or fill material into the navigable waters at specified disposal sites": subparagraph (a);
- Specify the disposal sites for such permits: subparagraph (b);
- Deny or restrict the use of specified disposal sites if "the discharge of such materials into such area will have an unacceptable adverse effect on municipal water supplies and fishery areas": subparagraph (c);
- Specify type of and conditions for non-prohibited discharges: subparagraph (f);
- Provide for individual state or interstate compact administration of general permit programs: subparagraphs (g), (h), and (j);
- Withdraw approval of such state or interstate permit programs: subparagraph (i);
- Ensure public availability of permits and permit applications: subparagraph (o);
- Exempt certain federal or state projects from regulation under this Section: subparagraph (r); and
- Determine conditions and penalties for violation of permit conditions or limitations: subparagraph (s).

Section 401 certification is required prior to final issuance of Section 404 permits from the US Army Corps of Engineers.

Section 303(d) of the Clean Water Act requires that all states identify water bodies that do not meet specified water quality standards and that do not support intended beneficial uses. Identified waters are placed on the Section 303(d) List of Impaired Water Bodies. Once waters are placed on this list, states are required to develop a water quality control plan—called a total

maximum daily load (TMDL)—for each water body and each associated pollutant/stressor. TMDLs are discussed in more detail below.

San Francisco Estuary Partnership

The San Francisco Estuary Partnership (formerly the San Francisco Estuary Project), established pursuant to CWA Section 320, culminated in June 1993 with completion of its Comprehensive Conservation and Management Plan for the preservation, restoration, and enhancement of the San Francisco Bay-Delta Estuary and has been updated in 2016.

National Pollutant Discharge Elimination System

The State Water Resources Control Board has implemented a National Pollutant Discharge Elimination System (NPDES) general construction permit for the Santa Clara Valley. For properties of 1 or more acres, a Notice of Intent and stormwater pollution prevention plan (SWPPP) must be prepared prior to commencement of construction. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling or excavation. Subsequent to the general construction permit, the San Francisco Bay Regional Water Quality Control Board (RWQCB) issued a Municipal Storm Water NPDES Permit to the municipalities in the Santa Clara Valley. The Santa Clara Valley Urban Runoff Pollution Prevention Program assists the co-permittees in implementing the provisions of this permit.

The City of Sunnyvale is one of 76 co-permittees listed under a regional Municipal Regional Stormwater Permit (MRP) for the San Francisco Bay (Order No. R2-2015-0049) administered by the San Francisco Bay RWQCB. The MRP regulates discharges from municipal separate storm drain systems into waterways under each co-permittee's jurisdiction. The Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPP) assists the co-permittees in implementing the provisions of this permit.

The MRP defines which projects must comply with the design standards. New and redevelopment projects that create or replace 10,000 square feet or more of impervious surface are subject to MRP Provision C.3. Those projects must provide permanent/post-construction treatment controls for stormwater according to specific calculations. If the redevelopment results in an alteration of more than 50 percent of the existing impervious surfaces, permanent BMPs must be implemented to treat runoff from the entire project site. The City of Sunnyvale has developed a Stormwater Quality BMP Guidance Manual for New and Redevelopment Projects to ensure compliance with the MRP requirements.

*Low Impact Design (LID)*

The SCVURPP has published a C.3 Stormwater Handbook that assists developers in meeting local municipal and State regulations through the use of low impact design (LID) strategies. The goal of LID is to reduce runoff and mimic a site's predevelopment hydrology by minimizing disturbed areas and impervious cover, and then infiltrating, storing, detaining, and/or biotreating stormwater close to the source. LID uses principles such as preserving and re-creating natural landscape features and minimizing imperviousness to create a functional and appealing site drainage that treats stormwater as a resource rather than a waste product. MRP Provision C.3.c requires source control and landscaping that minimizes irrigation and runoff and promotes surface infiltration. A regulated project must implement at least one of the design strategies identified in the MRP (e.g., minimizing impervious surfaces and/or directing roof runoff into cisterns). Each regulated project must identify how much stormwater must be treated, and the

project is required to treat 100 percent of the amount of that runoff (e.g., using infiltration or biotreatment techniques).

Total Maximum Daily Loads

Under CWA Section 303(d) and California's Porter-Cologne Water Quality Control Act (discussed below), the State of California is required to establish beneficial uses of state waters and to adopt water quality standards to protect those beneficial uses. Section 303(d) establishes the total maximum daily load (TMDL) process to assist in guiding the application of state water quality standards, requiring the states to identify waters whose water quality is impaired (affected by the presence of pollutants or contaminants) and to establish a TMDL or the maximum quantity of a particular contaminant that a water body can assimilate without experiencing adverse effects on the beneficial use identified.

TMDLs serve as a regulatory mechanism to identify and implement additional controls on both point and non-point source discharges in water bodies that are impaired from one or more pollutants and are not expected to be restored through normal point source controls. In California, the Regional Water Quality Control Boards generally prepare TMDLs for the impaired water bodies under their jurisdiction. TMDL implementation is accomplished through amendments to the RWQCB Basin Plans, which are reviewed and if necessary, modified or amended triennially.

### Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) administers a National Flood Insurance Program (NFIP), in which participating agencies must satisfy certain mandated floodplain management criteria. The National Flood Insurance Act of 1968 adopted a desired level of protection with an expectation that developments should be protected from floodwater damage of the Intermediate Regional Flood (IRF). The IRF is defined as a flood that has an average frequency of occurrence on the order of once every 100 years, although such a flood may occur in any given year. The act made federally subsidized flood insurance available to property owners if their communities participate in the NFIP. A community establishes its eligibility to participate by adopting and enforcing floodplain management measures to regulate new construction and by ensuring that substantial improvements in Special Flood Hazard Areas (SFHA) are designed to eliminate or minimize future flood damage.

An SFHA is an area within a floodplain having a 1 percent or greater chance of flood occurrence in any given year. Special Flood Hazard Areas are delineated on flood hazard boundary maps issued by FEMA. The Flood Disaster Protection Act of 1973 and the National Flood Insurance Reform Act of 1994 make flood insurance mandatory for most properties in Special Flood Hazard Areas. FEMA Flood Insurance maps show an SFHA covering portions of Sunnyvale (Sunnyvale 2012).

### Executive Order 11988

Executive Order 11988 (Floodplain Management) is an order signed by President Carter in 1977 to avoid the adverse impacts associated with the occupancy and modification of floodplains. The order addresses floodplain issues related to public safety, conservation, and economics. It generally requires federal agencies constructing, permitting, or funding a project in a floodplain to avoid incompatible floodplain development, be consistent with the standards and criteria of the NFIP, and restore and preserve natural and beneficial floodplain values.

## STATE

### Porter-Cologne Water Quality Act

The Porter-Cologne Water Quality Act of 1969 governs the coordination and control of water quality in the state and includes provisions relating to non-point source pollution. The California Coastal Commission, pursuant to the Coastal Act, specifies duties regarding the federally approved California Coastal Management Program. This law required that the State Water Resources Control Board (SWRCB), along with the California Coastal Commission, regional boards, and other appropriate state agencies and advisory groups, prepare a detailed program to implement the state's non-point source management plan on or before February 1, 2001. The law also required that the SWRCB, in consultation with the California Coastal Commission and other agencies, submit copies of prescribed state and regional board reports containing information related to non-point source pollution, on or before August 1 of each year.

### State Implementation Program

The Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California of 2005 addresses a gap in water quality standards covering priority toxic pollutants. The State Implementation Program (SIP) established the policy for development of new standards for a variety of toxic pollutants, as required by the CWA. It applies to discharges of toxic pollutants into California's inland surface waters, enclosed bays, and estuaries subject to regulation under the Porter-Cologne Water Quality Control Act and the Clean Water Act. Such regulation may occur through the issuance of NPDES permits, the issuance or waiver of waste discharge requirements, or other regulatory approaches.

### State Water Resources Control Board

Responsibility for the protection of water quality in California rests with the State Water Resources Control Board and the nine Regional Water Quality Control Boards. In 1992, the SWRCB adopted the General Construction Activity Storm Water Permit, which is required for all stormwater discharges associated with construction activity where clearing, grading, and excavation results in a land disturbance of 5 or more acres.

### Regional Water Quality Control Board, San Francisco Bay Region

The San Francisco Bay RWQCB regulates surface water and groundwater quality in the San Francisco Bay region. The area under the RWQCB's jurisdiction comprises all of the San Francisco Bay segments extending to the mouth of the Sacramento-San Joaquin Delta (Winter Island near Pittsburg). In its efforts to protect the region's surface waters and groundwater, the RWQCB addresses region-wide water quality concerns through the creation and triennial update of a Water Quality Control Plan (Basin Plan) and adopts, monitors compliance with, and enforces waste discharge requirements and NPDES permits.

#### San Francisco Bay Regional Water Quality Control Plan (Basin Plan)

The Basin Plan is a master policy document that contains descriptions of the legal, technical, and programmatic bases of water quality regulation in the San Francisco Bay region. The plan describes the beneficial uses to be protected in these waterways, water quality objectives to protect those uses, and implementation measures to make sure those objectives are achieved.

In 2007, the SWRCB approved the Basin Plan amendment that established new water quality objectives for mercury in the tissues of bay fish and a total maximum daily load for mercury in San Francisco Bay. Also in 2007, San Francisco Bay RWQCB staff released a proposed Basin Plan amendment for the incorporation of a TMDL for polychlorinated biphenyls (PCBs) in all segments of San Francisco Bay. In March 2010, the EPA approved the Basin Plan amendment and an implementation plan to achieve the TMDL. The RWQCB is now implementing the total maximum daily loads on a variety of fronts. The Basin Plan was last updated in 2015.

### Bay Conservation and Development Commission

The Bay Conservation and Development Commission (BCDC) is the federally designated state coastal management agency for the San Francisco Bay segment of the California coastal zone. This designation empowers the BCDC to use the authority of the federal Coastal Zone Management Act to ensure that federal projects and activities are consistent with the policies of the San Francisco Bay Plan and state law.

## LOCAL

### Santa Clara Valley Water District Comprehensive Water Resources Management Plan

The SCVWD's Comprehensive Water Resources Management Plan is organized in the following elements: Water Supply, Natural Flood Protection, and Water Resources Stewardship. Each element includes an informational overview that describes overarching goals and related objectives on a broad level and places them in a countywide context.

At the heart of the plan are the goals, objectives, and strategies that serve as the SCVWD's framework and provide information for partner agencies. The Santa Clara Valley Water District is involved in water management at varying levels of involvement. In some instances, it plays a primary role; in others, it collaborates with other agencies and/or partners; in still other cases, the SCVWD serves as an informational resource and public advocate. The Comprehensive Water Resources Management Plan clarifies these degrees of involvement.

### City of Sunnyvale Municipal Code

#### Chapter 12.60, Stormwater Management

As stated in Section 12.60.010, Purpose and Intent, the purpose of the Stormwater Management chapter is to provide regulations and give legal effect to certain requirements of the NPDES permit issued to the City. Chapter 12.60 includes:

- Discharge prohibitions to the stormwater conveyance system;
- Requirements for stormwater pollution prevention and the development of stormwater management plans, including post-construction stormwater treatment requirements;
- Numeric sizing criteria for pollutant removal treatment systems;
- Applicability of hydromodification management requirements to certain areas of the city based on drainage area to creeks and watersheds;
- Requirements for agreements to maintain stormwater treatment best management practices (BMPs) once constructed;

- Guidance on the selection of BMPs as well as minimum best management practices for all dischargers;
- Authority for City staff to inspect and require the proper operation and maintenance of treatment devices;
- The process by which waivers and alternative compliance with permit requirements may be demonstrated; and
- Penalties for failure to comply with provisions of the chapter.

Chapter 16.62, Prevention of Flood Damage

Municipal Code Chapter 16.62 provides regulations to prevent flood damage in Sunnyvale. This chapter establishes provisions for reducing flood hazards, including standards for construction, utilities, subdivisions, manufactured homes, floodways, and coastal high hazard areas.

## 3.8.3 IMPACTS AND MITIGATION MEASURES

### STANDARDS OF SIGNIFICANCE

Pursuant to State CEQA Guidelines Appendix G, a hydrologic or water quality impact would be considered significant if the Draft LUTE would result in any of the following actions:

1) Violate any water quality standards or waste discharge requirements.
2) 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).
3) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.
4) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
5) Otherwise substantially degrade water quality.
6) 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.
7) Place within a 100-year flood hazard area structures that would impede or redirect flood flows.
8) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of a failure of a levee or dam.
9) Expose people or structures to inundation by seiche, tsunami, or mudflow.

The reader is referred to Section 3.11, Utilities and Service Systems, regarding analysis of groundwater and water supply impacts (Standard of Significance 2), and to Section 3.13, Greenhouse Gases and Climate Change Adaptation, for additional discussion of sea level rise.

## METHODOLOGY

The hydrology and flood potential analysis is based on a review of published information, reports, and plans regarding regional hydrology, climate, geology, water quality, and regulations. Numerous technical studies and reports were reviewed to aid in the analysis of the hydrology and water quality setting and impacts as a result of the Draft LUTE.

## PROJECT IMPACTS AND MITIGATION MEASURES

### Construction and Operational Water Quality Impacts (Standards of Significance 1, 3, 4, and 5)

**Impact 3.8.1** Future development or redevelopment pursuant to the Draft LUTE would include construction activities that could expose soil to erosion during storm events, causing degradation of water quality. Such development or redevelopment could also increase impervious surfaces, and as a result, alter drainage patterns and increase drainage rates and runoff over existing conditions. Runoff from urban uses may also contribute to the degradation of water quality in the area. However, these impacts would be reduced through the implementation of Draft LUTE policies and actions, in conjunction with compliance with existing regulatory programs. This impact is **less than significant.**

#### Construction Water Quality Impacts

Construction activities associated with future development or redevelopment pursuant to the Draft LUTE would consist of grading, demolition, and vegetation removal that would increase soil erosion rates on the areas proposed for infill or redevelopment. Grading operations may impact surface runoff by increasing the amount of silt and debris carried by runoff. Areas with uncontrolled concentrated flow would experience loss of material in the graded areas, potentially impacting waters beyond the construction site.

Additionally, refueling and parking of construction equipment and other vehicles on-site during construction may result in oil, grease, or related pollutant leaks and spills that may discharge into storm drains. Improper handling, storage, or disposal of fuels and materials or improper cleaning of machinery close to area waterways could cause water quality degradation.

As noted in the Regulatory Framework subsection above, Sunnyvale Municipal Code Chapter 12.60 provides regulations and gives legal effect to certain requirements of the NPDES permit issued to Sunnyvale regarding municipal stormwater and urban runoff requirements. During construction of projects in the city, the dischargers, through individual coverage under the State's General Construction NPDES permits, must eliminate non-stormwater discharges to stormwater systems, develop and implement a stormwater pollution prevention plan (SWPPP), and perform monitoring of discharges to stormwater systems. Measures included in subsequent grading plans for infill or redevelopment projects would be required to comply with Municipal Code Chapter 12.60, Stormwater Management, as well as to employ best management practices (BMPs) identified in the SWPPP to prevent erosion and control loose soil and sediment, to ensure that proposed construction does not result in the movement of unwanted material into

waters within or outside the construction site. This would reduce construction water quality impacts associated with implementation of the Draft LUTE to a less than significant level.

Operational Water Quality Impacts

Subsequent development under the Draft LUTE would result in infill and other development within the Planning Area. Direct surface water quality impacts could occur from the following general land use activities:

- Residential: maintenance of yards associated with the use of fertilizers, herbicides, and pesticides, and motor vehicle operation and maintenance
- Commercial/Industrial: maintenance of landscape areas associated with the use of fertilizers, herbicides, and pesticides, and motor vehicle operation and maintenance
- Recreation: maintenance of parks associated with the use of fertilizers, herbicides, and pesticides, and motor vehicle operation and maintenance

Runoff typically contains oils, grease, fuel, antifreeze, and byproducts of combustion (such as lead, cadmium, nickel, and other metals), as well as nutrients, sediments, and other pollutants. Additionally, sizable quantities of animal waste from pets (e.g., dogs and cats) could lead to fecal contamination of water sources. Precipitation during the early portion of the wet season (December to April) displaces these pollutants into stormwater runoff, resulting in high pollutant concentrations in the initial wet weather runoff. This initial runoff, containing peak pollutant levels, is referred to as the "first flush" of storm events. It is estimated that during the rainy season, the first flush of heavy metals and hydrocarbons would occur during the first 5 inches of seasonal rainfall.

The amount and type of runoff generated by the various projects would be greater than that under existing conditions due to increases in impervious surfaces. There would be a corresponding increase in urban runoff pollutants and first-flush roadway contaminants such as heavy metals, oil, and grease, as well as an increase in nutrients (e.g., fertilizers) and other chemicals from landscaped areas. These constituents would result in water quality impacts on on- and off-site drainage flows to area waterways.

Additionally, changes from current drainage conditions may potentially result in indirect impacts on water quality in Stevens Creek, Calabazas Creek, or San Francisco Bay. These indirect impacts would be due to a corresponding increase in urban runoff pollutants and roadway contaminants such as heavy metals, oil, and grease, and an increase in nutrients (such as fertilizers) and other chemicals from landscaped areas.

Potential impacts on water quality from construction and operation activities are currently addressed through the existing requirements of Municipal Code Chapter 12.60 and individual NPDES permits.

Compliance with the State General Construction Activity Storm Water Permit requirements (where applicable), the City's Municipal Code Chapter 12.60, and the City's Urban Runoff Management Plan would reduce surface water quality impacts associated with implementation of the Draft LUTE to a less than significant level. This impact is avoided through the use of effective construction-phase, source control, and treatment control BMPs that include site preparation, runoff control, sediment retention, and other similar features. The effectiveness of

BMPs is recognized in the California Stormwater Quality Association, Stormwater Best Management Practice Handbooks.

In addition, implementation of the following Draft LUTE policy and action would strengthen enforcement of surface water standards and waste discharge requirements:

Policy 72: Protect creeks and wetlands as important parts of the community's natural environment and open space and for their contribution to flood control.

Action 3: Minimize or divert pollutants from draining into creeks and wetlands by enforcing best management practices during construction, site development, and ongoing operations.

Implementation of this Draft LUTE policy and action, in conjunction with compliance with existing regulatory programs, would ensure that construction and operational water quality impacts related to future development and redevelopment projects pursuant to the Draft LUTE would be **less than significant**.

Mitigation Measures

None required.

### Flood Hazards (Standards of Significance 6, 7, and 8)

**Impact 3.8.2** Implementation of the Draft LUTE would result in the exposure of additional people and/or structures to potential risks from flooding hazards and sea level rise. However, with compliance with existing regulations in conjunction with Draft LUTE policies and actions, this impact is considered **less than significant.**

Flooding

Portions of Sunnyvale, per the Federal Emergency Management Agency, are located within the 100-year floodplain. The Draft LUTE generally would continue to allow new development in areas of the city designated by FEMA as Special Flood Hazard Areas, consistent with the Code of Federal Regulations for the National Flood Insurance Program. Chapter 16.62, Prevention of Flood Damage, of Sunnyvale's Municipal Code requires new structures built within a FEMA-designated Special Flood Hazard Area to meet requirements set forth under the Buildings and Construction Ordinance (Ordinance No. 2916-10).

Earthquakes may generate flooding from a tsunami (sea wave caused by an earthquake), seiche (wave generated in an enclosed body of water), or dam failure. A tsunami off the coast could cause San Francisco Bay water to top local levees, especially if it arrived at high tide. Tidal flooding could occur if the system of dikes and levees failed or their banks overflowed. Local earthquakes could cause failure in parts of the levee system, which would create problems if a tsunami were to happen as well. The Santa Clara Valley Water District's system of flood control is in place to help reduce damage from all hazards discussed above, whether they happen individually or simultaneously. A capital improvement project was completed by the City Department of Public Works in 2006 to repair and strengthen the levees, reducing the chance that levees would fail in the event of a major earthquake.

The city would be affected if the Stevens Creek Reservoir were to fail as the result of an earthquake. The southwest part of the city south of Remington Drive and west of Sunnyvale-Saratoga Road would be the most significantly affected. This estimated flood inundation area is based on the reservoir's maximum 3,700 acre-foot storage capacity. Depending on the quantity of water released, the depth of flooding could vary from several inches to several feet. For any large release of water, Interstate 280 would act as a barrier to keep some water out of Sunnyvale. Safety improvements in the mid-2000s to the reservoir and the dam were engineered to withstand an earthquake of magnitude 8.25 on the Richter scale on the San Andreas fault. Upstream and downstream berms were built and the dam was raised 10 feet. The contour of gentle slopes surrounding the dam, plus the compacted earth along the sides and the face of the dam, were designed to encourage runoff and the collection of water and to discourage landslides. The spillway was also upgraded to be capable of withstanding a flow of 15,600 cubic feet per second. In addition, safety inspections are conducted after all earthquakes of 5.0 or greater magnitude.

### Sea Level Rise

Implementation of the Draft LUTE could expose additional people and/or structures to hazards associated with sea level rise, including inundation, increased flooding, and loss of natural wetland habitat. Additionally, reports indicate that if San Francisco Bay rises by 30 centimeters (11.8 inches), the 100-year storm surge–induced flood event would be shifted to occur once every 10 years. Areas of Sunnyvale that are located in the FEMA 100-year floodplain are shown on **Figure 3.8-2.**

Additionally, with increased flood events and tidal inundation, Sunnyvale could experience the loss of valuable real estate, critical public infrastructure, and natural resources.

Improvements set forth in Sunnyvale Municipal Code Chapter 16.62, Prevention of Flood Damage, as well as compliance with General Plan Policy SN-1.4 and associated actions, which address hydraulic changes due to global warming, will improve tidal inundation problems and flooding hazards associated with future sea level rise. Sunnyvale's current levees are adequate to meet some increase in sea level rise; however, further monitoring and additional studies will be necessary to determine the city's future risks and areas of deficient protection from sea level rise. The reader is referred to Section 3.13, Greenhouse Gases and Climate Change, for further discussion of sea level rise.

### Stormwater Conveyance

The Draft LUTE would not alter stormwater conveyance patterns or systems. Future development and redevelopment projects pursuant to the Draft LUTE would be required to convey stormwater into the city's existing stormwater infrastructure. Sunnyvale has two pump stations that collect runoff from low-lying urban areas and discharge to creeks and sloughs that are at a higher elevation. Levees were constructed in the northern portion of Sunnyvale to control flooding and saltwater intrusion from San Francisco Bay. Per Chapter 12.60 of the Sunnyvale Municipal Code, all new and redevelopment projects that create or replace 1 acre or more of impervious surface must implement hydromodification controls and standards so they do not cause an increase (over the pre-project existing condition) in the erosion potential of the stream into which they flow.

Implementation of the following Draft LUTE policies and actions would further reduce the exposure of additional people and/or structures to potential risks from flood hazards:

Policy 10: Participate in federal, state and regional programs and processes in order to protect the natural and human environment in Sunnyvale and the region.

Action 1: Protect and preserve the diked wetland areas in the baylands to preserve or enhance flood protection.

Policy 11: Prepare for risks and hazards related to climate change prior to their occurrence.

Action 1: Monitor and participate in regional meetings focusing on environmental adaptation and resilience.

Action 2: Regularly train and inform the Sunnyvale Department of Public Safety, Office of Emergency Services on potential climate change risks and hazards.

Action 3: Consider potential climate change impacts when preparing local planning documents and processes.

Action 4: Analyze and disclose possible impacts of climate change on development projects or plan areas, with an emphasis on sea level rise.

Action 5: Integrate climate change adaptation into future updates of the Zoning Code, Building Code, General Plan, and other related documents.

Action 6: Monitor climate change science and policy and regularly inform stakeholders of new information.

Action 7: Use the City's communication process, including the website, to discuss climate change and climate change adaptation.

Action 8: On a regular basis, assess adaptation efforts of the city, region, and state and identify goals or gaps to be addressed.

Action 9: Support efforts such as those of the Bay Conservation and Development Commission and the Joint Policy Committee to analyze and prepare for the Impacts of climate change in the Bay Area.

Action 10: Share Sunnyvale's knowledge of climate action planning with other jurisdictions and agencies.

Policy 17: Address sea level rise, increased rainfall, and other impacts of climate change when reviewing new development near creeks, and consider the projected flood levels over the economic lifespan of the project.

Policy 72: Protect creeks and wetlands as important parts of the community's natural environment and open space and for their contribution to flood control.

Action 1: Work with other agencies to maintain creeks and wetlands in their natural state.

Action 2: Work with appropriate agencies to identify creek channels and wetlands to use as recreational areas.

Action 3: Minimize or divert pollutants from draining into creeks and wetlands by enforcing best management practices during construction and site development.

Policy 73: Engage in regional efforts to enhance and protect land use near streams and to respond to sea level rise and climate change.

Action 1: Maintain and regularly review and update a streamside development review and permitting process.

Action 2: Apply development standards provided by the Santa Clara Valley Water District.

Action 3: Conduct streamside development review as part of a building permit plan check process, design review, the miscellaneous plan permit, and/or the discretionary review process.

Action 4: Minimize effects of development on natural streambeds.

Action 5: When opportunities exist, remove existing structures adjacent to streams that impact the streambed.

Policy 10, Action 1 would commit the City to the protection of the diked wetlands area in the baylands that provide flood protection, while Policy 17 would ensure that potential flooding impacts from sea level rise are considered as part of project review. Policy 73 and associated actions would provide opportunities to improve drainage and flooding conveyance through the improvement of streambeds.

Compliance with the City's existing General Plan policies regarding protection of waterways (Goal EM-8) and protection of life and property from 100-year floods (Policy SN-1.2) and compliance with Municipal Code Chapters 12.60 and 16.62 and with the Draft LUTE policies and actions described above would reduce impacts from flooding and drainage conditions in Sunnyvale associated with implementation of the Draft LUTE to a **less than significant** level.

Mitigation Measures

None required.

### Inundation Hazards (Standard of Significance 9)

**Impact 3.8.3** Implementation of the Draft LUTE would not result in the exposure of additional people and/or structures to potential risks from inundation by seiche, tsunami, or mudflow. This impact is considered **less than significant**.

As described in the Existing Setting subsection, seiches and tsunamis would not be expected to affect areas developed as part of the Draft LUTE. It is probable that an earthquake similar to the 1906 earthquake would be the largest to occur in the Bay Area; consequently, seiches with an increase in water elevation of more than 4 inches would be considered unlikely. There are no published maps or hazard information on seiche hazards in the Bay Area. Tsunamis would only be expected to affect low-lying marsh areas and bayward portions of sloughs. Mudflow (a type of landslide) would not be a hazard in Sunnyvale because of the city's generally flat terrain and distance from hilly or mountainous areas. Therefore, this impact is **less than significant.**

Mitigation Measures

None required.

## 3.8.2 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

### CUMULATIVE SETTING

The cumulative setting consists of 2035 buildout in the four Santa Clara Basin watersheds of which Sunnyvale is a part—the Sunnyvale West Channel, Sunnyvale East Channel, Calabazas Creek, and Stevens Creek watersheds. The boundaries of these watersheds are discussed above in the Existing Setting subsection. These watersheds include parts of Cupertino, Mountain View, Palo Alto, Los Altos, San Jose, Santa Clara, and Saratoga.

### CUMULATIVE IMPACTS AND MITIGATION MEASURES

**Cumulative Water Quality Impacts**

**Impact 3.8.4** Future land uses and development pursuant to the Draft LUTE, in combination with current land uses in the local watersheds and future planned land uses and development in the cities and other agencies in the Santa Clara Basin, could introduce additional non-point source pollutants to surface waters. However, the Draft LUTE's contribution to this impact would be **less than cumulatively considerable.**

As described under Impact 3.8.1, subsequent infill and redevelopment pursuant to the Draft LUTE could contribute to water quality degradation from construction activities, operations, and alteration of drainage patterns. Future development associated with the Draft LUTE, in combination with cumulative development in the local watersheds, could result in cumulative water quality impacts to the adjacent San Francisco Bay, Stevens Creek, and Calabazas Creek.

All future development in Sunnyvale would be required to comply with Sunnyvale Municipal Code Chapters 12.60 and 16.62, as well as to employ best management practices (BMPs) for the prevention of erosion and the control of loose soil and sediment. BMPs would also be used for the treatment of post-construction stormwater. During construction of projects in Sunnyvale, the dischargers, through individual coverage under the State's General Construction NPDES permit, must eliminate non-stormwater discharges to stormwater systems, develop and implement a stormwater pollution prevention plan (SWPPP), and perform monitoring of discharges to stormwater systems. Many other jurisdictions in the Santa Clara Basin are also co-permittees under the Regional NPDES permit, and future land use activities and development in those jurisdictions would be subject to similar BMP requirements.

Compliance with Municipal Code Chapters 12.60 and 16.62 would reduce Sunnyvale's contribution to cumulative water quality impacts to a **less than cumulatively considerable** level. This impact is reduced through the use of effective BMPs that include site preparation, runoff control, sediment retention, and other similar features. The effectiveness of BMPs is recognized in the California Stormwater Quality Association, California Stormwater Best Management Practice Handbooks.

Mitigation Measures

None required.

### Cumulative Flood Hazards

**Impact 3.8.5** Implementation of the Draft LUTE could increase impervious surfaces and alter drainage conditions and rates in Sunnyvale, which could contribute to cumulative flood conditions within the Santa Clara Basin. However, the Draft LUTE's contribution to this impact is considered **less than cumulatively considerable**.

Sunnyvale is an urbanized community with less than 1 percent of developable vacant land. Additional development in the city is not expected to increase impervious surfaces or alter drainage conditions to a significant degree. Future development pursuant to the Draft LUTE would result in infill and redevelopment in Sunnyvale. Some of this infill and redevelopment may be in areas of Sunnyvale that are located in the 100-year floodplain. Additional development in Sunnyvale, along with past, present, and other future development along San Francisco Bay in adjacent cities and adjacent unincorporated Santa Clara County, could result in cumulative flooding impacts.

The planned infill and redevelopment associated with the Draft LUTE could expose future residences and structures to flood hazards. As noted above, new development and redevelopment must comply with the requirements of Sunnyvale Municipal Code Chapter 16.62, Prevention of Flood Damage, for new structures built within a FEMA-designated Special Flood Hazard Area and to meet requirements set forth under the Buildings and Construction Ordinance (Ordinance No. 2916-10) in order to mitigate flood hazards. Similar requirements are in place in other jurisdictions in the Santa Clara Basin that are NFIP participants.

Compliance with Draft LUTE policies and actions, and compliance with Sunnyvale General Plan policy provisions and associated implementation programs cited under Impact 3.8.2, would reduce flood, tidal inundation, sea level rise, and drainage impacts in Sunnyvale. The General Plan policy provisions for flooding and tidal inundation require new development and redevelopment proposals in areas subject to flooding to provide a minimum flood protection level equal to a 100-year storm event, pursue sources of state and federal funding, and establish and maintain an effective emergency response program that anticipates the potential for disasters. Therefore, the Draft LUTE's contribution to this impact would be considered **less than cumulatively considerable**.

#### Mitigation Measures

None required.

## REFERENCES

BCDC (San Francisco Bay Conservation and Development Commission). 2007 (amended 2011). *Climate Change Action Plan*. Accessed October 2012.

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# 3.9 Biological Resources

This section describes the existing biological resources, including the special-status species and sensitive habitats known to occur or potentially occur in Sunnyvale, the regulations and programs which provide for their protection, and an assessment of the potential impacts of implementing the Draft LUTE. This section also includes a discussion of feasible mitigation measures necessary to reduce impacts to a less than significant level.

A summary of the impact conclusions related to biological resources is provided below.

| Impact Number | Impact Topic | Impact Significance |
|---|---|---|
| 3.9.1 | Special-Status and Other Protected Species | Less than significant |
| 3.9.2 | Wetland and Sensitive Habitats | Less than significant |
| 3.9.3 | Substantial Interference with Wildlife Movement | Less than significant |
| 3.9.4 | Conflict with Adopted Habitat, Natural Community Conservation Plans, or Local Protection Measures | Less than significant |
| 3.9.5 | Cumulative Biological Resource Impacts | Less than cumulatively considerable |

## 3.9.1 EXISTING SETTING

### VEGETATIVE COMMUNITIES

Sunnyvale is located along the southern San Francisco Bay. The interface of the city with the bay (east of Moffett Federal Airfield) provides some of the best natural areas in and around the city. Beyond this interstitial zone, Sunnyvale is built out, with few natural areas. Small patches of fresh emergent marsh occur, as well as segments of Stevens Creek, Calabazas Creek, and Moffett Channel (see **Figure 3.8-1**). The natural areas located near the bay are designated as Baylands in the Draft LUTE and are proposed to be retained as open space. The following analyses are therefore concentrated on the remaining urbanized environment of Sunnyvale.

### NON-NATIVE ANNUAL GRASSLAND

Non-native annual grassland is the most common "natural community" or undeveloped habitat type in Sunnyvale. In urban areas, this habitat type is often called ruderal, or disturbed. This community is composed almost entirely of annual grasses and other herbaceous species. Plants typical of this community include several species of brome (*Bromus* spp.), wild oats (*Avena* spp.), filarees (*Erodium* spp.), schismus (*Schismus* spp.), fescues (*Vulpia* spp.), and a variety of native wildflowers such as California poppy (*Eschscholtzia californica*) and phacelia (*Phacelia* spp.), along with other non-native species.

Ruderal grassland areas can be found in freeway cloverleafs, along roadways, and in vacant, undeveloped urban lots. Although they do not support many native species, these areas can be a refuge for common species such as raccoon (*Procyon lotor*), dark-eyed junco (*Junco hyemalis*), lesser goldfinch (*Carduelis psaltria*), and many others. Special-status species that may occur in ruderal areas include western burrowing owl (*Athene cunicularia*) and Congdon's tarplant (*Centromadia parryi* spp. *congdonii*). Western burrowing owl is known to occur at Shoreline Regional Park.

### URBAN

Urban communities are characterized by residential and commercial developments that generally include structures, roadways and other hardscapes, remnant mature native trees, and ornamental landscaping. Park communities are integrated into the urban community and include designated open space areas that are predominantly landscaped. Typical landscape species in the urban community are generally non-natives such as junipers (*Juniperus* spp.), roses (*Rosa* spp.), Bradford pear (*Pyrus callereyana 'Bradford'*), crepe myrtle (*Lagerstroemia indica*), weeping willow (*Salix babylonica*), oleander (*Nerium oleander*), and English ivy (*Hedera helix*). Common urban street trees in the city include California black walnut (*Juglans californica*), Chinese pistache (*Pistacia chinensis*), liquidamber (*Liquidamber styraciflua*), eucalyptus (*Eucalyptus* spp.), London plane (*Plantanus acerifolia*), olive (*Olea europaea*), and tulip tree (*Liriodendron tulipifera*). Ruderal habitats in vacant lots are generally dominated by species such as yellow star thistle (*Centaurea solstitialis*), prickly lettuce (*Latuca serriola*), flax-leaved flea bane (*Conyza bonariensis*), and non-native grasses, including soft chess, ripgut brome, and foxtail barley. Vegetation in park communities largely consists of turf with occasional non-native tree species similar to those found in urban habitats. Parks can include golf courses, playing fields, and baseball and softball diamonds.

Many common wildlife species have become adapted to use urban and park areas for foraging, shelter, and breeding habitat. These species readily adapt to tolerate human disturbance and to non-native vegetation. Species associated with urban and park areas in the city include mockingbird (*Mimus polyglottos*), scrub jay (*Aphelocoma californica*), house finch (*Carpodacus mexicanus*), European starling (*Sturnus vulgaris*), lesser goldfinch, house sparrow (*Passer domesticus*), western gray squirrel (*Sciurus griseus*), California ground squirrel (*Spermophilus beecheyi*), rock dove (*Columba livia*), mourning dove (*Zenaida macroura*), American crow (*Corvus brachyrhynchos*), Brewer's blackbird (*Euphagus cyanocephalus*), sandhill crane (*Grus canadensis*), various raptor species, egrets, and many species of rodents. A few other species that may be found, particularly in park areas, include raccoon, opossum (*Didelphis virginiana*), Pacific treefrog (*Hyla regilla*), and western toad (*Bufo boreas*).

### EMERGENT WETLAND

This habitat includes both seasonal and perennial wetlands and is typically associated with agricultural irrigation water or naturally occurring creeks, sloughs, marshes (freshwater and brackish), and rivers. Vegetation varies in height, cover, and species composition depending on the water depth and frequency of inundation. Common vegetation in this habitat includes cattails and tule (*Scirpus robustus*) along with Baltic rush (*Juncus balticus*), barnyard grass (*Echinochloa crusgallia*), tall nutsedge (*Cyperus eragrostis*), and dallis grass (*Paspalum dilatatum*). Other hydrophytic species found in this habitat include water smartweed (*Polygonum amphibium*), ditchgrass (*Paspalum distichum*), salt grass (*Distichlis spicata*), floating boxseed (*Ludwigia repens*), and South American vervain (*Verbena bonariensis*).

In habitat with only seasonal inundation, typical vegetation is shorter and includes many annual species. Common plant species found in seasonal wetlands include Italian ryegrass (*Loliium multiflorum*), curly dock (*Rumex crispus*), spikerush (*Eeleocharis macrostachya*), swamp grass (*Crypsis schoenoides*), alkali grass (*Puccinellia* spp.), coyote thistle (*Eryngium armatum*), loosestrife hedge hyssop (*Lythrum hyssopifolium*), and cocklebur (*Xanthium strumarium*).

Both natural and managed wetlands in the city provide valuable nesting, foraging, cover, and breeding habitat for many bird, amphibian, and mammal species. Common wildlife species include western pond turtle (*Actinemys marmorata*), bullfrog (*Rana catesbeiana*), Pacific

treefrog, great blue heron (*Ardea herodias*), raccoon, striped skunk (*Mephitis mephitis*), and muskrat (*Ondatra zibethicus*).

### WILDLIFE CORRIDORS

Wildlife corridors refer to established migration routes commonly used by resident and migratory species for passage from one geographic location to another. Corridors are present in a variety of habitats and link otherwise fragmented acres of undisturbed area. Maintaining the continuity of established wildlife corridors is important to sustain species with specific foraging requirements, preserve a species' distribution potential, and retain diversity among many wildlife populations. Therefore, resource agencies consider wildlife corridors to be a sensitive resource. The waterways (Stevens Creek, Calabazas Creek, and Moffett Channel) and surrounding open spaces within the city serve as aquatic and terrestrial wildlife migration corridors.

### SPECIAL-STATUS SPECIES

Special-status plant and animal species are those that are afforded special recognition by federal, state, or local resource agencies or organizations. Special-status species are of relatively limited distribution and generally require specialized habitat conditions.

Special-status plant species are defined as:

- Listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (ESA) (50 Code of Federal Regulations (50 CFR 17-12 [listed plants] and various notices in the Federal Register [proposed species]).
- Candidates for possible future listing as threatened or endangered under the ESA.
- Listed or candidates for listing by the State of California as threatened or endangered under the California Endangered Species Act (CESA) (14 California Code of Regulations [CCR] 670.5).
- Listed as rare under the California Native Plant Protection Act (California Fish and Game Code Section 1900 et seq.).
- Considered by the California Native Plant Society (CNPS) to be rare, threatened, or endangered in California (CNPS Lists 1B and 2).

Special-status wildlife are animals that meet the definition of "endangered, rare, or threatened" under the California Environmental Quality Act (CEQA) (State CEQA Guidelines Section 15380). For the purposes of this document, this includes all species that meet any of the following criteria:

- Listed or proposed for listing as threatened or endangered under the ESA (50 CFR 17-11 [listed animals] and various notices in the Federal Register [proposed species]).
- Candidates for possible future listing as threatened or endangered under the ESA.
- Listed or candidates for listing by the State of California as threatened or endangered under the CESA (14 CCR 670.5).

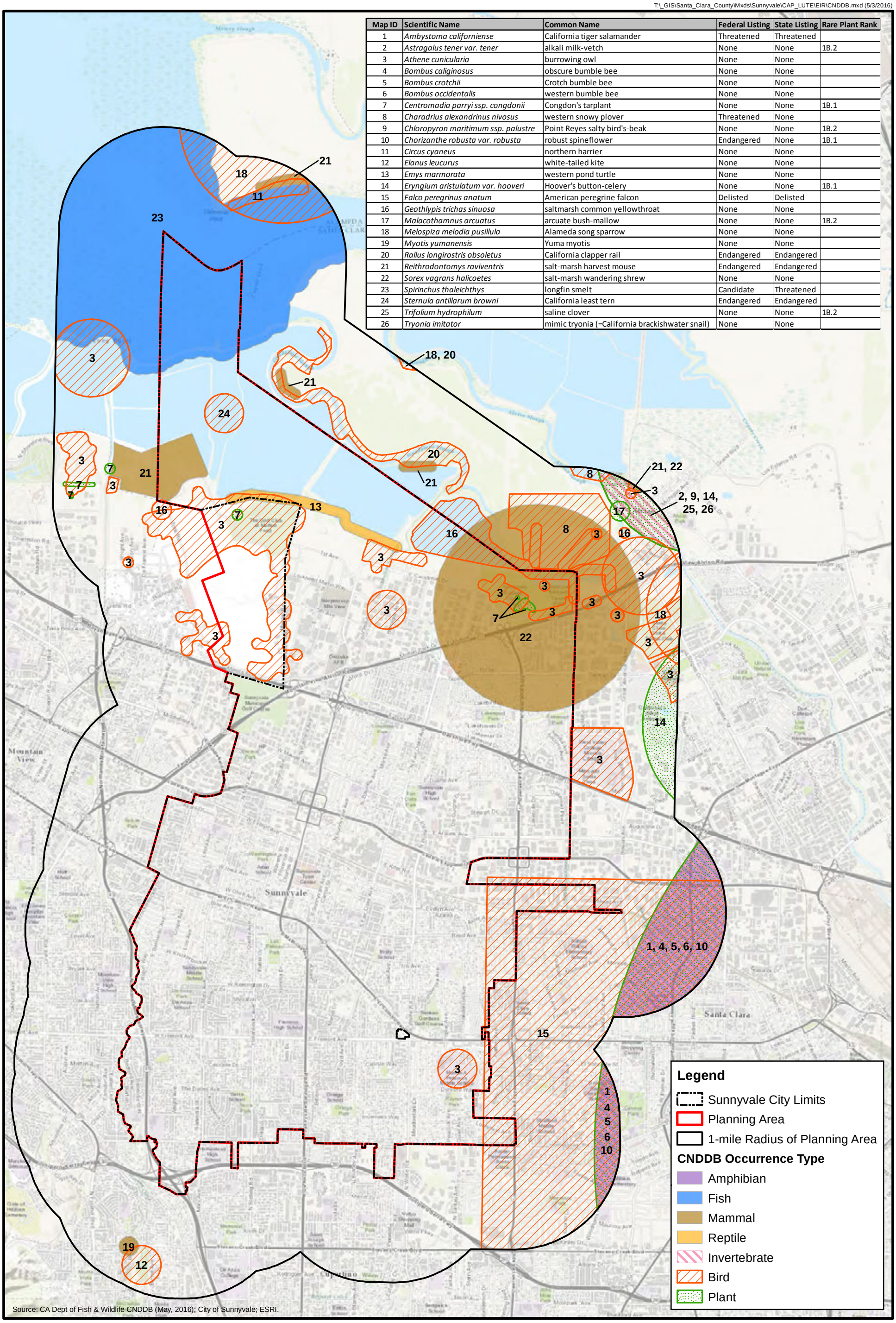
- Otherwise protected under state or federal law. Sunnyvale was evaluated by querying the California Natural Diversity Database (CNDDB), the US Fish and Wildlife Service, and the CNPS for previously recorded occurrences of special-status species within the Planning Area.

The CDFW maintains records for the distribution and known occurrences of sensitive species and habitats in the CNDDB, which is organized into map areas based on 7.5-minute topographic maps produced by the US Geological Survey (USGS). The CNDDB is based on actual recorded occurrences but does not constitute an exhaustive inventory of every resource. The absence of an occurrence in a particular location does not necessarily mean that special-status species are absent from that area, but that no data has been entered into the CNDDB inventory. Detailed field surveys are generally required to provide a conclusive determination on presence or absence of sensitive resources from a particular location where there is evidence of potential occurrence.

**Table 3.9-1** and **Figure 3.9-1** identify the special-status species plant and animal species, respectively, which have potential to be affected by future projects pursuant to the Draft LUTE. The habitat preferences for each special-status species were carefully reviewed and considered in the context of the planning area and surrounding areas. In addition to the species listed below, steelhead (*Oncorhynchus mykiss irideus*) and California clapper rail (*Rallus longirostris obsoletus*) are known to occur in Stevens Creek (Mountain View 2011).

T:_GIS\Santa_Clara_County\Mxds\Sunnyvale\CAP_LUTE\EIR\CNDDB.mxd (5/3/2016)

| Map ID | Scientific Name | Common Name | Federal Listing | State Listing | Rare Plant Rank |
|---|---|---|---|---|---|
| 1 | *Ambystoma californiense* | California tiger salamander | Threatened | Threatened | |
| 2 | *Astragalus tener var. tener* | alkali milk-vetch | None | None | 1B.2 |
| 3 | *Athene cunicularia* | burrowing owl | None | None | |
| 4 | *Bombus caliginosus* | obscure bumble bee | None | None | |
| 5 | *Bombus crotchii* | Crotch bumble bee | None | None | |
| 6 | *Bombus occidentalis* | western bumble bee | None | None | |
| 7 | *Centromadia parryi ssp. congdonii* | Congdon's tarplant | None | None | 1B.1 |
| 8 | *Charadrius alexandrinus nivosus* | western snowy plover | Threatened | None | |
| 9 | *Chloropyron maritimum ssp. palustre* | Point Reyes salty bird's-beak | None | None | 1B.2 |
| 10 | *Chorizanthe robusta var. robusta* | robust spineflower | Endangered | None | 1B.1 |
| 11 | *Circus cyaneus* | northern harrier | None | None | |
| 12 | *Elanus leucurus* | white-tailed kite | None | None | |
| 13 | *Emys marmorata* | western pond turtle | None | None | |
| 14 | *Eryngium aristulatum var. hooveri* | Hoover's button-celery | None | None | 1B.1 |
| 15 | *Falco peregrinus anatum* | American peregrine falcon | Delisted | Delisted | |
| 16 | *Geothlypis trichas sinuosa* | saltmarsh common yellowthroat | None | None | |
| 17 | *Malacothamnus arcuatus* | arcuate bush-mallow | None | None | 1B.2 |
| 18 | *Melospiza melodia pusillula* | Alameda song sparrow | None | None | |
| 19 | *Myotis yumanensis* | Yuma myotis | None | None | |
| 20 | *Rallus longirostris obsoletus* | California clapper rail | Endangered | Endangered | |
| 21 | *Reithrodontomys raviventris* | salt-marsh harvest mouse | Endangered | Endangered | |
| 22 | *Sorex vagrans halicoetes* | salt-marsh wandering shrew | None | None | |
| 23 | *Spirinchus thaleichthys* | longfin smelt | Candidate | Threatened | |
| 24 | *Sternula antillarum browni* | California least tern | Endangered | Endangered | |
| 25 | *Trifolium hydrophilum* | saline clover | None | None | 1B.2 |
| 26 | *Tryonia imitator* | mimic tryonia (=California brackishwater snail) | None | None | |

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Miles

**FIGURE 3.9-1**
CNDDB Occurrences of Special-Status Species Within 1 Mile of Planning Area

Michael Baker INTERNATIONAL

**TABLE 3.9-1**
**SPECIAL-STATUS SPECIES POTENTIALLY OCCURRING IN URBANIZED PORTIONS OF SUNNYVALE**

| Scientific Name | Common Name | Federal Listing | State Listing | Rare Plant Rank | Possibility in Urbanized Sunnyvale |
|---|---|---|---|---|---|
| *Ambystoma californiense* | California tiger salamander | Threatened | Threatened, SSC | | None. No habitat in non-bay areas. |
| *Astragalus tener* var. *tener* | alkali milk-vetch | None | None | 1B.2 | Very low. No alkali playa in non-bay areas. |
| *Athene cunicularia* | burrowing owl | None | None, SSC | | High in vacant lots |
| *Centromadia parryi* ssp. *congdonii* | Congdon's tarplant | None | None | 1B.1 | Moderate to high. Available habitat in ruderal grasslands throughout non-bay areas. |
| *Charadrius alexandrinus nivosus* | western snowy plover | Threatened | None, SSC | | None. Confined to bay. |
| *Chloropyron maritimum* ssp. *palustre* | Point Reyes bird's-beak | None | None | 1B.2 | None. No marshes and swamp in non-bay areas. |
| *Chorizanthe robusta* var. *robusta* | robust spineflower | Endangered | None | 1B.1 | Moderate to high. Available habitat in ruderal grasslands. |
| *Circus cyaneus* | northern harrier | None | None, SSC | | None. No foraging or nesting habitat in non-bay areas. |
| *Elanus leucurus* | white-tailed kite | None | None, FP | | Moderate. Nesting and foraging in non-bay areas. |
| *Emys marmorata* | Western pond turtle | None | None, SSC | | None. No rivers or suitable water bodies are present. |
| *Eryngium aristulatum* var. *hooveri* | Hoover's button-celery | None | None | 1B.1 | Very low. No alkali wetland or vernal pools in non-bay areas. |
| *Falco peregrinus anatum* | American peregrine falcon | Delisted | Delisted, FP | | None. No foraging or nesting habitat in non-bay areas. |
| *Geothlypis trichas sinuosa* | saltmarsh common yellowthroat | None | None, SSC | | None. No salt marshes in non-bay areas. |
| *Masticophis lateralis euryxanthus* | Alameda whipsnake | Threatened | Threatened | | None. No chaparral, coastal scrub habitats, or rocky outcrops present. |
| *Malacothamnus arcuatus* | arcuate bush-mallow | None | None | 1B.2 | None. No chaparral or woodlands present. |

| Scientific Name | Common Name | Federal Listing | State Listing | Rare Plant Rank | Possibility in Urbanized Sunnyvale |
|---|---|---|---|---|---|
| *Melospiza melodia pusillula* | Alameda song sparrow | None | None, SSC | | None. No salt marshes in non-bay areas. |
| *Myotis yumanensis* | Yuma myotis | None | None | | Moderate. |
| *Rallus longirostris obsoletus* | California clapper rail | Endangered | Endangered, FP | | None. No salt marshes in non-bay areas. |
| *Reithrodontomys raviventris* | salt-marsh harvest mouse | Endangered | Endangered, FP | | None. No salt marshes in non-bay areas. |
| *Sorex vagrans halicoetes* | salt-marsh wandering shrew | None | None, SSC | | None. No salt marshes in non-bay areas. |
| *Spirinchus thaleichthys* | Longfin smelt | Candidate | Threatened | | None. No rivers or suitable water resources present. |
| *Sternula antillarum browni* | California least tern | Endangered | Endangered, FP | | None. No salt marshes in non-bay areas. |
| *Trifolium hydrophilum* | saline clover | None | None | 1B.2 | None. No marshes or swamp in non-bay areas. |

**CODE DESIGNATIONS**

| State | CNPS Rank |
|---|---|
| **SSC** = California Species of Special Concern<br>**FP** = Fully Protected | **Rank 1B.1** – Plant species that are rare, threatened, or endangered in California and elsewhere<br>**Rank 1B 2** – Fairly threatened in California (moderate degree/immediacy of threat) |

## 3.9.2 REGULATORY FRAMEWORK

This section lists specific environmental review and consultation requirements and identifies permits and approvals that must be obtained from local, state, and federal agencies.

### FEDERAL

#### Endangered Species Act

Provisions of the federal Endangered Species Act (ESA), as amended (16 USC 1531), protect federally listed threatened and endangered species and their habitats from unlawful take. "Take" under the ESA includes activities such as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." US Fish and Wildlife Service (USFWS) regulations define harm to include some types of "significant habitat modification or degradation." In the case of *Babbitt, Secretary of Interior, et al., Petitioners v. Sweet Home Chapter of Communities for a Great Oregon, et al.* (No. 94-859), the Supreme Court of the United States ruled on June 29, 1995, that "harm" may include habitat modification "where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering."

For projects with a federal nexus, ESA Section 7 requires that federal agencies, in consultation with the USFWS or National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries), use their authorities to further the purpose of the ESA and to ensure that their actions are not likely to jeopardize the continued existence of listed species or result in destruction or adverse modification of critical habitat. Section 10(a)(1)(B) allows nonfederal entities to obtain permits for incidental taking of threatened or endangered species through consultation with the USFWS or NOAA Fisheries. In general, NOAA Fisheries is responsible for protection of federally listed marine species and anadromous fish while other listed species come under USFWS jurisdiction. Key provisions of the ESA are summarized below under the section that implements them.

Section 10

ESA Section 10 provides a means for nonfederal entities (states, local agencies, and private parties) that are not permitted or funded by a federal agency to receive authorization to disturb, displace, or kill (i.e., take) threatened and endangered species. It allows the USFWS and/or NOAA Fisheries to issue an incidental take permit authorizing take resulting from otherwise legal activities, as long as the take would not jeopardize the continued existence of the species. Section 10 requires the applicant to prepare a habitat conservation plan addressing project impacts and proposing mitigation measures to compensate for those impacts. The plan is subject to USFWS and/or NOAA Fisheries review and must be approved by the reviewing agency or agencies before the proposed project can be initiated. Because the issuance of the incidental take permit is a federal action, the USFWS and/or NOAA Fisheries must also comply with the requirements of ESA Section 7 and the National Environmental Policy Act (NEPA).

Section 7

ESA Section 7 applies to the management of federal lands as well as to other federal actions, such as federal approval of private activities through the issuance of federal permits, licenses, funding, or other actions that may affect listed species. Section 7 directs all federal agencies to use their existing authorities to conserve threatened and endangered species and, in consultation with the USFWS, to ensure that their actions do not jeopardize listed species or destroy or adversely modify critical habitat. Critical habitat is defined as specific areas that are essential to the conservation of federally listed species.

### Clean Water Act, Section 404

The objective of the Clean Water Act (CWA 1977, as amended) is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Discharge of fill material into waters of the United States, including wetlands, is regulated by the US Army Corps of Engineers (USACE) under Section 404 of the federal Clean Water Act (33 USC 1251–1376). USACE regulations implementing Section 404 define waters of the United States to include intrastate waters, including lakes, rivers, streams, wetlands, and natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce. Wetlands are defined for regulatory purposes as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3; 40 CFR 230.3). The jurisdictional boundaries for other waters of the United States are identified based on the presence of an ordinary high water mark (OHWM) as defined in 33 CFR 328.3(e). The placement of structures in navigable waters of the United States is also regulated by the USACE under Section 10 of the federal Rivers and Harbors Act (33 USC 401 et seq.). Projects are

permitted under either individual or general (e.g., nationwide) permits. Specific applicability of permit type is determined by the USACE on a case-by-case basis.

In 1987, the USACE published a manual that standardized the manner in which wetlands were to be delineated nationwide. To determine whether areas that appear to be wetlands are subject to USACE jurisdiction (i.e., are "jurisdictional" wetlands), a wetlands delineation must be performed. Under normal circumstances, positive indicators from three parameters—wetland hydrology, hydrophytic vegetation, and hydric soils—must be present to classify a feature as a jurisdictional wetland. More recently, the USACE developed the Arid West Regional Supplement (USACE 2006) for identifying wetlands and distinguishing them from aquatic habitats and other nonwetlands. The supplement presents wetland indicators, delineation guidance, and other information that is specific to the Arid West Region. For any wetland delineations submitted after June 5, 2007, the USACE requires that the site be surveyed according to both the 1987 manual and the supplement guidelines. In addition to verifying wetlands for potential jurisdiction, the USACE is responsible for the issuance of permits for projects that propose filling of wetlands. Any permanent loss of a jurisdictional wetland as a result of project construction activities is considered a significant impact.

A "no net loss" wetlands policy is an overall policy goal for wetland protection first adopted by the George H.W. Bush Administration (1989–1993) and endorsed and updated by the Clinton Administration (1993–2001).

### Clean Water Act, Section 401

Section 401 of the CWA requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States to obtain a certification that the discharge will comply with applicable effluent limitations and water quality standards. The appropriate Regional Water Quality Control Board regulates Section 401 requirements (see under State).

### Migratory Bird Treaty Act

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703–711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). The majority of birds found in the city are protected under the MBTA.

## STATE

### California Endangered Species Act

Under the California Endangered Species Act (CESA), the CDFW has the responsibility for maintaining a list of endangered and threatened species (California Fish and Game Code Section 2070). The CDFW maintains a list of "candidate species," which are species that the agency formally notices as being under review for addition to the list of endangered or threatened species. The CDFW also maintains lists of "species of special concern," which serve as species "watch lists." Pursuant to the requirements of the CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present on the project site and determine whether the proposed project will have a potentially significant impact on such species. In addition, the CDFW

encourages informal consultation on any proposed project that may impact a candidate species.

Project-related impacts on species on the CESA endangered or threatened list would be considered significant. State-listed species are fully protected under the mandates of the CESA. Take of protected species incidental to otherwise lawful management activities may be authorized under California Fish and Game Code Section 206.591. Authorization from the CDFW would be in the form of an Incidental Take Permit.

### California Wetlands Conservation Policy

In August 1993, California Governor Pete Wilson announced the California Wetlands Conservation Policy. The goals of the policy are to establish a framework and strategy that will:

- Ensure no overall net loss and achieve a long-term net gain in the quantity, quality, and permanence of wetlands acreage and values in California in a manner that fosters creativity, stewardship, and respect for private property.
- Reduce procedural complexity in the administration of state and federal wetlands conservation programs.
- Encourage partnerships to make landowner incentive programs and cooperative planning efforts the primary focus of wetlands conservation and restoration.

The Governor also signed Executive Order W-59-93, which incorporates the goals and objectives contained in the new policy and directs the Resources Agency to establish an interagency task force to direct and coordinate administration and implementation of the policy.

### Porter-Cologne Water Quality Control Act

Water quality in California is governed by the Porter-Cologne Water Quality Control Act. This law assigns overall responsibility for water rights and water quality protection to the State Water Resource Control Board (SWRCB) and directs the nine statewide Regional Water Quality Control Boards (RWQCBs) to develop and enforce water quality standards within their boundaries.

### California Regional Water Quality Control Board

#### Clean Water Act, Section 401 Water Quality Certification

Section 401 of the CWA (33 USC 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards. The appropriate Regional Water Quality Control Board (in California) regulates Section 401 requirements. The San Francisco Bay Regional Water Quality Control Board is responsible for enforcing water quality criteria and protecting water resources in Sunnyvale. The RWQCB is responsible for controlling discharges to surface waters of the state by issuing waste discharge requirements (WDR) or commonly by issuing conditional waivers to WDRs. The Regional Water Quality Control Board requires that a project proponent obtain a CWA Section 401 water quality certification for Section 404 permits granted by the USACE.

### Delegated Permit Authority

The State of California has been delegated permit authority for the National Pollutant Discharge Elimination System (NPDES) permit program, including stormwater permits for all areas except Indian lands. Issuing CWA Section 404 dredge and fill permits remains the responsibility of the USACE, but the State actively uses its CWA Section 401 certification authority to ensure 404 permits protect state water quality standards.

### State Definition of Covered Waters

Under California state law, "waters of the State" means "any surface water or groundwater, including saline waters, within the boundaries of the state." Therefore, water quality laws apply to both surface water and groundwater. After the US Supreme Court decision in *Solid Waste Agency of Northern Cook County* v. *Army COE of Engineers* (*SWANCC v. USCOE*), the Office of Chief Counsel of the SWRCB released a legal memorandum confirming the State's jurisdiction over isolated wetlands. The memorandum stated that under the California Porter-Cologne Water Quality Control Act, discharges to wetlands and other waters of the state are subject to state regulation, and this includes isolated wetlands. In general, the RWQCBs regulate discharges to isolated waters in much the same way as they do for federal jurisdictional waters, using Porter-Cologne rather than CWA authority.

## California Fish and Game Code

### Fully Protected Species

Certain species are considered fully protected, meaning that Fish and Game Code explicitly prohibits all take of individuals of these species except for take permitted for scientific research. Section 5050 lists fully protected amphibians and reptiles, Section 5515 lists fully protected fish, Section 3511 lists fully protected birds, and Section 4700 lists fully protected mammals.

It is possible for a species to be protected under the California Fish and Game Code, but not fully protected. For instance, mountain lion (*Puma concolor*) is protected under Section 4800 et seq., but it is not a fully protected species.

### Protection of Birds and Their Nests

Eggs and nests of all birds are protected under Section 3503 of the California Fish and Game Code, nesting birds (including raptors and passerines) under Sections 3503.5 and 3513, and birds of prey under Section 3503.5. Migratory non-game birds are protected under Section 3800 and other specified birds under Section 3505.

### Stream and Lake Protection

The CDFW has jurisdictional authority over streams and lakes and the wetland resources associated with these aquatic systems under California Fish and Game Code Section 1600 et seq. through administration of lake or streambed alteration agreements. Such agreements are not a permit, but rather a mutual accord between the CDFW and the project proponent. California Fish and Game Code Section 1600 et seq. was repealed and replaced in October 2003 with the new Sections 1600–1616 that took effect on January 1, 2004 (Senate Bill 418, Sher). Under the new code, the CDFW has the authority to regulate work that will "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other

material containing crumbled, flaked, or ground pavement where it may pass into any river lake or stream." The CDFW enters into a streambed alteration agreement with the project proponent and can impose conditions in the agreement to minimize and mitigate impacts on fish and wildlife resources. Because the CDFW includes under its jurisdiction streamside habitats that may not qualify as wetlands under the federal Clean Water Act definition, CDFW jurisdiction may be broader than USACE jurisdiction.

A project proponent must submit a notification of streambed alteration to the CDFW before construction. The notification requires an application fee for streambed alteration agreements, with a specific fee schedule to be determined by the CDFW. The CDFW can enter into programmatic agreements that cover recurring operation and maintenance activities and regional plans. These agreements are sometimes referred to as Master Streambed Alteration Agreements.

### REGIONAL

#### San Francisco Bay Plan

The San Francisco Bay Plan is a policy tool that, under the provisions of the McAteer-Petris Act, allows the San Francisco Bay Conservation and Development Commission (BCDC) to "exercise its authority to issue or deny permit applications for placing fill, extracting materials, or changing the use of any land, water, or structure within the area of its jurisdiction." The BCDC's area of jurisdiction includes all of San Francisco Bay, a shoreline band extending 100 feet from the water, and salt ponds, managed wetlands, and certain waterways associated with the bay. The Bay Plan stipulates: "Any public agency or private owner holding shoreline land is required to obtain a permit from the Commission before proceeding with (shoreline) development." Sunnyvale's San Francisco Bay shoreline is within the jurisdiction of the BCDC, and associated development activities are regulated by the Bay Plan. The Bay Plan Map 7 policies pertaining to Sunnyvale and its immediate surroundings include the following:

- Policy 12, South Bay. Enhance and restore valuable wildlife habitat. Bay tidal marshes and salt ponds may be acquired as part of the Don Edwards San Francisco Bay National Wildlife Refuge and managed to maximize wildlife and aquatic life values. Salt ponds can be managed for the benefit of aquatic life and wildlife. Provide continuous public access to the Bay and salt ponds along levees if in a manner protective of sensitive wildlife. Provide opportunities for non-motorized small boat launching facility where compatible with wildlife and habitat protection.

#### Santa Clara Valley Habitat Plan

The Santa Clara Valley Habitat Plan (SCVHP) is a comprehensive, multi-jurisdictional habitat conservation plan pursuant to Section (a)(1)(B) of the federal Endangered Species Act, as well as a natural communities conservation plan (NCCP) under the California NCCP Act of 2001. The overall biological goal of the SCVHP is to "protect and enhance ecological diversity and function within a large section of Santa Clara County, while allowing for currently planned development and growth." The SCVHP was approved and adopted in 2013 by the County of Santa Clara, the Santa Clara Valley Water District, and the Santa Clara Valley Transportation Authority, as well as the Cities of Gilroy, Morgan Hill, and San Jose. Sunnyvale is not a signatory to the plan and is not in the SCVHP planning area.

### South Bay Salt Ponds Restoration Project

The South Bay Salt Ponds Restoration Project is intended to restore 15,100 acres of industrial salt ponds along the southern shoreline of San Francisco Bay to tidal wetlands and related habitats, while providing flood control and recreation access. The restoration project would take place on shoreline lands outside of the city limits that are currently categorized as water bodies.

#### LOCAL

### City of Sunnyvale General Plan

The following provisions of the Sunnyvale General Plan apply to biological resources:

- Policy EM-8.6 – Minimize the impacts from stormwater and urban runoff on the biological integrity of natural drainage systems and water bodies.
- LT-1.11b – Protect and preserve the diked wetland areas in the Baylands, which serve as either salt evaporation ponds or holding ponds for the wastewater treatment plant.
- Goal CC-5 – Protection of Sunnyvale's Heritage – To enhance, preserve and protect Sunnyvale's heritage including natural features, the built environment and significant artifacts.

### City of Sunnyvale Municipal Code

Municipal Code Chapter 19.94, Tree Preservation, provides protections for trees with a trunk size of 38 inches in circumference or 113 inches in total circumference for multiple trunk trees at a height of 4.5 feet (defined as a "Protected Tree" in the code). The Municipal Code cites limited circumstances for removal of protected trees and requires implementation of protection measures for these trees during construction activities.

## 3.9.3 IMPACTS AND MITIGATION MEASURES

#### STANDARDS OF SIGNIFICANCE

A biological resource impact is considered significant if implementation of the proposed project would:

1) Have a substantial adverse effect, either directly or indirectly through habitat modifications, on any special-status plant or animal species identified, tracked, or listed in local or regional plans, policies, or regulations, or by the CDFW, USFWS, or NOAA Fisheries.

2) Have a substantial adverse effect on any wetlands, riparian, or other sensitive or critical habitat identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS.

3) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

4) Conflict with any adopted habitat conservation plan, recovery plan, natural community conservation plan, local ordinance, or other approved local, regional, or state plans or policies intended to protect biological resources.

5) Reduce the number or restrict the range of an endangered, rare, or threatened plant or animal species or biotic community, thereby causing the species or community to drop below self-sustaining levels.

### METHODOLOGY

The impact assessment was based on information available from various existing planning documents and database searches, field review, and the standards of significance described above. The assessment discusses potential impacts that could occur with implementation of the Draft LUTE. Impacts were determined by comparing existing habitat baseline data and sensitive species associations to land uses designated in the Draft LUTE and by determining effects that could occur in association with future development pursuant to the Draft LUTE.

#### Special-Status Species Assessment

Special-status species, identified from the literature and database searches, were determined to have potential to occur if their documented geographic range from the literature and database search includes the project vicinity and if suitable habitat for the species was identified within or near Sunnyvale.

The CNDDB was queried for a list of special-status wildlife, plant, and fisheries resources that are known to occur in Sunnyvale or the vicinity. The CNPS electronic online inventory was also searched for rare or endangered plants that may occur in Sunnyvale.

In addition, the online USFWS list for the relevant USGS 7.5-minute quadrangles was queried and reviewed for federally listed or candidate plant and animal species that could potentially be affected by the LUTE.

### ASSUMPTIONS

The following potential impacts were considered in the analysis of impacts included below.

- Vegetation removal, grading, and construction of new residential, industrial, and commercial uses could result in the direct loss of special-status species and their habitats and loss of sensitive and/or critical habitats where such habitat conditions exist in the city.

- Construction in or adjacent to creeks and adjacent riparian habitats could result in direct loss of special-status species and their habitat and loss and/or degradation of aquatic and riparian habitat and wetlands.

- Discharge of construction and other potential sources of polluted stormwater, and increased urban stormwater runoff, could result in indirect impacts on special-status species and sensitive habitats. Water quality impacts are discussed in more detail in Section 3.8, Hydrology and Water Quality.

- Increased urban development, particularly on the edge of existing development, could result in further fragmentation of wildlife habitats and disruption of movement corridors.

This impact analysis considers that the city is largely built out and does not contain large areas of existing natural habitat. Thus, habitat impacts are generally limited to creeks within the city and wetlands along San Francisco Bay.

## PROJECT IMPACTS AND MITIGATION MEASURES

### Special-Status and Other Protected Species (Standards of Significance 1 and 5)

**Impact 3.9.1** Future land uses and development consistent with the Draft LUTE could result in the loss of special-status plant and animal species and other species protected by state and federal law. This impact would be considered **less than significant**.

**Table 3.9-1** identifies special-status species plant and animal species that could occur within and near Sunnyvale. As noted above, the urbanized portions of the city are largely built out and do not have large areas of natural habitat. Ruderal infill lots could support burrowing owl and Congdon's tarplant. Urban parks, open space, and riparian areas could support nesting birds. Active nests of all migratory birds, including raptors, are protected by state and federal law. Direct impacts on special-status species could occur as a result of construction of private development and/or public projects supporting future uses (e.g., trails). In addition, indirect impacts could occur, which may include increased human/wildlife interactions from trail use, habitat fragmentation, and encroachment by exotic weeds.

The following Draft LUTE policies and actions address natural habitat conditions in the city. The City of Sunnyvale is required to comply with all applicable federal and state laws and regulations pertaining to species and habitat protection. As such, this impact is considered **less than significant**.

Policy 10: Participate in federal, state and regional programs and processes in order to protect the natural and human environment in Sunnyvale and the region.

Action 1: Protect and preserve the diked wetland areas in the baylands to preserve or enhance flood protection.

Action 2: Coordinate with regional agencies such as the Bay Conservation and Development Commission regarding new and changing land uses proposed along the San Francisco Bay.

Action 5: Continue to evaluate and ensure mitigation of potential biological impacts of future development and redevelopment projects in a manner consistent with applicable local, state, and federal laws and regulations.

Policy 72: Protect creeks and wetlands as important parts of the community's natural environment and open space and for their contribution to flood control.

Action 1: Work with other agencies to maintain creeks and wetlands in their natural state.

Action 2: Work with appropriate agencies to identify creek channels and wetlands to use as recreational areas.

Action 3: Minimize or divert pollutants from draining into creeks and wetlands by enforcing best management practices during construction and site development.

Mitigation Measures

None required.

**Wetlands and Other Sensitive Habitats (Standard of Significance 2)**

**Impact 3.9.2** Future land uses and development consistent with the Draft LUTE could adversely affect protected wetlands and other waters as well as riparian habitats. This Impact would be considered **less than significant**.

Wetlands and other waters in Sunnyvale are protected under the federal Clean Water Act and the state's Porter-Cologne Water Quality Control Act, and are under the jurisdiction of the US Army Corps of Engineers and the San Francisco Bay Regional Water Quality Control Board. Federal and state regulations require avoidance of impacts to the extent feasible, as well as compensation for unavoidable losses of jurisdictional wetlands and waters. Future land uses and development along watercourses in Sunnyvale consistent with the Draft LUTE would have potential to affect jurisdictional waters and wetlands as well as riparian habitats.

Sunnyvale Municipal Code Section 12.60.010 requires compliance with the Clean Water Act and the Porter-Cologne Water Quality Control Act. The City would be responsible for ensuring that future projects implement appropriate measures to demonstrate compliance (see Section 3.8, Hydrology and Water Quality, for a further discussion of water quality protection standards).

In addition, the following Draft LUTE policies and actions generally address wetlands and other natural habitat conditions in Sunnyvale. The City of Sunnyvale is required to comply with all applicable federal and state laws and regulations pertaining to species and habitat protection. As such, this impact is considered **less than significant**.

Policy 10: Participate in federal, state and regional programs and processes in order to protect the natural and human environment in Sunnyvale and the region.

Action 1: Protect and preserve the diked wetland areas in the baylands to preserve or enhance flood protection.

Action 2: Coordinate with regional agencies such as the Bay Conservation and Development Commission regarding new and changing land uses proposed along the San Francisco Bay.

Action 4: Work with regional agencies on land use and transportation issues that affect the human environment, such as air, water, and noise, for Sunnyvale residents and businesses.

Action 5: Continue to evaluate and ensure mitigation of potential biological impacts of future development and redevelopment projects in a manner consistent with applicable local, state, and federal laws and regulations.

Policy 72: Protect creeks and wetlands as important parts of the community's natural environment and open space and for their contribution to flood control.

Action 1: Work with other agencies to maintain creeks and wetlands in their natural state.

Action 2: Work with appropriate agencies to identify creek channels and wetlands to use as recreational areas.

Action 3: Minimize or divert pollutants from draining into creeks and wetlands by enforcing best management practices during construction and site development.

Policy 73: Engage in regional efforts to enhance and protect land uses near streams and to respond to sea level rise and climate change.

Action 1: Maintain and regularly review and update a streamside development review and permitting process.

Action 3: Conduct streamside development review as part of a building permit plan check process, design review, the miscellaneous plan permit, and/or the discretionary review process.

Action 4: Minimize effects of development on natural streambeds.

Action 5: When opportunities exist, remove existing structures adjacent to streams that impact the streambed.

Mitigation Measures

None required.

### Substantial Interference with Wildlife Movement (Standard of Significance 3)

**Impact 3.9.3** Implementation of the Draft LUTE would result in revitalization and development of existing urban areas of Sunnyvale and would not expand the existing urban footprint of the city so as to substantially conflict with wildlife movement. This impact would be considered **less than significant**.

As shown in **Figure 2.0-4**, the planned development of the city under the Draft LUTE would occur within existing developed areas of the city and would not extend into wetlands and open space areas along San Francisco Bay that provide habitat and movement corridors for wildlife species in the region. In addition, creek and waterway corridors within the City (Stevens Creek, Calabazas Creek, and Moffett Channel) would be retained in their current condition under the Draft LUTE. The Draft LUTE also does not propose any new roadway extensions that would bisect natural habitat areas. Thus, this impact would be **less than significant**.

Mitigation Measures

None required.

### Conflict with Adopted Habitat, Natural Community Conservation Plans, or Local Protection Measures (Standard of Significance 4)

**Impact 3.9.4** Implementation of the Draft LUTE would not conflict with any adopted biological resource–related protection plans or standards. This impact would be considered **less than significant**.

Sunnyvale is not within the planning area boundary of the Santa Clara Valley Habitat Plan, but development of subsequent projects guided by the policies and actions in the Draft LUTE could include construction activities and would generate vehicle trips, which could result in nitrogen oxide (NOx) emissions, as described in Section 3.5, Air Quality. The deposition of airborne nitrogen compounds such as NOx on certain types of soil can adversely affect the soil ecosystem (and overlying vegetation). Of particular concern in the Santa Clara Valley are soils derived from serpentinite (serpentine soils), which support certain native California plants.

Appendix E of the habitat plan includes simulations of nitrogen deposition indicating that nearly one-third of the nitrogen deposition is derived from mobile sources within approximately 2 miles of the habitat areas, 16 percent comes from other sources within approximately 12 miles of the habitat areas, and 17 percent comes from the remainder of Santa Clara County (Santa Clara Valley Habitat Agency 2012). The LUTE planning area does not contain serpentine soils, and the planning area is approximately 8 miles from the closest mapped soils, based on mapping in the SCVHP. The policies and actions in the Draft LUTE direct future growth focused on efficient land use within the planning area. The Draft LUTE does not propose new industrial processes that would be a source of emissions. Mobile sources of emissions would not be within 2 miles of the serpentine soils. As such, implementation of the Draft LUTE would not conflict with the Santa Clara Valley Habitat Plan.

#### San Francisco Bay Plan

Draft LUTE Policies 10, 72, and 73, listed above, would support key objectives in the Bay Plan to preserve open space adjacent to San Francisco Bay, protect water quality of the bay, and increase public access to the bay and associated shoreline. Thus, conflicts with applicable natural resource plans would not occur.

#### Tree Preservation

Sunnyvale maintains a Heritage Resources Inventory, which identifies several heritage tree locations (Sunnyvale 2015). The Draft LUTE would not conflict with the tree protection provisions of Chapter 19.94 of the Municipal Code, with implementation of the following policies and actions:

Policy 14: Accelerate the planting of large canopy trees to increase tree coverage in Sunnyvale in order to add to the scenic beauty and walkability of the community; provide environmental benefits such as air quality improvements, wildlife habitat, and reduction of heat islands; and enhance the health, safety, and welfare of residents.

Policy 15: Maintain and regularly review and update regulations and practices for the planting, protection, removal, replacement, and long-term management of large trees on private property and City-owned golf courses and parks.

Action 1: Strictly enforce Municipal Code Chapters 13.16 City Trees and 19.94 Tree Preservation to prevent the unauthorized removal, irreversible damage, and pruning of large protected trees.

Policy 16: Recognize the value of protected trees and heritage landmark trees (as defined in City ordinances) to the legacy, character, and livability of the community by expanding the designation and protection of large signature and native trees on private property and in City parks.

Bird Safe Building Design Guidelines

The potential for bird collisions with buildings is a potential hazard in an urban area where tall buildings are constructed. Current zoning allows buildings as tall as 75 feet. The City adopted the Bird Safe Building Design Guidelines in 2014 to reduce the risk of bird collisions in new construction. The guidelines require developers to minimize reflective surfaces and glass walls, reduce nighttime lighting, discourage the placement of larger water features, and avoid landscape designs that emphasize tall landscaping adjacent to reflective surfaces.

Based on the discussions above, no conflict with biological-resource related protection plans or standards would result, and this impact would be **less than significant**.

Mitigation Measures

None required.

## 3.9.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

### CUMULATIVE SETTING

The LUTE planning area and the surrounding area consisting of Mountain View, Santa Clara, and Cupertino as a whole are considered for the purpose of evaluating cumulative biological resources impacts. As noted above, Sunnyvale is largely built out with urban land uses and does not have large areas of natural habitat. These characteristics are shared by surrounding communities.

### CUMULATIVE IMPACTS AND MITIGATION MEASURES

**Cumulative Biological Resource Impacts**

**Impact 3.9.5** Implementation of the Draft LUTE could contribute to significant cumulative impacts on special-status species and natural habitats. The Draft LUTE's contribution to this impact would be **cumulatively considerable**.

Future development in Sunnyvale and the surrounding area in Santa Clara County may result in degradation of wildlife habitat and protected waters through a variety of actions that, when combined with other habitat impacts occurring from development in surrounding areas, could result in significant cumulative impacts. Future development in surrounding areas would also contribute to cumulative impacts on special-status species and habitats. Furthermore, increased development and disturbance created by human activities (e.g., fires, increased nighttime lighting, and reduced access to habitat and movement corridors) could constrain wildlife movement, result in direct mortality, habitat loss, and deterioration of habitat suitability.

Sunnyvale is a largely built-out community with few natural areas. The Draft LUTE establishes the framework for how various land uses, development, and transportation will function. Subsequent projects would be limited to infill development and redevelopment at locations where habitat value would likely be limited given the built out conditions of the City. However, when combined with regional development, the LUTE's contribution to significant cumulative biological resources impacts would be cumulatively considerable.

Mitigation Measures

Implementation of the Draft LUTE policies and actions identified in Impacts 3.9.1, 3.9.2, and 3.9.4 and existing City regulations would offset Sunnyvale's contribution to cumulative biological resource impacts in that project-related biological impacts are considered and mitigated consistent with local, state, and federal regulations, which includes compliance with no net loss of wetlands and policies of state and federal agencies. Thus, this impact would be reduced to **less than cumulatively considerable**.

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# 3.10 Cultural Resources

This section considers and evaluates the potential impacts of the Draft LUTE on cultural resources. Cultural resources include historic buildings and structures, historic districts, historic resources sites, prehistoric and historic archaeological sites, and other prehistoric and historic objects and artifacts.

The following definitions are common terms used to discuss the regulatory requirements and treatment of cultural resources:

- *Cultural resources* is the term used to describe several different types of properties: prehistoric and historical archaeological sites; architectural properties such as buildings, bridges, and infrastructure; and resources of importance to Native Americans.

- *Historic properties* is a term defined by the National Historic Preservation Act (NHPA) as any prehistoric or historic district, site, building, structure, or object included on, or eligible for inclusion on, the National Register of Historic Places (NRHP), including artifacts, records, and material remains related to such property.

- *Historical resource* is a California Environmental Quality Act (CEQA) term that includes buildings, sites, structures, objects, or districts, each of which may have historical, prehistoric, architectural, archaeological, cultural, or scientific importance and is eligible for listing or is listed in the California Register of Historical Resources (CRHR).

Assembly Bill (AB) 52 recently amended CEQA by requiring that lead agencies consult with Native American groups or individuals regarding the identification, evaluation, and treatment of an additional category of cultural resources, *tribal resources*, prior to the release of an environmental document. This requirement took effect on July 1, 2015. The revised Notice of Preparation for this EIR was published on June 17, 2015, prior to the effective date of this requirement. Therefore, this project is not subject to this consultation process, and tribal resources are not evaluated in this EIR. Please see discussion in Section 3.10.2, Regulatory Setting, below for discussion of the related Senate Bill (SB) 18 Native American consultation process.

A summary of the impact conclusions related to cultural resources is provided below.

| Impact Number | Impact Topic | Impact Significance |
|---|---|---|
| 3.10.1 | Historic Resources | Significant and unavoidable |
| 3.10.2 | Archaeological Resources and Human Remains | Less than significant |
| 3.10.3 | Cumulative Impacts on Historic Resources, Archaeological Resources, and Human Remains | Cumulatively considerable and significant and unavoidable |

## 3.10.1 EXISTING SETTING

### PREHISTORY AND ETHNOGRAPHY

Sunnyvale is located near the southern shore of San Francisco Bay. The archaeological work completed in the San Francisco Bay Area has generated extensive data that was used to correlate archaeological cultures in the delta with those in the bay. The taxonomic system for Central California, including the San Francisco Bay region, is grouped into adaptive modes or patterns (i.e., specific economic and/or technological characteristics that are restricted in space, but do not imply a temporal sequence). There are five patterns (i.e., Windmiller, Berkeley, Borax Lake, Augustine, and Houx) for the North Coast Ranges, San Francisco Bay, and the lower

Sacramento Valley, assigned to six periods: Paleo-Indian (10,000 to 6,000 BC); Lower, Middle, and Upper Archaic (6,000 BC to AD 500); and Upper and Lower Emergent (AD 500 to 1800)).

The Paleo-Indian Period began with the first entry of people into California. These people probably subsisted mainly on big game and minimally processed plant foods, and had few or no trade networks. During the Lower Archaic, milling stones for plant processing were abundant and hunting was less important than obtaining plant foods. Artifacts were predominantly of local materials, suggesting that few if any extensive trade networks were established at this time.

During the Middle Archaic, the subsistence base began to expand and diversify with a developing acorn economy, as evidenced by the mortar and pestle, and the growing importance of hunting. Status and wealth distinctions were evidenced in the Upper Archaic archaeological record, and regional trade networks were well established at this time for the exchange of goods and ideas, such as obsidian and Kuksu ceremonial practices involving spirit impersonations.

Increasing social complexity continued during the Lower Emergent. Territorial boundaries were well established by this time with regularized intergroup exchanges involving more and varied goods, people, and ideas. Bow and arrow technology was also introduced. By the Upper Emergent, a monetary system based on the clamshell disk bead had been established. Native population reached its zenith during this time, as evidenced by high site densities and large village sites in the archaeological record (Mountain View 2011).

Sunnyvale is situated in territory once occupied by Costanoan (also commonly referred to as Ohlone) language groups. Eight Ohlone languages were spoken in the area from the southern edge of the Carquinez Strait to portions of the Big Sur and Salinas rivers south of Monterey Bay, to approximately 50 miles inland from the coast (Mountain View 2011).

Ohlone territories comprised one or more land-holding groups that anthropologists refer to as "tribelets." The tribelet, a nearly universal characteristic throughout native California, consists of a principle village occupied year-round and a series of smaller hamlets and resource-gathering and processing locations occupied intermittently or seasonally. Populations of tribelets ranged between 50 and 500 persons and were largely determined by the carrying capacity of a tribelet's territory (Mountain View 2011).

The traditional Ohlone lifeway had been severely disrupted by 1810 due to introduced diseases, a declining birth rate, and the impact of the mission system. The Ohlone were transformed from hunters and gatherers into agricultural laborers who lived at the missions and worked with former neighboring groups such as the Esselen, Yokuts, and Miwok. The Indians from Mission Santa Clara were apparently involved in the hide and tallow trade that coursed up and down the Guadalupe River between 1820 and 1850. Later, because of the secularization of the missions by Mexico in 1834, most of the aboriginal population gradually moved to ranchos to work as manual laborers (Mountain View 2011).

### HISTORIC CONTEXT

With the Mexican Revolution of 1821, a portion of the land that is now Sunnyvale was given to Estrada and Inez Castro as part of a Mexican land grant. They formed Rancho Pastoria de las Borregas (Pasture of the Sheep Ranch). Missouri settler Martin Murphy Jr. purchased much of the rancho in 1850 and established a wheat farm, which was soon replaced by fruit orchards (Sunnyvale 2011).

The development of Sunnyvale began in 1864, when the Central Railroad built a line from San Francisco to San Jose. Murphy donated right-of-way for the railroad through his property in exchange for a railroad stop at Murphy Station. Industry first came to Sunnyvale after the 1906 earthquake. The first industries included the Hendy Ironworks and the Libby cannery, located at the center of town, close to the railroad. Housing was also located downtown and was laid out in a traditional grid pattern, most efficient for the city's flat terrain. Simple, small bungalows and revival-style homes were predominant. The downtown grew as a mix of uses in close proximity and walking distance of each other. When Sunnyvale was incorporated in 1912, it had 1,800 residents (Sunnyvale 2011).

Transportation routes also played a significant role in the city's development. The earliest transportation facilities were the railroad and El Camino Real. The paving of El Camino Real in 1913 heralded the arrival of the automobile and a profound change in the pattern of development. The automobile allowed businesses and homes to spread out, rather than concentrate in the downtown or along transportation routes. By the end of World War II, Sunnyvale had made the change from an agricultural community to an industrial center, with its economy focused on defense and aerospace industries. Naval Air Station Sunnyvale was built (now Moffett Federal Airfield), and Lockheed Martin became the city's largest employer. By 1950, farms and fields were increasingly replaced with homes, factories, and offices as the population grew to 10,000 (Sunnyvale 2011).

This change set the stage for the boom decades of the 1950s and 1960s. Nearly 65 percent of the city's existing housing and 50 percent of the nonresidential buildings were constructed between 1950 and 1969. By 1970, Sunnyvale had a population of 96,000.

The last 30 years of the twentieth century saw Sunnyvale's economy experience yet another large shift, as high-technology companies launched the Silicon Valley era. The federal downsizing of defense development and manufacturing resulted in a loss of defense and aerospace jobs, which were quickly replaced with jobs designing and manufacturing circuits and computers. These in turn gave way to more high-value and knowledge-based jobs in computer programming, administration, and sophisticated research and design functions. The Mid-Peninsula and South Bay areas became known as Silicon Valley, the world center for high-technology innovation. The city attracted successful companies such as AMD, Network Appliance, Juniper Networks, and Yahoo. The population grew by 14 percent in the 1990s, rising to 131,800 by 2000. The high-tech slowdown in the early years of the new century brought rapid growth to a halt, with jobs declining rather dramatically between 2000 and 2005. The economy has since rebounded, adapting to and developing new industries, jobs, and sources of revenue (Sunnyvale 2011).

### KNOWN CULTURAL RESOURCES IN THE PLANNING AREA

The City of Sunnyvale maintains a Heritage Resources Inventory, containing landmarks, trees, residential and commercial districts, and individual structures of local importance. There are two main types of protected structures in Sunnyvale—heritage resources and local landmarks. A local landmark is the highest level of protection afforded by the City under its Code. Heritage resources have a somewhat lower level of protection.

Approximately 50 individual structures are listed as heritage resources, along with several heritage tree locations, and 11 properties are identified as individual local landmarks. In addition, Sunnyvale also contains two historical districts—the Taaffe-Frances Heritage Neighborhood (a residential district) and the Murphy Station Heritage Landmark District (a commercial district) (Sunnyvale 2015). Local landmarks in Sunnyvale are described in **Table 3.10-1**.

**TABLE 3.10-1**
**LOCAL LANDMARKS**

| Resource | Description |
|---|---|
| **Briggs-Stelling House**<br>Location: 822 Springfield Terrace | Originally constructed in the 1870s for George H. Briggs and extensively reconstructed in the 1920s for the Henry S. Stelling family, the mansion recounts the history of Sunnyvale. Briggs was one of the earliest pioneers who came from Boston in 1854. Stelling, the son of one of San Jose's first orchardists, grew pears and award-winning cherries. Under his wife's care, the gardens surrounding the mansion became a showcase. |
| **Collins-Scott Winery**<br>Location: 775 Cascade Drive | Built in 1881 by the Collins brothers, the Collins-Scott Winery is the oldest brick building in Sunnyvale. In 1889, a private railroad was built on the property and more than 300 gallons of wine were shipped daily. In 1927, all of the buildings except the brick distillery were destroyed by fire. In 1965, the present owners, the Duane Heinlen family, remodeled the structure as it stands today. |
| **Del Monte Building**<br>Location: 114 S. Murphy Avenue | Built in 1904 by the Madison & Bonner Packing Company, the building was used for processing dried fruit from nearby orchards. Cannery mergers in 1916 formed the California Packing Corporation now known as Del Monte. From 1930 to 1986, the building was used for seed processing and research. In 1993, the building was moved to the northeast comer of the 100 block of S. Murphy Avenue (the Murphy Station Heritage Landmark District) to avoid demolition. The building has since been renovated for commercial use. |
| **Hendy Iron Works**<br>(Northrup Grumman)<br>Location: 501 E. Hendy Avenue | Constructed in 1906, Hendy Iron Works was an industrial pioneer in Sunnyvale. Originally producing equipment for mining gold and silver, the company supplied marine engines in both World War I and World War II. In continuous operation from 1906 to 1946, the company was purchased by Westinghouse Electric in 1947. The water tower stored the city's emergency water supply in the early 1900s. |
| **Libby Water Tower**<br>Location: 444 W. California Avenue | McNeill & Libby opened in 1907 and by 1922 became the world's largest cannery. The original tower supplied water to the cannery and its workers and was replaced in 1965 by the present structure. |
| **Residence at 505 S. Murphy Avenue** | This residence was built in 1939 by the Homer Pfeiffer family and remained in the family until it was sold in the mid-1980s. It is an excellent example of the Tudor Revival style as applied to a suburban house and embodies distinctive characteristics of homes constructed during this period of architecture. |
| **Murphy Station Landmark District**<br>Location: 100 block of S. Murphy Avenue | Murphy Station was established when Martin Murphy Jr., a California pioneer, granted the railroad a right-of-way through his land in 1864. The stop saw the arrival and departure of important dignitaries who visited Murphy's Bayview Ranch, a focal point of political and social activity in the Santa Clara Valley.<br><br>In 1898, William Crossman, a real estate developer, purchased 200 acres from Murphy and named the town Encinal, "Place where the live oak grows." The first post office and general store were built on this street near the site of Murphy Station. The town was renamed Sunnyvale in 1901 and incorporated in 1912. The railroad and industrial buildings ran east and west and the business district ran north and south, providing the base from which Sunnyvale grew. The 100 block of South Murphy Avenue is the original downtown commercial district. Most of the structures were built between 1900 and 1940. |
| **Spalding House**<br>Location: 1385 Ramon Drive | Built in the early 1920s by C. C. Spalding, this mansion served as his family residence. Spalding was the first treasurer of the City of Sunnyvale and is best remembered for his contributions to the development of Murphy Avenue. He organized and established the Bank of Sunnyvale in 1906 and later became a state legislator. |

| Resource | Description |
|---|---|
| **Stowell House**<br>901 Sunnyvale/Saratoga Road | The Stowell House is so named because until 1999, when Dolly Stowell died, it had been the family residence of Sunnyvale pioneer Charles Stowell and his descendents. Stowell bought the home from F. C. Fry in 1899, who had built the home circa 1890. Stowell and his brother-in-law Charles Spaulding were prominent businessmen in the community. They built the S & S building on the corner of Murphy and Washington avenues. They also were involved in the construction of several other prominent buildings, including the First Baptist Church and the US Post Office. |
| **Vargas Redwood Trees**<br>Location: 501 Hendy Avenue | These coast redwoods were planted in 1900 by Manuel Vargas, "Mr. Sunnyvale." The saplings were gathered during a family outing to Pescadero and planted at the entrance to the Vargas family home. |
| **Wright Ranch**<br>Location: 1234 Cranberry Avenue | Originally part of a 320-acre ranch, this is Sunnyvale's oldest remaining ranch house. It was built circa 1870 by William Wright, a forty-niner who left the gold fields to raise grain and stock. |

*Source: Sunnyvale 2015*

The Heritage Resources Inventory also identifies heritage trees at 15 locations in the city (**Table 3.10-2**). Removal of a heritage tree must be approved by the Heritage Preservation Commission.

**TABLE 3.10-2**
**HERITAGE TREES**

| | | |
|---|---|---|
| **Bernardo Avenue**<br>1650 S. Bernardo<br>*Coast live oak* | **Hollenbeck Avenue**<br>880–882 Hollenbeck (Bocks Ranch)<br>*Sycamores* | **Remington Drive**<br>550. E. Remington<br>(Community Center)<br>*California live oak* |
| **Calgary Drive**<br>1748 Calgary Drive<br>*Coast live oak* | **Ives Terrace**<br>*Valley oak* | **Sheraton Drive**<br>696 Sheraton Drive<br>*Coast live oak* |
| **California Avenue**<br>130 E. California<br>(site of Murphy Homestead)<br>*Palm trees* | **Manzanita Avenue**<br>755 Manzanita<br>*Coast redwood* | **Sunnyvale Avenue**<br>545 S. Sunnyvale<br>*Monkey puzzle tree* |
| **Dartshire Way**<br>814 Dartshire<br>*Dawn redwood* | **Pastoria Avenue**<br>467 S. Pastoria<br>*Coast redwood* | **Town Center Lane**<br>2501 Town Center Lane<br>(Town Center Trees)<br>*Variety tree grove* |
| **Hendy Avenue**<br>501 E. Hendy<br>*American chestnut* | **Picasso Terrace**<br>674 Picasso<br>*Coast live oaks* | **Tiffany Court**<br>679 Tiffany Court<br>*Coast live oak* |

A California Historical Resources Information System (CHRIS) records search conducted at the Northwest Information Center at Sonoma State University identified 18 recorded archaeological resources and 20 historical buildings or structures within Sunnyvale's boundaries (**Tables 3.10-3** and **3.10-4**).

The State Office of Historic Preservation Historic Property Directory (which includes listings of the California Register of Historical Resources, California State Historical Landmarks, California State Points of Historical Interest, and the National Register of Historic Places) lists 518 addresses that correlate to addresses in Sunnyvale. Some of the 518 properties were recorded individually and

others are contributing/noncontributing elements of the 14 districts that also exist in Sunnyvale. The California Inventory of Historic Resources lists the Sullivan home and the Murphy home and estate.

**TABLE 3.10-3**
**RECORDED ARCHAEOLOGICAL RESOURCES IN PLANNING AREA**

| Site Identification Number | Site Description |
|---|---|
| P-43-000019 (CA-SCL-134) | Native American habitation site with known burials |
| P-43-000028 (CA-SCL-8) | Native American habitation site |
| P-43-000029 (CA-SCL-9) | Native American habitation site |
| P-43-000030 (CA-SCL-10) | Native American habitation site |
| P-43-000031 (CA-SCL-11) | Native American habitation site |
| P-43-000032 (CASCL-12/H) | Native American habitation site with known burials that also includes a historic-era component |
| P-43-000033 (CA-SCL-13) | Native American habitation site |
| P-43-000040 (CA-SCL-20) | Native American habitation site with known burials |
| P-43-000045 (CA-SCL-25) | Native American habitation site |
| P-43-000046 (CA-SCL-26) | Native American habitation site |
| P-43-000047 (CA-SCL-27) | Native American habitation site |
| P-43-000048 (CA-SCL-28) | Native American habitation site |
| P-43-000049 (CA-SCL-29) | Native American habitation site |
| P-43-000421 (CA-SCL-416/H) | Native American habitation site with an unknown historic-era component |
| P-43-000671 (CA- SCL-747) | (no description given) |
| P-43-001194 (CA-SCL-832) | Native American habitation site with known burials |
| P-43-002193 (CA-SCL-863) | Native American habitation site with known burials |
| P-43-002241 | Unknown Native American site |

**TABLE 3.10-4**
**RECORDED HISTORICAL SITES IN PLANNING AREA**

| Site Identification Number | Site Description |
|---|---|
| P-43-000928 | Southern Pacific Railroad |
| P-43-001231 | Native American habitation site |
| P-43-001232 | (no description given) |
| P-43-001253 | (no description given) |
| P-43-001261 | 461 South Murphy Avenue |
| P-43-001262 | 471 South Murphy Avenue |
| P-43-001263 | (no description given) |
| P-43- 001298 | (no description given) |
| P-43-001449 | 160 North Sunnyvale Avenue |
| P-43-001592 | Butcher House & Orchard |

| Site Identification Number | Site Description |
|---|---|
| P-43-001732 | El Patito Florists Building |
| P-43-001804 | 585 Old San Francisco Road |
| P-43-001805 | 321 Flora Vista Avenue |
| P-43-001817 | Bishop Elementary School |
| P-43-002472 | #563, Moffett Federal Airfield |
| P-43-002512 | #167, Moffett Federal Airfield |
| P-43-002516 | #191, Moffett Federal Airfield |
| P-43-002535 | #395, Moffett Federal Airfield |
| P-43-002540 | #446, Moffett Federal Airfield |
| P-43-002643 | Irvine House |

In addition to these sites, the Peery Park Specific Plan area includes the Mellow's Nursery and Farm site that is a City-designated heritage resource (Sunnyvale 2016).

## 3.10.2 REGULATORY FRAMEWORK

### FEDERAL

Federal regulations for cultural resources are primarily governed by Section 106 of the National Historic Preservation Act of 1966, which applies to actions taken by federal agencies. The goal of the Section 106 review process is to offer a measure of protection to sites that are determined eligible for listing on the National Register of Historic Places. The criteria for determining NRHP eligibility are found in Title 36 Code of Federal Regulations (CFR) Part 60. NHPA Section 106 requires federal agencies to take into account the effects of their undertakings on historic properties and affords the federal Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The council's implementing regulations, "Protection of Historic Properties," are found in Title 36 CFR Part 800.

The NRHP is the official list of the nation's historic places worthy of preservation. Authorized under the National Historic Preservation Act of 1966, it is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect the country's historic and archaeological resources. The NRHP is administered by the National Park Service under the Secretary of the Interior. Properties listed in the register include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and culture. The NRHP includes:

- All historic areas in the National Park System;
- National Historic Landmarks that have been designated by the Secretary of the Interior for their significance to all Americans; and
- Properties significant to the nation, state, or community which have been nominated by state historic preservation offices, federal agencies, and tribal preservation offices, and have been approved by the National Park Service.

To be considered eligible, a property must meet the National Register Criteria for Evaluation, found in Title 36 CFR Part 60.4. This involves examining the property's age, integrity, and significance as follows:

- Age and Integrity. Is the property old enough to be considered historic (generally at least 50 years old) and does it still look much the way it did in the past?

- Significance. Is the property associated with events, activities, or developments that were important in the past? With the lives of people who were important in the past? With significant architectural history, landscape history, or engineering achievements? Does it have the potential to yield information through archaeological investigation about our past?

Archaeological site evaluation assesses each site's potential to meet one or more of the criteria for NRHP eligibility based on visual surface and subsurface evidence (if available) at each site's location, information gathered during literature and records searches, and the researcher's knowledge of and familiarity with the historic or prehistoric context associated with each site.

The American Indian Religious Freedom Act, Title 42 United States Code Section 1996, protects Native American religious practices, ethnic heritage sites, and land uses.

National Historic Landmarks are nationally significant historic places designated by the Secretary of the Interior because they possess exceptional value or quality in illustrating or interpreting the heritage of the United States. Today, fewer than 2,500 historic places bear this national distinction. National Historic Landmarks are places where nationally significant historical events occurred, that are associated with prominent Americans who represent pivotal ideas that shaped the nation, that teach Americans about their ancient past, or that are premier examples of design or construction. While many historic places are important locally or at a state level, a lesser number have meaning for all Americans. National Historic Landmarks are places that possess exceptional value or quality in illustrating and interpreting the heritage of the United States.

## STATE

### California Environmental Quality Act

Under CEQA, public agencies must consider the effects of their actions on both historical resources and unique archaeological resources. Pursuant to Public Resources Code Section 21084.1, a "project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment." Section 21083.2 requires agencies to determine whether proposed projects would have effects on unique archaeological resources.

*Historical resource* is a term with a defined statutory meaning (Public Resources Code Section 21084.1 and State CEQA Guidelines Section 15064.5[a], [b]). The term embraces any resource listed in or determined to be eligible for listing in the California Register of Historical Resources (CRHR). The CRHR is administered through the California Office of Historic Preservation (OHP) and includes resources listed in or formally determined eligible for listing in the NRHP, as well as some California State Landmarks and Points of Historical Interest.

Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be historical resources for purposes of CEQA unless a preponderance of evidence indicates otherwise (Public Resources Code Section 5024.1 and California Code of Regulations, Title 14, Section 4850). Unless a resource listed in a survey has been demolished, lost substantial integrity, or there is a preponderance of evidence indicating that it is otherwise not eligible for listing, a lead agency should consider the resource to be potentially eligible for the CRHR.

In addition to assessing whether historical resources potentially impacted by a proposed project are listed or have been identified in a survey process (Public Resources Code Section 5024.1[g]), lead agencies have a responsibility to evaluate them against the CRHR criteria prior to making a finding as to a proposed project's impacts on historical resources (Public Resources Code Section 21084.1 and State CEQA Guidelines Section 15064.5[a][3]). Following the State CEQA Guidelines, a historical resource is defined as any object, building, structure, site, area, place, record, or manuscript that:

a) Is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, or cultural annals of California; and

b) Meets any of the following criteria:

    1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

    2) Is associated with the lives of persons important in our past;

    3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

    4) Has yielded, or may be likely to yield, information important in prehistory or history.

Archaeological resources may also qualify as historical resources, and Public Resources Code Section 5024 requires consultation with the Office of Historic Preservation when a project may impact historical resources located on State-owned land.

For historic structures, State CEQA Guidelines Section 15064.5(b)(3) indicates that generally, a project that follows the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings, or the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (1995) (Secretary's Standards) would be considered to mitigate impacts to a historic resource to a level of less than significant. Potential eligibility also rests upon the integrity of the resource. Integrity is defined as the retention of the resource's physical identity that existed during its period of significance. Integrity is determined through considering the setting, design, workmanship, materials, location, feeling, and association of the resource.

As noted above, CEQA also requires lead agencies to consider whether projects will impact unique archaeological resources. Public Resources Code Section 21083.2(g) states:

*"Unique archaeological resource" means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:*

- *Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.*
- *Has a special and particular quality such as being the oldest of its type or the best available example of its type.*
- *Is directly associated with a scientifically recognized important prehistoric or historic event or person.*

Treatment options under Section 21083.2 include activities that preserve such resources in place in an undisturbed state. Other acceptable methods of mitigation under Section 21083.2 include excavation and curation or study in place without excavation and curation (if the study finds that the artifacts would not meet one or more of the criteria for defining a unique archaeological resource).

Advice on procedures to identify cultural resources, evaluate their importance, and estimate potential effects is provided in several agency publications such as the series produced by the Governor's Office of Planning and Research (OPR). The technical advice series produced by the OPR strongly recommends that Native American concerns and the concerns of other interested persons and corporate entities, including but not limited to museums, historical commissions, associations, and societies, be solicited as part of the process of cultural resources inventory. In addition, California law protects Native American burials, skeletal remains, and associated grave goods regardless of their antiquity and provides for the sensitive treatment and disposition of those remains.

Section 7050.5(b) of the California Health and Safety Code specifies protocol when human remains are discovered. The code states:

*In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.*

State CEQA Guidelines Section 15064.5(e) requires that excavation activities be stopped whenever human remains are uncovered and that the county coroner be called in to assess the remains. If the county coroner determines that the remains are those of Native Americans, the Native American Heritage Commission must be contacted within 24 hours. At that time, the lead agency must consult with the appropriate Native Americans, if any, as timely identified by the Native American Heritage Commission. Section 15064.5 directs the lead agency (or applicant), under certain circumstances, to develop an agreement with the Native Americans for the treatment and disposition of the remains.

In addition to the mitigation provisions pertaining to accidental discovery of human remains, the State CEQA Guidelines require that a lead agency make provisions for the accidental discovery of historical or archaeological resources, generally. Pursuant to Section 15064.5(f), these provisions should include an immediate evaluation of the find by a qualified archaeologist. If the find is determined to be a historical or unique archaeological resource, contingency funding and a time allotment sufficient to allow for implementation of avoidance measures or appropriate mitigation should be available. Work could continue on other parts of the building site while historical or unique archaeological resource mitigation takes place.

#### Senate Bill 18 (Government Code Sections 65352.3 and 65352.4)

As of March 1, 2005, Senate Bill 18 (Government Code Sections 65352.3 and 65352.4) requires that, prior to the adoption or amendment of a general plan proposed on or after March 1, 2005, a city or county must consult with Native American tribes with respect to the possible preservation of, or the mitigation of impacts on, specified Native American places, features, and objects located within that jurisdiction. The City initiated this consultation process in 2010. No request for consultation under SB 18 has been received by the City at the time of the release of this Draft EIR.

### LOCAL

#### City of Sunnyvale Heritage Preservation Guidelines

The Community Character chapter of the Sunnyvale General Plan establishes criteria for identifying cultural resources in the city. The City of Sunnyvale has approached the delineation of cultural resources by relating them to their heritage value. As stated in the Community Character chapter, the term *heritage* encompasses a broader concept than the term *historical.* A community's heritage includes not only its record of historical events and the inventory of its historical buildings, sites, and artifacts, but also the cultural legacy of that history. Heritage resources are important because they document the cultural history of a particular place and illustrate the relationship between the present and the past. Each heritage resource enriches the history of a place and adds to a complex pattern of growth and development over time. Modifications to local landmarks and heritage resources must be reviewed and approved by either Planning staff or the Heritage Preservation Commission, and specific, stringent reviews must be conducted if a local landmark is to be modified in a way that would significantly alter its historic character.

## 3.10.3 IMPACTS AND MITIGATION MEASURES

Following Public Resources Code Sections 21083.2 and 21084.1, and Section 15064.5 and Appendix G of the State CEQA Guidelines, cultural resource impacts are considered to be significant if implementation of the Draft LUTE would result in any of the following:

1) Cause a substantial adverse change in the significance of a historical resource as defined in Public Resources Code Section 21084.1 and CEQA Guidelines Section 15064.5, respectively.

2) Cause a substantial adverse change in the significance of an archaeological resource as defined in Public Resources Code Sections 21083.2 and 21084.1, and CEQA Guidelines Section 15064.5, respectively.

3) Disturb any human remains, including those interred outside of formal cemeteries.

State CEQA Guidelines Section 15064.5 defines *substantial adverse change* as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource is materially impaired.

CEQA Guidelines, Section 15064.5(b)(2) defines *materially impaired* for purposes of the definition of substantial adverse change as follows:

*The significance of an historical resource is materially impaired when a project:*

*(A) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources; or*

*(B) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or*

*(C) Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.*

CEQA requires that if a project would result in an effect that may cause a substantial adverse change in the significance of a historical resource or would cause significant effects on a unique archaeological resource, then alternative plans or mitigation measures must be considered. Therefore, prior to assessing effects or developing mitigation measures, the significance of cultural resources must first be determined. The steps that are normally taken in a cultural resources investigation for CEQA compliance are as follows:

- Identify potential historical resources and unique archaeological resources.
- Evaluate the eligibility of historical resources.
- Evaluate the effects of the project on eligible historical resources.

### METHODOLOGY

Investigations included a CHRIS records search conducted at the Northwest Information Center at Sonoma State University. The records search identified 18 archaeological sites and 20 historical properties within the Planning Area (**Tables 3.10-3** and **3.10-4**).

Additionally, the City requested a sacred lands search and a list of Native American contacts from the Native American Heritage Commission (NAHC). The results of the sacred lands search did not identify any Native American cultural resources. The City initiated the consultation process as required under SB 18. As a result, Sunnyvale received a letter from the NAHC indicating a records search failed to identify the presence of Native American cultural resources in the immediate project area. However, it was recommended that other sources of cultural resources should also be contacted for information regarding known and recorded sites. A list of

Native American individuals/organizations was provided, and those agencies and organizations were subsequently contacted. No additional responses have been received.

## PROJECT IMPACTS AND MITIGATION MEASURES

### Historic Resources (Standard of Significance 1)

**Impact 3.10.1** Implementation of the Draft LUTE could indirectly result in impacts on historic structures. This impact would be **potentially significant**.

Sunnyvale includes numerous buildings that have historical value that are associated with its previous industrial and military related industries. While the Draft LUTE does not propose the removal of any historic resources, implementation of Draft LUTE policies and actions would allow for new land uses, development, and redevelopment. Depending upon their location, these subsequent actions have the potential to directly (i.e., demolition) or indirectly (i.e., adverse effects to historical setting from adjacent construction) impact historic buildings and structures that qualify as historic resources under CEQA. For example, the Peery Park Specific Plan Draft EIR has identified potential significant impacts to the Mellow's Nursery and Farm historic resource due to proposed redevelopment of the site (Sunnyvale 2016).

The Community Character chapter of the Sunnyvale General Plan includes various policies addressing this issue. Policy CC-5.1 states that the City will preserve existing landmarks and cultural resources and their environmental settings, Policy CC-5.3 seeks to identify and work to resolve conflicts between the preservation of historic resources and alternative land uses, and Policy CC-5.4 states that the City will seek out, catalog, and evaluate heritage resources that may be significant.

However, there may be circumstances where it may not be feasible to retain a historic structure for public health and safety reasons, the required rehabilitation of the structure may result in the loss of historic features, and/or costs to rehabilitate the structure may be economically infeasible. In addition, the loss of a historic use/operation would also be considered a significant impact.

Archaeological sites can also qualify as historical resources (California Code of Regulations Section 15064.5(c)). For purposes of this discussion, however, potential impacts on archaeological sites are discussed below under the threshold of significance for archaeological resources.

#### Mitigation Measures

While prohibiting demolition of historic structures or requiring modifications to historic structures to comply with the Secretary's Standards may avoid this impact, compliance with such requirements may not be feasible in all circumstances for public health and safety reasons. The required rehabilitation of the structure may also result in the loss of historic features and/or uses, and/or costs to rehabilitate the structure in accordance with the Secretary's Standards may be economically infeasible. Therefore, no feasible mitigation is available, and this impact is considered **significant and unavoidable**.

### Archaeological Resources and Human Remains (Standards of Significance 2 and 3)

**Impact 3.10.2** Implementation of the Draft LUTE could indirectly result in potential disturbance of undiscovered cultural resources (i.e., prehistoric sites, historic sites, isolated artifacts and features) and unrecorded human remains. This impact would be **less than significant.**

As identified in **Tables 3.10-3** and **3.10-4**, cultural resources have been identified throughout Sunnyvale. Implementation of the LUTE policies and actions would allow for new development and redevelopment. These subsequent actions have the potential to directly (i.e., grading) or indirectly (i.e., adverse effects to historical setting from adjacent construction) impact undiscovered archaeological resources and unrecorded human remains. Policy CC-5.5 of the Community Character Chapter of the General Plan directs that archaeological resources should be protected whenever possible. Further, as noted in the Regulatory Framework subsection above, implementation of Health and Safety Code Section 7050.5(b) specifies protocol when human remains are discovered. Implementation of the actions required under Section 7050.5(b) would ensure a less than significant impact on human remains.

Draft LUTE Policy 10, Action 6 (noted below) addresses this impact by work stoppage during construction of subsequent projects if archaeological resources are discovered, investigation by a qualified professional, and implementation of measures to protect the resource(s).

> *Continue to condition projects to halt all ground-disturbing activities when unusual amounts of shell or bone, isolated artifacts, or other similar features are discovered. Retain an archaeologist or paleontologist to determine the significance of the discovery. Mitigation of discovered significant cultural resources shall be consistent with Public Resources Code Section 21083.2 to ensure protection of the resource.*

Mitigation Measures

None required.

## 3.10.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

### CUMULATIVE SETTING

The cumulative setting associated with the Draft LUTE includes Sunnyvale and surrounding areas in Santa Clara County. Most cultural resources impacts as described in CEQA Appendix G are generally site-specific and not cumulative in nature, as impacts generally vary by site characteristics and history. However, continued growth in the region would contribute to the potential for loss of cultural resources, which are finite and nonrenewable resources. These resources include archaeological resources associated with Native American activities and historic resources associated with settlement, farming, and economic development.

### CUMULATIVE IMPACTS AND MITIGATION MEASURES

### Cumulative Impacts on Historic Resources, Archeological Resources, and Human Remains

**Impact 3.10.3** Implementation of the Draft LUTE, in addition to existing, approved, proposed, and reasonably foreseeable development in the region, could result in

significant cumulative impacts to cultural resources in Santa Clara County. The Draft LUTE's contribution to this impact is considered **cumulatively considerable**.

Implementation of the Draft LUTE, in combination with cumulative development in the surrounding portions of Santa Clara County, would increase the potential to disturb known and undiscovered cultural resources. The Draft LUTE might contribute to the cumulative loss of cultural resources in the region. This contribution may be considerable when combined with other development in the region.

For built-environment historical resources, subsequent proposed development projects consistent with the Draft LUTE could adversely affect such resources due to resource demolition or surrounding land uses and site designs that are more intense and incompatible, which could impact the historical integrity of nearby historical buildings. Such development also has the potential to adversely affect archaeological resources and human remains through their destruction or disturbance.

Therefore, subsequent development projects consistent with the Draft LUTE in Sunnyvale, as well as other local recent and current developments, have the potential to cause significant cumulative impacts on cultural resources due to their destruction or loss of archeological resources or historical integrity.

Mitigation Measures

Implementation of Draft LUTE Policy 10, Action 5 would offset Draft LUTE impacts on archaeological resources by protecting discovered resources. While prohibiting demolition of historic structures or requiring modifications to historic structures to comply with the Secretary's Standards would avoid this impact, compliance with such requirements may not be feasible in all circumstances for public health and safety reasons. The required rehabilitation of the structure may also result in the loss of historic features, and/or costs to rehabilitate the structure in accordance with the Secretary's Standards may be economically infeasible. These conditions exist both in Sunnyvale and in portions of surrounding Santa Clara County. Therefore, the Draft LUTE's contribution to this significant impact is considered **cumulatively considerable** and the impact would be **significant and unavoidable**.

## REFERENCES

California Historical Resources Information System. 2012. *Record Search Results for the Proposed City of Sunnyvale Land Use and Transportation Element Update/Climate Action Plan Environmental Impact Report Planning Area*.

Mountain View, City of. 2011. *City of Mountain View Draft 2030 General Plan and Greenhouse Gas Reduction Program Environmental Impact Report*.

Sunnyvale, City of. 2011. *Sunnyvale General Plan* (consolidated in 2011).

———. 2015. City of Sunnyvale Heritage Resources Inventory. Accessed July 21, 2015. http://sunnyvale.ca.gov/Portals/0/Sunnyvale/CDD/Residential/Heritage%20Resources%20and%20Landmark%20Alteration%20%20Inventory-%20%20FINAL.pdf.

———. 2016. *Peery Park Specific Plan Draft EIR*.

# 3.11 Utilities and Service Systems

This section describes utilities for the City of Sunnyvale. Specifically, the section includes an examination of water services (supply and infrastructure), wastewater services and stormwater drainage facilities, solid waste, and gas, electric, and telecommunication services. Each subsection includes a description of existing facilities and infrastructure, as well as potential environmental impacts resulting from implementation of the Draft LUTE.

A summary of impact conclusions is provided below.

| Impact Number | Impact Topic | Impact Significance |
|---|---|---|
| 3.11.1.1 | Water Supply Demand and Environmental Effects | Less than significant |
| 3.11.1.2 | Water Supply Infrastructure | Less than significant |
| 3.11.1.3 | Cumulative Water Supply Impacts | Less than cumulatively considerable |
| 3.11.2.1 | Waste Discharge Requirements | Less than significant |
| 3.11.2.2 | Wastewater Conveyance and Treatment | Less than significant |
| 3.11.2.3 | Cumulative Wastewater Service Impacts | Less than cumulatively considerable |
| 3.11.3.1 | Increased Solid Waste Disposal | Less than significant |
| 3.11.3.2 | Compliance with Solid Waste Regulations | Less than significant |
| 3.11.3.3 | Cumulative Solid Waste Impacts | Less than cumulatively considerable |
| 3.11.4.1 | Energy Consumption Impacts | Less than cumulatively considerable |

## 3.11.1 WATER SUPPLY AND SERVICE

A water supply assessment (WSA) was prepared that addressed the Draft LUTE as well as the Peery Park Specific Plan and the Lawrence Station Area Plan in accordance with state water planning law. The WSA is included as **Appendix E** to this Draft EIR. Unless otherwise noted, the information about existing and planned supplies, historic and future demand, and supply reliability presented in this section is taken from the WSA.

Since completion of the WSA, the City has adopted a 2015 Urban Water Management Plan (UWMP) that is not reflected in the WSA. While there is some variation in the estimates for water demand and supply between the WSA and the 2015 UWMP, both documents conclude that there is adequate water supply for growth anticipated under the Draft LUTE under normal year and drought conditions.

### 3.11.1.1 EXISTING SETTING

#### WATER SUPPLY

Sunnyvale has three sources of potable water supply: purchased surface water from the San Francisco Public Utilities Commission (SFPUC), purchased treated surface water from the Santa Clara Valley Water District (SCVWD), and groundwater. Recycled water produced at the City's Water Pollution Control Plant (WPCP) makes up the remaining part of the water portfolio.

## SFPUC Water Supply

The City receives imported water from the City and County of San Francisco's Regional Water System (RWS), operated by the SFPUC. This supply is predominantly from the Sierra Nevada, delivered through the Hetch Hetchy aqueducts, but also includes treated water produced by the SFPUC from its local watersheds and facilities in Alameda and San Mateo counties. The local watershed facilities are operated to capture local runoff. The amount of imported water available to the SFPUC's retail and wholesale customers is constrained by hydrology, physical facilities, and the institutional parameters that allocate the water supply of the Tuolumne River. The SFPUC depends on reservoir storage to ensure ongoing reliability of its water supplies.

The City of Sunnyvale has an Individual Supply Guarantee (ISG) of 12.58 million gallons per day (mgd) (or approximately 14,100 acre-feet per year [AFY]) from the SFPUC. Although the SFPUC's Water Supply Agreement and accompanying Water Supply Contract expire in 2034, the ISG (which quantifies the SFPUC's obligation to supply water to its individual wholesale customers) survives their expiration and continues indefinitely. The Sunnyvale contract also includes a minimum purchase amount of 8.93 mgd (10,003 AFY), which the City agrees to buy, regardless of whether sales drop below this level.

The SFPUC adopted a water supply element, the Interim Supply Limitation, to limit sales from the RWS watersheds to an average of 265 mgd annually through 2018. Interim Supply Allocations refer to each individual wholesale customer's share of the Interim Supply Limitation. Sunnyvale's Interim Supply Allocation is 9.44 mgd.

SFPUC deliveries to the City of Sunnyvale reached a maximum of 12,675 AFY in 2008. The 2014 deliveries were 8,454 AFY, and the 2015 deliveries are estimated to be 8,586 AFY (based on actual usage through July 2015).

### SFPUC Water Supply Reliability

The wholesale customers and the City of San Francisco adopted a Water Shortage Allocation Plan in 2009 to allocate water from the regional water system to retail and wholesale customers during system-wide shortages. In order to enhance the ability of the SFPUC water supply system to meet identified service goals for water quality, seismic reliability, delivery reliability, and water supply, the SFPUC has implemented its Water System Improvement Program, approved October 31, 2008.

In September 2009, the Bay Area Water Supply and Conservation Agency (BAWSCA) completed the Water Conservation Implementation Plan. BAWSCA's water management objective is to ensure that a reliable, high-quality supply of water is available where and when people in the BAWSCA service area need it. Several member agencies have elected to participate in the BAWSCA regional water conservation programs, and BAWSCA continues to work with individual member agencies to incorporate the savings identified in the Water Conservation Implementation Plan into their future water supply portfolios.

## SCVWD Water Supply

The SCVWD's water supply includes a variety of sources consisting of imported and local surface water and groundwater, and the agency manages water supplies according to its Comprehensive Water Resources Management Plan.

The SCVWD supplies the City of Sunnyvale with treated surface water through an entitlement of imported Central Valley Project (CVP) water and the State Water Project (SWP), as well as surface water from local reservoirs. The current contractual agreement between the City and the SCVWD became effective in 1976 with a 75-year term ending in 2051.

The SCVWD has a contract for 100,000 AFY from the State Water Project, and nearly all of this supply is used for municipal and industrial (M&I) needs. The CVP contract amount is 152,500 AFY. However, the actual amount of water delivered is typically significantly less than these contractual amounts and depends on hydrology, conveyance limitations, and environmental regulations. Local runoff is captured in local reservoirs for recharge into the groundwater basin or treatment at one of the SCVWD's three water treatment plants. Water stored in local reservoirs provides up to 25 percent of Santa Clara County's water supply. Reservoir operations are coordinated with imported Bay-Delta water received from the SWP and the CVP.

The quantity of water available to Sunnyvale is based on a requested 3-year delivery schedule submitted by the City and approved by the SCVWD. The request for each year in the 3-year delivery schedule may not be less than 95 percent of the maximum amount requested in the 3-year period. SCVWD deliveries to the City reached a maximum of 13,577 AFY in 1999. The 2014 deliveries were 8,491 AFY, and the 2015 deliveries are estimated to be 7,237 AFY (based on actual usage through July 2015).

### Groundwater

The SCVWD manages two groundwater subbasins in Santa Clara County: the Santa Clara Subbasin and the Llagas Subbasin. The groundwater subbasins in Santa Clara County are not adjudicated and have not been identified or projected to be in overdraft by the California Department of Water Resources (DWR).

Local groundwater supplies up to half of the county's water supply during normal years. The SCVWD's Groundwater Management Plan ensures that local groundwater resources are sustained and protected. In April of each year, when the quantity of imported water available to the SCVWD by contract and the local water yield can be estimated accurately, the water district estimates the carryover storage. Based on the calculated carryover capacity and anticipated customer demand, the SCVWD reviews and modifies its groundwater management strategy in order to maintain adequate water in the basin.

The SCVWD has an active conjunctive water management program to optimize the use of groundwater and surface water and to prevent groundwater overdraft and land subsidence. The SCVWD augments natural groundwater recharge with a managed recharge program to offset groundwater pumping, sustain storage reserves, and minimize the risk of land subsidence. Through these recharge activities, the SCVWD works to keep groundwater basins "full" to protect against drought. Storing surplus water in the groundwater basins enables part of the supply to be carried over from wet years to dry years.

### *Water Supply Management During Current Drought Conditions*

On February 25, 2014, the SCVWD board approved a resolution setting a countywide water use reduction target equal to 20 percent of 2013 water use through December 31, 2014, and recommended that retail water agencies, local municipalities, and the County of Santa Clara implement mandatory measures as needed to achieve the 20 percent water use reduction target. In early 2015, the statewide drought condition was still in the severe to exceptional stage. Local surface water and groundwater supplies were well below average and imported water

allocations for 2015 were very low (25 percent or less). In consideration of the continued severity of the drought and worsening water supply projections, increased water use reductions beyond the previous call for 20 percent were determined to be necessary to preserve groundwater storage. On March 24, 2015, the board called for 30 percent water use reductions and recommended that retail water agencies, municipalities, and the County implement mandatory measures as needed to accomplish that target, including a two day a week outdoor irrigation schedule.

*Factors Affecting Overall SFPUC and SCVWD Water Supply*

Several factors have the potential to negatively impact reliability, including hydrologic variability, climate change, environmental effects, infrastructure failure, and regulatory actions as well as institutional, political, and other uncertainties. Hydrologic uncertainties influence the projections of both local and imported water supplies and the anticipated reliability of those supplies.

*Climate Change*

Initial climate change modeling completed by the SFPUC indicates that about 7 percent of runoff currently draining into the Hetch Hetchy Reservoir will shift from the spring and summer seasons to the fall and winter seasons in the Hetch Hetchy basin by 2025. The SFPUC views the assessment of the effects of climate change as an ongoing project requiring regular updating to reflect improvements in climate science, atmospheric/ocean modeling, and human response to the threat of greenhouse gas emissions. The SFPUC has stated that based on this preliminary analysis, the potential impacts of climate change are not expected to affect the water supply available from the San Francisco RWS or the overall operation of the RWS through 2030.

Supply analyses performed by the SCVWD are based on the assumption of historical patterns of precipitation. The development of SCVWD projects and programs to meet future needs takes hydrologic variability and climate change into account. Under any climate change scenario, the SCVWD may need to consider additional treatment options to respond to water quality impacts associated with increased salinity in the Delta. The SCVWD may also need to consider additional storage to take advantage of more wet-season water, additional supplies to replace reduced water supply from existing sources, and additional water transfers (depending on water market impacts).

*Delta Pumping Restrictions*

Decreased snowpack and projected earlier spring melts will reduce the amount of water available to meet peak demands in late spring and summer. These changes could decrease imported water and possibly local water supplies while increasing salinity in the Delta, adversely impacting water quality and Bay-Delta ecosystems. Based on the SWP Delivery Reliability Report 2009 and associated CALSIM II modeling results, projected imported supplies under climate change conditions from the Delta for average, normal year, dry year, and multiple dry years are reduced by 3 percent on average and 4 percent over the multiple dry year period compared to the analysis performed without climate change.

**City of Sunnyvale Water Supply**

SFPUC and SCVWD Supplies

As noted above, the City of Sunnyvale has an Individual Supply Guarantee of approximately 14,100 acre-feet per year from the SFPUC. The Sunnyvale contract also includes a minimum purchase amount of 10,003 AFY, which Sunnyvale agrees to buy, regardless of whether sales

drop below this level. The quantity of water available to Sunnyvale from the SCVWD is based on a requested 3-year delivery schedule submitted by the City and approved by the SCVWD. The request for each year in the 3-year delivery schedule may not be less than 95 percent of the maximum amount requested in the 3-year period. District deliveries to the City reached a maximum of 13,577 AFY in 1999.

### Groundwater

Sunnyvale owns, operates, and maintains six groundwater wells. The wells are used to help supplement imported water supplies during peak demands in the summer months and in emergency situations. The City's allowable withdrawal of groundwater depends on a number of factors, including withdrawals by other water agencies, the quantity of water recharged, and carryover storage from the previous year. Although the City has historically relied on groundwater to meet between 4 and 11 percent of its total demand (approximately 1,000–2,700 AFY), the City wells have the capacity to produce approximately 8,000 AFY. Currently, the City projects producing approximately 1,000 AFY from the groundwater basin during the 20-year period 2015 to 2035.

### Recycled Water

The City developed a wastewater reclamation program in 1991 when it first identified short-term goals of recycling wastewater of 20 to 30 percent of high-quality effluent from the Sunnyvale Water Pollution Control Plant (WPCP). The City's long-term goal is to reuse 100 percent of all wastewater (15 mgd) generated from the WPCP to reduce all flows to San Francisco Bay. This goal, if attained, would involve the export of water to a location or agency outside the city limits. The City built a storage tank in 2000 to allow more recycled water to be stored in order to keep up with demand on the system once the area is built out. In September 2013, the City Council approved the Recycled Water Feasibility Study that identifies possible extensions of the recycled water system. Possible extensions to serve the south end of Sunnyvale along Wolfe Road are currently under way. Possible extensions to serve the south end of the city and also Cupertino and Los Altos may be evaluated in the future.

The City has completed Phases I and II of the 2000 Recycled Water Master Plan, which now serves Baylands Park, the Lockheed Martin Area, the Sunnyvale Municipal Golf Course, and other parks and industrial areas in the northern part of the city. In recent years, however, the City has not been producing recycled water because of requirements related to discharge to the bay, as well as operational limitations. The City is undertaking a project at the WPCP that will allow the City to regularly produce recycled water again in 2016. As indicated in the City's 2010 Urban Water Management Plan (UWMP), the City projects a demand for 1,525 AFY in 2020, 1,650 AFY in 2025, and 1,775 AFY in 2030 and 2035. The City anticipates it will be able to produce 2,298 acre-feet per year by 2030.

**Table 3.11.1-1** summarizes the City's historical and available water supply.

**TABLE 3.11.1-1**
**CITY OF SUNNYVALE HISTORICAL AND ACTUAL WATER SUPPLY**

| Supply Source | Historical | | Actual | | | Contractual/Operational Limits | |
|---|---|---|---|---|---|---|---|
| | Minimum | Maximum | 2010 | 2014 | 2015 [1] | Minimum | Maximum |
| SFPUC | 8,454 | 12,675 | 8,982 | 8,454 | 8,881 | 10,003 | 14,100 |
| SCVWD | 8,176 | 13,577 | 9,331 | 8,491 | 6,592 | 9,180 | 13,577 |
| Groundwater | 123 | 3,786 | 1,629 | 2,064 | 136 | 0 | 8,000 |
| Recycled Water | 0 | 1,928 | 1,523 | 0 | 729 | 0 | 2,298 |
| **Total** | **16,753** | **31,966** | **21,465** | **19,008** | **16,338** | **10,003** | **39,975** |

*Source: Sunnyvale 2015b, Table 4-13 (see DEIR **Appendix E**)*

*1. Updated from data in the WSA.*

## Drought Conditions and Supply Reliability

Severe to exceptional drought conditions continue throughout California (-92 percent), even though much of the state, including Santa Clara County, has received close to average rainfall to date. The US Drought Monitor (August 11, 2015) reported that most of Santa Clara County continues to be in "extreme" drought severity. However, drought conditions have improved in 2016.

In the event of a decrease of local supplies, the City would respond by pursuing demand reduction programs in accordance with the severity of the supply shortage. Any supply deficit would be compensated for by increased conservation levels and restrictions on consumption.

An analysis of the supplies historically available during times of shortage is reflected in Table 5-6 in the WSA (included in **Appendix E** of this Draft EIR). This analysis does not account for population and system growth, and reflects the amount of supply available to meet the system's demands during designated years. Based on the SCVWD August 2015 Drought Monthly Status Report, the City reduced its water use by 26 percent as compared to 2013 through the month of July and used a total of 9,313 acre-feet of water between January and July 2015. An analysis of the current supply reliability is reflected in Table 5-7 in the WSA (included in DEIR **Appendix E**).

## Water Shortage Contingency Planning

The City of Sunnyvale has developed a water shortage contingency plan that includes mandatory and voluntary water use restrictions, rate block adjustment, and approaches for enforcement associated with each stage of anticipated reduction. The contingency plan defines four levels of supply reductions corresponding to the percentage of shortage. The reader is referred to Section 5.3 in the WSA (see **Appendix E**) for additional information about the specific prohibitions and consumption reduction.

On May 12, 2015, the Sunnyvale City Council adopted Resolution No. 693-15, declaring a continued water emergency, increasing the water reduction target to 30 percent, re-implementing Stage 1 water use prohibitions, imposing additional drought restrictions, and amending Resolution 650-14 to add administrative fines for violations.

## WATER SUPPLY INFRASTRUCTURE

The City of Sunnyvale owns, operates, and maintains a water distribution system that provides retail potable and non-potable water service to a majority of the residents and businesses within the city limits (the California Water Service Company [Cal Water] provides retail potable water service to pocket areas in the city).

The City's potable water distribution system is a closed network consisting of three different pressure zones. The conveyance system extends over 300 miles, with pipe diameters ranging from 4 to 36 inches. There are ten potable water storage reservoirs at five different locations throughout the city with a total storage capacity of 27.5 million gallons. The City has one recycled water reservoir with a storage capacity of 2 million gallons. The City also has distribution system interties to the cities of Cupertino, Mountain View, and Santa Clara and to the California Water Service Company through service connections located within city boundaries that are reserved for use in case of an emergency (Sunnyvale 2015b). Over 80 percent of the distribution and trunk lines in the city were installed in the 1960s and are nearing the end of their estimated 50-year service life, so rehabilitation and/or replacement is needed to minimize the need for emergency repairs.

## WATER DEMAND

### Historic and Current Demand

Water use in Sunnyvale generally increased during the period from 1993 to 2001 and has steadily decreased since 2002 in response to drought-related conservation measures and economic factors and based on previously negotiated contractual limitations. Sunnyvale converted its traditional sewer treatment plant in the mid-1990s to allow for the production of recycled water and began supplementing the overall water supply using recycled water in 1999 (Sunnyvale 2011b).

Past and current water use in the city summarized by classification of the water delivered to all customers is listed in **Table 3.11.1-2**. The 2015 water use listed in **Table 3.11.1-2** reflects projections in the 2010 UWMP. Anticipated demand for 2015, based on trending of actual use measured through July 2015, is also presented.

**TABLE 3.11.1-2**
**PAST AND CURRENT WATER DEMAND BY CUSTOMER TYPE**

| Customer Type | 2005 | 2010 | 20151 |
|---|---|---|---|
| Single-Family Residential | 8,264 | 7,023 | 5,129 |
| Multi-Family Residential | 6,047 | 8,309 | 5,046 |
| Commercial | 9,035 | 4,261 | 3,583 |
| Irrigation | 642 | 970 | 1,640 |
| Other (fire flow) | 946 | 911 | 244 |
| **Total Potable** | **24,934** | **21,474** | **15,642** |

*Source: Sunnyvale 2015b, Tables 4-2 and 4-6 (see DEIR **Appendix E**)*

*1. Updated data since completion of the WSA.*

The decrease in demand from 2005 to 2015 can be attributed to the economic downturn as well as to water conservation due to the extended drought in California. Current water use trends indicate that actual 2015 water use will be approximately 4,600 AFY less (approximately 22 percent lower) than the 2010 UWMP projections for 2015.

Water loss in the City's distribution system can be attributed to various causes such as leaks, breaks, malfunctioning valves, and the difference between the actual and measured quantities from water meter inaccuracies. Other losses come from legitimate uses such as water/sewer main and hydrant flushing, tests of fire suppression systems, and street cleaning.

### PROJECTED SUPPLY AND DEMAND

The City approved its 2010 Urban Water Management Plan (UWMP) in 2011, which projected supply and demand for the UWMP's 20-year planning horizon through 2030 (see **Table 3.11.1-3**). These projections, as presented in the 2010 UWMP, reflect normal year conditions.

**TABLE 3.11.1-3**
**2010 UWMP WATER SUPPLY PROJECTIONS FOR NORMAL YEAR (AFY)**

| Supply Source | Projections | | | |
|---|---|---|---|---|
| | 2015 | 2020 | 2025 | 2030 |
| SFPUC | 10,003 | 10,003 | 10,003 | 10,003 |
| SCVWD | 9,570 | 9,999 | 11,023 | 12,728 |
| Groundwater | 1,000 | 1,000 | 1,000 | 1,000 |
| Recycled Water | 1,400 | 1,525 | 1,765 | 1,775 |
| **Total** | **21,973** | **22,527** | **23,791** | **25,506** |

*Source: Sunnyvale 2015b, Table 4-14 (see DEIR **Appendix E**)*

Current and projected potable water demands through 2030 are summarized in **Table 3.11.15-4**, based on the 2010 UWMP. The City's maximum allowable water demands for 2015 and 2020 are 24,916 AFY and 25,901 AFY, respectively.[1] As indicated by the data, the demands in 2015 and 2020 are below those maximum allowable demands.

**TABLE 3.11.1-4**
**CURRENT AND PROJECTED POTABLE WATER DEMAND BY CUSTOMER TYPE AND SUPPLY SOURCE (AFY)**

| | 2015 [1] | 2015 | 2020 | 2025 | 2030 |
|---|---|---|---|---|---|
| **Demand by Customer Type** | | | | | |
| Single-Family Residential | 5,129 | 6,555 | 6,393 | 6,341 | 6,378 |
| Multi-Family Residential | 5,046 | 7,755 | 7,563 | 7,502 | 7,545 |
| Commercial | 3,583 | 4,507 | 5,334 | 6,485 | 8,100 |
| Irrigation | 1,640 | 905 | 883 | 876 | 881 |
| Other (fire flow) | 244 | 850 | 829 | 823 | 827 |
| **Total Potable Demand** | **15,642** | **20,572** | **21,002** | **22,026** | **23,731** |

[1] Based on the City's 2015 and 2020 SBx7-7 goal of 157 gallons per capita per day.

| | 2015 [1] | 2015 | 2020 | 2025 | 2030 |
|---|---|---|---|---|---|
| **Demand by Supply Source** | | | | | |
| SFPUC | 8,883 | 10,003 | 10,003 | 10,003 | 10,003 |
| SCVWD | 6,497 | 9,570 | 9,999 | 11,023 | 12,728 |
| Groundwater | 134 | 1,000 | 1,000 | 1,000 | 1,000 |
| Total Supply to Meet Demand | 15,965 | 20,573 | 21,002 | 22,026 | 23,731 |

*Source: Sunnyvale 2015b, Tables 4-6 and 4-7 (see DEIR **Appendix E**)*

*1. Updated since completion of the WSA.*

### 3.11.1.2 REGULATORY FRAMEWORK

#### FEDERAL

**Safe Drinking Water Act**

Congress originally passed the Safe Drinking Water Act in 1974 to protect public health by regulating the nation's public drinking water supply. The law was amended in 1986 and 1996 and requires many actions to protect drinking water and its sources: rivers, lakes, reservoirs, springs, and groundwater wells. The act applies to every public water system in the United States but does not regulate private wells that serve fewer than 25 individuals.

The act authorizes the US Environmental Protection Agency (EPA) to set national health-based standards for drinking water to protect against both naturally occurring and man-made contaminants that may be found in drinking water. Originally, the act focused primarily on treatment as the means of providing safe drinking water at the tap. The 1996 amendments changed the existing law by recognizing source water protection, operator training, funding for water system improvements, and public information as important components of safe drinking water. This approach is intended to ensure the quality of drinking water by protecting it from source to tap.

#### STATE

**California Water Plan**

The California Water Plan is the state's blueprint for integrated water management and sustainability. The California Department of Water Resources (DWR) updates the plan approximately every five years. The California Water Plan is a statewide strategic plan for water management to the year 2050. The plan includes a framework and resource management strategies promoting two major initiatives: integrated regional water management that enables regions to implement strategies appropriate for their own needs and helps them become more self-sufficient, and improved statewide water management systems that provide for upgrades to large physical facilities, such as the State Water Project, and statewide management programs essential to California's economy.

**Urban Water Management Planning Act**

In 1983, the California legislature enacted the Urban Water Management Planning Act (Water Code Sections 10610–10656). The act states that every urban water supplier that provides water to 3,000 or more customers, or that provides over 3,000 acre-feet of water annually, should make

every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry years. The act describes the contents of urban water management plans as well as how urban water suppliers should adopt and implement the plans. It is the act's intention to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied. The City of Sunnyvale adopted its 2010 Urban Water Management Plan in 2011.

### Senate Bill 610

Senate Bill (SB) 610 (Water Code Section 10910[c][2]) makes changes to the Urban Water Management Planning Act to require additional information in urban water management plans if groundwater is identified as a source available to the supplier. Required information includes a copy of any groundwater management plan adopted by the supplier, a copy of the adjudication order or decree for adjudicated basins, and if nonadjudicated, whether the basin has been identified as being overdrafted or projected to be overdrafted in the most current DWR publication on that basin. If the basin is in overdraft, the plan must include current efforts to eliminate any long-term overdraft. A key provision in SB 610 requires that any project subject to the California Environmental Quality Act (CEQA) supplied with water from a public water system be provided a specified water supply assessment, except as specified in the law. Water supply assessments are required under SB 610 for projects that include 500 units of residential development (would demand an amount of water equivalent to, or greater than, the amount of water required by a project with 500 dwelling units) and for projects that would increase the number of the public water system's existing service connections by 10 percent.

### Assembly Bill 901

Assembly Bill (AB) 901 requires urban water management plans to include information relating to the quality of existing sources of water available to an urban water supplier over given time periods and the manner in which water quality affects water management strategies and supply.

### Assembly Bill 1420

Effective January 1, 2009, AB 1420 amended the Urban Water Management Planning Act to require that water management grants or loans made to urban water suppliers and awarded or administered by the DWR, the State Water Resources Control Board, or the California Bay-Delta Authority or its successor agency be conditioned on implementation of the water demand management measures.

### Senate Bill x7-7 (Chapter 4, Statutes of 2009)

SBx7-7, the Water Conservation Act of 2009, requires the state to achieve a 20 percent reduction in urban per capita water use by December 31, 2020. The responsibility for this conservation falls to local water agencies, which must increase water use efficiency through promotion of water conservation standards that are consistent with the California Urban Water Conservation Council's best management practices.[2] Each urban retail water supplier was also required to develop urban water use targets and an interim urban water use target by July 1, 2011, based

[2] The California Urban Water Conservation Council was created in 1991 by numerous urban water agencies, public interest organizations, and private entities throughout California to assist in increasing water conservation in the state. The council's goal is to integrate best management practices into the planning and management of California's water resources.

on the alternative methods set out in the 2009 act. The agencies must meet those targets by the 2020 deadline. The act also requires each agency to monitor its progress toward its targets, achieving a 10 percent reduction by 2015. These requirements and the City of Sunnyvale's specific compliance plan are outlined in the City's 2010 UWMP. The City's calculated water use target is 157 gallons per day per capita.

### LOCAL

#### City of Sunnyvale General Plan

The Environmental Management – Water Supply subchapter of the General Plan contains the following policies that are relevant to the analysis of water supply impacts:

EM-1.2 Maximize recycled water use for all approved purposes both within and in areas adjacent to the City, where feasible.

EM-2.1 Lower overall water demand through the effective use of water conservation programs in the residential, commercial, industrial, and landscaping arenas.

#### City of Sunnyvale Green Building Standards

On April 24, 2012, the City Council revised the green building standards for new construction, additions, and remodels of buildings. Incentives are offered for projects that exceed the minimum green building standards and are offered to encourage project applicants and developers to provide additional green building features. Mixed-use projects are required to meet the appropriate Build It Green standard for the residential portion and Leadership in Energy and Environmental Design (LEED) for the nonresidential portion. These measures include efficient irrigation systems, insulation of hot water pipes, and water-efficient fixtures.

#### City of Sunnyvale Climate Action Plan

The Climate Action Plan (CAP), adopted in 2014, contains the following measures and action items for reducing water consumption:

Measure WC-2 Reduce indoor and outdoor potable water use in residences, businesses, and industry.

Action WC-2.1 Require new development to reduce potable indoor water consumption by 30% (Tier 1 CalGreen) and outdoor landscaping water use by 40%.

Action WC-2.3 Require new open space and street trees to be drought-tolerant.

Action WC-2.4 Implement the City's Urban Water Management Plan to facilitate a 20% reduction in per capita water use by 2020.

In addition, under Action Item WC-2.2, development standards would be revised to ensure the use of graywater, recycled water, and rainwater catchment systems is allowed in all zoning districts. The CAP also includes action items that would help promote the use of recycled water by improving the quality of recycled water (WC-1.1), promote the use of "purple pipe" infrastructure in new construction or major renovation projects (WC-1.2 and WC-1.3), and create flexible provisions that would encourage residents and businesses to collect rainwater for irrigation purposes (WC-1.4).

### 3.11.1.3 IMPACTS AND MITIGATION MEASURES

#### STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following State CEQA Guidelines Appendix G thresholds of significance. A water service impact is considered significant if implementation of the Draft LUTE would:

1) Result in the need for new entitlements or a substantial expansion or alteration to local or regional water supplies that would result in a physical impact on the environment.

2) Result in the need for new systems or a substantial expansion or alteration to the local or regional water treatment or distribution facilities that would result in a physical impact to the environment.

#### METHODOLOGY

A water supply assessment was prepared in accordance with SB 610. The conclusions of the WSA are presented in the impact analyses. Detailed descriptions of the water supplies, demand assumptions, factors used to estimate demand, and additional information regarding water supply programs are presented in the WSA, which is included in this Draft EIR as **Appendix E**.

#### IMPACTS AND MITIGATION MEASURES

**Water Supply Demand and Environmental Effects (Standard of Significance 1)**

**Impact 3.11.1.1** Subsequent development under the Draft LUTE would increase the demand for water, but new water supply entitlements or expansion of local or regional water supplies would not be required. This would be a **less than significant** impact.

Implementation of the policies and actions in the Draft LUTE could result in approximately 5,500 additional housing units and an additional 4.3 million square feet of industrial/office/commercial space, which would result in a water demand of 2,274 acre-feet per year by 2035.

The estimated water demand, including the Draft LUTE, through the 2035 planning horizon (assumed year of buildout of the city) is summarized in **Table 3.11.1-5**.[3] The demand is assumed to increase linearly over the 20-year planning horizon, with ultimate buildout in 2035. **Table 3.11.1-5** also identifies potable demand over the same period without the Draft LUTE (i.e., growth anticipated under the adopted General Plan) and the combined total.

[3] The specific demand associated with each growth area is shown in Table 3-1 in the WSA (Appendix E of this Draft EIR).

**TABLE 3.11.1-5**
**ESTIMATED WATER DEMAND (2015 THROUGH 2035) ADOPTED GENERAL PLAN PLUS DRAFT LUTE**

| | 2015 [1] | 2015 | 2020 | 2025 | 2030 | 2035 [2] |
|---|---|---|---|---|---|---|
| Draft LUTE Demand | 0 | 0 | 568 | 1,137 | 1,705 | 2,274 |
| Potable Demand (adopted General Plan) | 15,965 | 20,573 | 21,002 | 22,026 | 23,731 | 26,129 |
| **Total Potable Demand** | 15,695 | 20,573 | 21,570 | 23,163 | 25,436 | 28,926 |
| Recycled Demand | 0 | 1,400 | 1,525 | 1,650 | 1,775 | 1,775 |
| Total Adjusted Demand | 15,965 | 21,973 | 23,095 | 24,813 | 27,211 | 30,701 |

*Source: Sunnyvale 2015b, Table 4-9*
*1. Projection based on trending of actual usage measured through July 2015.*
*2. Year 2035 is the year assumed for buildout of Sunnyvale under the City's adopted General Plan and the Draft LUTE.*

Future water demands would be met through continued use of the SFPUC, SCVWD, groundwater, and recycled water supplies described in the Existing Setting subsection. The sources and availability of water to meet demand under normal and single dry years and under multiple dry years are summarized in **Tables 3.11.1-6a** and **3.11.1-6b**.

**TABLE 3.11.1-6A**
**SUPPLY AND DEMAND COMPARISON – NORMAL AND SINGLE DRY YEAR (AFY)**

| | Supply and Demand Comparison | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Normal Year | | | | Single Dry Year | | | |
| **Source** | **2020** | **2025** | **2030** | **2035** | **2020** | **2025** | **2030** | **2035** |
| SFPUC | 14,100 | 14,100 | 14,100 | 14,100 | 10,003 | 10,003 | 10,003 | 10,003 |
| SCVWD | 13,577 | 13,577 | 13,577 | 13,577 | 4,793 | 5,957 | 7,630 | 10,248 |
| Groundwater | 8,000 | 8,000 | 8,000 | 8,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Recycled Water | 1,525 | 1,650 | 2,298 | 2,298 | 1,525 | 1,650 | 1,775 | 1,775 |
| ***Supply Totals*** | ***37,702*** | ***37,327*** | ***37,975*** | ***37,975*** | ***17,321*** | ***18,610*** | ***20,408*** | ***23,026*** |
| Demand Totals | 23,095 | 24,813 | 27,211 | 30,701 | 17,231 | 18,610 | 20,408 | 23,026 |
| Difference | +14,107 | +12,541 | +10,764 | +7,274 | 0 | 0 | 0 | 0 |

*Source: Sunnyvale 2015b, Tables 5-8 and 5-9*

**TABLE 3.11.1-6B**
**SUPPLY AND DEMAND COMPARISON – MULTIPLE DRY YEARS (AFY)**

| Supply and Demand Comparison – Multiple Dry Years | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Multiple Dry Year (2016) | | | Multiple Dry Year (2020) | | | Multiple Dry Year (2025) | | | Multiple Dry Year (2030) | | | Multiple Dry Year (2035) | | |
| **Source** | **Year 1 (2016)** | **Year 2 (2017)** | **Year 3 (2018)** | **Year 1 (2020)** | **Year 2 (2021)** | **Year 3 (2022)** | **Year 1 (2025** | **Year 2 (2026)** | **Year 3 (2027)** | **Year 1 (2030)** | **Year 2 (2032)** | **Year 3 (2032)** | **Year 1 (2035** | **Year 2 (2036)** | **Year 3 (2037)** |
| SFPUC | 9,818 | 9,818 | 9,818 | 10,003 | 9,818 | 9,818 | 10,003 | 9,818 | 9,818 | 10,003 | 9,818 | 9,818 | 10,003 | 9,818 | 9,818 |
| SCVWD | 4,597 | 4,714 | 4,831 | 7,629 | 8,186 | 6,579 | 8,941 | 9,520 | 7,789 | 10,820 | 11,456 | 9,577 | 11,296 | 11,940 | 10,020 |
| Groundwater | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 |

| Supply and Demand Comparison – Multiple Dry Years | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Multiple Dry Year (2016) | | | Multiple Dry Year (2020) | | | Multiple Dry Year (2025) | | | Multiple Dry Year (2030) | | | Multiple Dry Year (2035) | | |
| Source | Year 1 (2016) | Year 2 (2017) | Year 3 (2018) | Year 1 (2020) | Year 2 (2021) | Year 3 (2022) | Year 1 (2025 | Year 2 (2026) | Year 3 (2027) | Year 1 (2030) | Year 2 (2032) | Year 3 (2032) | Year 1 (2035 | Year 2 (2036) | Year 3 (2037) |
| Recycled | 1,400 | 1,425 | 1,450 | 1,525 | 1,550 | 1,575 | 1,650 | 1,675 | 1,700 | 1,775 | 1,775 | 1,775 | 1,775 | 1,775 | 1,775 |
| **Supply Totals** | **15,965** | **16,107** | **16,249** | **19,307** | **19,704** | **18,122** | **20,744** | **21,163** | **19,457** | **22,748** | **23,199** | **21,320** | **23,224** | **23,683** | **21,763** |
| **Demand Totals** | **15,965** | **16,107** | **16,249** | **19,307** | **19,704** | **18,122** | **20,744** | **21,163** | **19,457** | **22,748** | **23,199** | **21,320** | **23,224** | **23,683** | **21,763** |
| Difference | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

*Source: Sunnyvale 2015b, Tables 5-10 through 5-14*

**Table 3.11.1-6a** identifies total water sources available to the City compared to demand under normal year conditions. The City does not expect to make complete use of each of these water sources. For example, between 2010 and 2014, the City's groundwater pumping ranged between 1,629 and 2,064 AFY. Groundwater production is not expected to increase beyond 1,000 acre-feet per year, except in multiple dry year conditions per the 2010 UWMP. As indicated by the data, the amount of supply would exceed the projected demand under normal year conditions, and the amount of supply would meet the projected demand under single dry-year conditions.

Under multiple dry year conditions, citywide demand would decrease in response to drought water conservation measures. Therefore, less water would be needed to meet demand. The City would be able to address the projected demands without rationing. This multiple dry year analysis also does not consider increased recycled water production of 2,298 AFY that would be available by 2030. For each of the 3-year increments, the 3-year dry period analysis (**Table 3.11.1-6b**) indicates that there will be sufficient supply to meet demands through increased imported water supply from the SCVWD and implementation of drought conservation programs to meet future growth in the city through 2035.

The following Draft LUTE policies and actions address water supply planning:

Policy 9: Work with regional agencies to ensure an adequate water supply that will allow progress toward Sunnyvale's long-term land use plans.

Action 1: Increase participation in reclaimed water and water conservation programs as part of land use permit review.

Policy 10: Participate in federal, state, and regional programs and processes in order to protect the natural and human environment in Sunnyvale and the region.

Action 4: Work with regional agencies on land use and transportation issues that affect the human environment such as air, water, and noise for Sunnyvale residents and businesses.

Water supplies are forecast to meet or exceed demand under normal and multiple dry year conditions, as shown in **Table 3.11.1-6a** and **Table 3.11.1-6b**. Implementation of the Draft LUTE policies and action items identified above and adopted CAP measures and action items WC-1.1 through WC-1.4 and WC-2.1 through WC-2.4, listed in the Regulatory Framework

subsection, along with the conservation programs already in place in Sunnyvale, will likely further reduce water usage of future development. Therefore, the Draft LUTE would not require new or expanded water supply entitlements, and this impact would be **less than significant**.

Mitigation Measures

None required.

**Water Supply Infrastructure (Standard of Significance 2)**

**Impact 3.11.1.2** Subsequent development under the Draft LUTE would increase demand for water supply and thus require additional water supply infrastructure to meet the projected demands. Implementation of Draft LUTE policies and continued implementation of City standards would ensure adequate water supply infrastructure is provided. This impact is considered **less than significant**.

The Draft LUTE would increase water demands by an additional 2,274 acre-feet per year over the amount projected in the 2010 UWMP for 2035. This additional water demand could lead to the need for additional water infrastructure. However, Sunnyvale is mostly built out, and the increased development intensity under the Draft LUTE would be in areas that already have water transmission infrastructure in place. This infrastructure may, however, have to be reconfigured and/or upsized in certain areas to accommodate redeveloped land uses. Over 80 percent of the distribution and trunk lines in the city were installed in the 1960s and are nearing the end of their estimated 50-year service life, so rehabilitation and/or replacement is needed to minimize the need for emergency repairs.

The site-specific environmental impacts associated with water supply infrastructure improvements needed to serve new development would be determined through project-level CEQA analysis at such time as improvements are proposed and their design and alignment are known. However, provision of such facilities in the city has been programmatically considered in the technical analysis in this Draft EIR as part of Sunnyvale's buildout. The water hydraulic model will be updated as part of the Water Master Plan update by projecting the City's 2035 water demand. Water infrastructure improvements will be identified and a financing mechanism will be developed as part of the model update based on the Draft LUTE prior to any project-specific CEQA analysis. As noted in Impact 3.11.1.1, implementation of the Draft LUTE would not trigger any new water supply sources and major infrastructure that could result in physical impacts to the environment. Any potential upgrading of pipelines in developed areas of the city is addressed programmatically by existing City water quality control measures, construction traffic control requirements, and construction-related air quality mitigation measures identified in Section 3.5, Air Quality, in this Draft EIR.

Impacts associated with increased demand for water supply infrastructure are considered **less than significant**.

Mitigation Measures

None required.

### 3.11.1.3 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

#### CUMULATIVE SETTING

The cumulative setting includes all existing, planned, proposed, approved, and reasonably foreseeable development in the SCVWD, SFPUC, and Cal Water service areas and the Santa Clara County Groundwater Basin. The SCVWD is Santa Clara County's principal water wholesaler and serves surrounding communities, such as Palo Alto and Mountain View. In addition to Sunnyvale and Santa Clara County, the water supply from the SFPUC is distributed to other wholesale customers in Alameda and San Mateo counties. Most new urban land uses in the surrounding area and development associated with implementation of the Draft LUTE would be dependent on these two water supply sources (SCVWD and SFPUC).

#### CUMULATIVE IMPACTS AND MITIGATION MEASURES

**Cumulative Water Supply Impacts**

**Impact 3.11.1.3** Implementation of the Draft LUTE, in combination with other existing, planned, proposed, approved, and reasonably foreseeable development in the cumulative setting, would increase the cumulative demand for water supplies and related infrastructure. The Draft LUTE's contribution to cumulative water supply and infrastructure impacts is considered **less than cumulatively considerable**.

The City of Sunnyvale obtains water from the SFPUC and the SCVWD. The amount of imported water available to the SFPUC's retail and wholesale customers is constrained by hydrology, physical facilities, and the institutional parameters that allocate the Tuolumne River's water supply. The maximum amount of water available to the City from the SFPUC is based on the city's allocation established through an ISA and ISG. The amount of water available from the SCVWD (a combination of surface water, imported water, and groundwater) is based on a 3-year schedule. In addition to SFPUC and SCVWD supplies, the City operates groundwater wells and produces recycled water.

The demand generated by the Draft LUTE, including existing and future demand to the year 2035, accounts for the cumulative growth in water demand within the city boundaries relative to supply availability. The analysis in Impact 3.11.1.1 demonstrates that SFPUC, SCVWD, and City water supplies would be adequate to serve buildout of the Draft LUTE through 2035 under normal and multiple dry year conditions. Implementation of the Draft LUTE would not result in the need for additional SFPUC and SCVWD supplies that could affect the availability of water to other wholesale and retail customers. The Draft LUTE would not result in the need for increased groundwater pumping.

The Draft LUTE's contribution to cumulative demand (2,274 AFY) would represent approximately 7.4 percent of total cumulative demand. Implementation of the Draft LUTE policies and actions listed in Impact 3.11.1.1 above would reduce potable water use throughout the city. These policies, along with the conservation programs already in place in the city as identified in the Regulatory Framework subsection above, would further reduce the Draft LUTE's contribution to cumulative water supply impacts to levels that would be less than cumulatively considerable.

Cumulative development would not result in the need for new or additional water supplies; as such, major improvements to convey water would not be necessary. Sunnyvale is mostly built out, and cumulative development would not be in areas without water transmission

infrastructure already in place. This infrastructure may, however, have to be reconfigured and/or upsized in certain areas to accommodate redeveloped land uses. Over 80 percent of the distribution and trunk lines in the city were installed in the 1960s and are nearing the end of their estimated 50-year service life, so rehabilitation and/or replacement is needed to minimize the need for emergency repairs.

The water hydraulic model will be updated as necessary, and water infrastructure improvements will be identified and a financing mechanism developed as part of the model update based on future projects prior to any project-specific CEQA analysis. The site-specific environmental impacts associated with water supply infrastructure improvements needed to serve new development would be determined through project-level CEQA analysis at such time as improvements are proposed and their design and alignment are known.

As noted in Impact 3.11.11.1, implementation of the Draft LUTE does not result in the need for any new water supply sources or major infrastructure that could result in physical impacts to the environment. Therefore, the Draft LUTE's contribution to cumulative water supply infrastructure improvements would be **less than cumulatively considerable.**

Mitigation Measures

None required.

## 3.11.2 WASTEWATER SERVICE

### 3.11.2.1 EXISTING SETTING

#### CITY OF SUNNYVALE WASTEWATER FACILITIES

The City owns and operates the Donald M. Sommers Water Pollution Control Plant (WPCP) located at 1444 Borregas Avenue in Sunnyvale. The WPCP treats wastewater from residential, commercial, and industrial sources in Sunnyvale, the Rancho Rinconada portion of Cupertino, and Moffett Federal Airfield. Treated wastewater is discharged to the southern San Francisco Bay via the Guadalupe Slough. Five major trunk networks terminate at the WPCP, referred to as the Lawrence, Borregas, Lockheed, Moffett, and Cannery trunks (Sunnyvale 2011a).

#### Water Pollution Control Plant

The WPCP uses advanced secondary treatment consisting of the following processes: primary treatment (sedimentation), secondary treatment (biological oxidation), and advanced-secondary treatment (filtration and disinfection). These processes provide treatment to a level that meets or exceeds National Pollutant Discharge Elimination System (NPDES) discharge requirements. The amount and quality of this effluent is regulated by the San Francisco Bay Regional Water Quality Control Board under Order No. R2-2014-0035 (NPDES permit CA0037621). The permitted average dry weather flow (ADWF) design capacity of the WPCP is 29.5 million gallons per day (mgd). Peak wet weather design capacity is 40 mgd. Approximately 10 percent of the WPCP flow is treated to a higher level to meet the requirements for disinfected tertiary recycled water as specified in Title 22 of the California Code of Regulations and then delivered to customers for non-potable uses, primarily irrigation. The City operates a separate distribution network of pipelines in the northern portion of Sunnyvale solely for the distribution of recycled water (Sunnyvale 2011a).

The amount of influent wastewater handled by the WPCP varies with the time of day and with seasonal changes in demand. In 2015, the average dry weather flow was approximately 11.4 mgd. The WPCP is currently operating at approximately 50 percent of its capacity, as projections made in 1983 prior to upgrades to the plant in 1984 anticipated higher levels of industrial land uses and wastewater flows than have been realized.

The City anticipates a steady level of 15 mgd for plant influent over the next 25 years as a conservative estimate; however, a 10-year trend (2006–2015) indicates that wastewater flows continue to decline despite population increases and a net influx of daytime workforce. In addition, changes in water conservation efforts in response to Governor Brown's Executive Order enacted April 1, 2015, will also likely impact wastewater flows to the WPCP. Flows are not expected to increase to levels that would approach the plant's capacity in the foreseeable future (Sunnyvale 2011a, 2011b). The City estimates there would be 17.44 mgd of wastewater flows in 2035 under existing General Plan buildout conditions (Sunnyvale 2011a, 2011b).[4]

Future Water Pollution Control Plant Improvements

Portions of the WPCP were first constructed in 1954 and are now over 50 years old. An asset condition assessment conducted in 2005 identified several critical plant structures as at risk and in need of rehabilitation. In 2007, a Capital Project Strategic Infrastructure Plan was put in place to set future direction of plant process enhancements and physical improvements.

The City is currently undergoing a master planning effort to rebuild the WPCP over the next 20 years. The draft Water Pollutant Control Plant Master Plan identifies upgrades to existing outdated equipment and aging infrastructure, and addresses the WPCP's current and future challenges treating the City's wastewater while complying with all applicable federal, state, and local regulations. As a result of the rebuild, the influent flow design capacity is projected to decrease to 19.5 mgd for average dry weather flows, while retaining a design capacity of 40 mgd for peak wet weather flows.

### Wastewater Conveyance Infrastructure

The City's sanitary sewer collection system consists of 283 miles of gravity sewers, sewer lift (pump) stations, and over 2 miles of sewer force mains. The sewer mains range in size from 6 to 42 inches in diameter. Sunnyvale's wastewater collection system has the capacity to convey all sewage and industrial wastes generated when the city is fully developed in accordance with the land use projections (approximately 55.7 mgd). Based on growth projections, it is not anticipated that flows will exceed the capacity of the overall collection system. Groundwater and rainwater infiltration into the sewer line through bad joints or broken pipes and inflow from direct connections of storm drains or downspouts, or illegal cross-connections, can affect capacity. Specific locations in the collection system may require additional capacity in the future (Sunnyvale 2011a). The City's Wastewater Collection System Master Plan and Capital Improvement Program identify the conveyance improvements projects including improvements to lift stations, pump stations 1 and 2, and pipeline improvements through the year 2020.

### Wastewater Pretreatment Program

Industrial and commercial facilities are regulated through discharge permits, best management practices (BMPs), and routine inspection and monitoring. Discharge permits contain specific

[4] Per Table 4-6 in the 2010 UWMP, the projected flows for 2025, 2030, and 2035 are 19,548 acre-feet per year, which is equivalent to 17.44 mgd.

requirements and limits for the concentration of pollutants in wastewater discharges. On average, the pretreatment program has 46 active industrial wastewater discharge permits issued to significant industrial users. Additionally, hundreds of commercial facilities are regulated through the application of BMPs tailored to specific activities commonly found in commercial businesses. When implemented, the BMPs reduce or eliminate the introduction of pollutants into the sanitary sewer. By regulating the disposal of industrial wastewater into the sanitary sewer, the pretreatment program seeks to prevent the introduction of pollutants that could interfere with the operation of the WPCP, cause damage to the sewer system, compromise public health or worker safety, or pass through the WPCP to San Francisco Bay (Sunnyvale 2011a).

### 3.11.2.2 REGULATORY FRAMEWORK

#### FEDERAL

**Clean Water Act**

National Pollution Discharge and Elimination System (NPDES) Permits

The NPDES permit system was established as part of the Clean Water Act (CWA) to regulate discharges from all point sources. Section 402(d) of the CWA establishes a framework for regulating nonpoint source (NPS) stormwater discharges under the NPDES permit program. For point source discharges, such as sewer outfalls, each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge. The WPCP currently operates under NPDES Permit No. CA0037621, Order No. R2-2014-0035, which was adopted on November 1, 2014, during a five-year renewal cycle. A detailed discussion of project compliance with NPDES permit requirements is presented in Section 3.8, Hydrology and Water Quality.

General Pretreatment Regulations

The Clean Water Act (CWA) and its implementing regulations set forth in Title 40 of the Code of Federal Regulations (CFR) establish discharges to a publicly owned treatment works (POTW). POTWs collect wastewater from homes, commercial buildings, and industrial facilities and transport it via a collection system to the treatment plant. The General Pretreatment Regulations establish responsibilities of federal, state, and local government, industry, and the public to implement pretreatment standards to protect municipal wastewater treatment plants from damage that may occur when hazardous, toxic, or other wastes are discharged into a sewer system and to protect the quality of sludge generated by these plants. Discharges to a POTW are regulated primarily by the POTW itself, rather than by a state or the EPA.

#### STATE

**State Water Resources Control Board**

Recycled Water Policy

To establish uniform requirements for the use of recycled water, the State Water Resources Control Board (SWRCB) adopted a statewide Recycled Water Policy on February 3, 2009. The policy's purpose is to increase the use of recycled water from municipal wastewater sources that meets the definition in Water Code Section 13050(n) in a manner that implements state and federal water quality laws. The policy describes permitting criteria intended to streamline the

permitting of the vast majority of recycled water projects. The intent of this streamlined permit process is to expedite the implementation of recycled water projects in a manner that implements state and federal water quality laws while allowing the Regional Water Quality Control Boards (RWQCBs) to focus on projects that require substantial regulatory review because of unique site-specific conditions.

Statewide General Permit for Landscape Irrigation Uses of Recycled Water

The SWRCB also developed a statewide general permit for landscape irrigation uses of recycled water. The intent of the law is to develop a uniform interpretation of state standards to ensure the safe, reliable use of recycled water for landscape irrigation uses, consistent with state and federal water quality law, and for which the California Department of Public Health has established uniform statewide standards. The law is also intended to reduce costs to producers and users of recycled water by streamlining the permitting process for using recycled water for landscape irrigation.

### Department of Public Health

The California Department of Public Health is responsible for establishing criteria to protect public health in association with recycled water use. The criteria issued by this department are found in the California Code of Regulations, Title 22, Division 4, Chapter 3, Water Recycling Criteria. The criteria contain treatment and effluent quality requirements that vary based on the proposed type of water reuse. Title 22 sets bacteriological water quality standards on the basis of the expected degree of public contact with recycled water. For water reuse applications with a high potential for the public to come into contact with the reclaimed water, Title 22 requires disinfected tertiary treatment. For applications with a lower potential for public contact, Title 22 requires three levels of secondary treatment, basically differing in the amount of disinfectant required.

Title 22 also specifies the reliability and redundancy for each recycled water treatment and use operation. Treatment plant design must allow for efficiency and convenience in operation and maintenance and provide the highest possible degree of treatment under varying circumstances. For recycled water piping, the department has requirements for preventing backflow of recycled water into the public water system and for avoiding cross-connection between the recycled and potable water systems.

The Department of Public Health does not have enforcement authority for the Title 22 criteria; instead, the RWQCBs enforce the criteria through enforcement of their permits containing the applicable criteria.

## LOCAL

### City of Sunnyvale Municipal Code

Title 12, Water and Sewers, of the Sunnyvale Municipal Code regulates wastewater in the city. Specifically, Chapter 12.40 establishes requirements for wastewater capacity allocation, including initial allocations and baseline limits, monitoring of wastewater flows, the need for wastewater capacity evaluations, and declarations of restrictions.

### City of Sunnyvale Climate Action Plan

The Climate Action Plan, adopted in 2014, contains the following measures and action items that would help reduce the demand for wastewater conveyance and treatment.

Measure WC-2 Reduce indoor and outdoor potable water use in residences, businesses, and industry.

Action WC-2.1: Require new development to reduce potable indoor water consumption by 30% (Tier 1 CALGreen) and outdoor landscaping water use by 40%.

## 3.11.2.3 IMPACTS AND MITIGATION MEASURES

### STANDARDS OF SIGNIFICANCE

The following standards are based on State CEQA Guidelines Appendix G. A significant impact to wastewater service would occur if implementation of the Draft LUTE would:

1) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.

2) Require or result in the construction of new wastewater treatment facilities or expansion or existing facilities, the construction of which could cause significant environmental effects.

3) Result in a determination by the wastewater treatment provider, which serves or may serve the project, that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

### METHODOLOGY

Evaluation of potential impacts on wastewater facilities and services was based on the City's General Plan, Urban Water Management Plan, and draft Water Pollutant Control Plant Master Plan (2014). A detailed list of reference material used in preparing this analysis can be found at this end of this section.

### PROJECT IMPACTS AND MITIGATION MEASURES

#### Waste Discharge Requirements (Standard of Significance 1)

**Impact 3.11.2.1** Subsequent development under the Draft LUTE would increase wastewater generation in the city. However, projected wastewater flows would remain within the capacity of Sunnyvale's wastewater collection and treatment system and would not exceed the wastewater treatment requirements of the RWQCB. This impact would be **less than significant**.

Implementation of the Draft LUTE would generate approximately additional wastewater flows by 2035 compared to 2014 conditions. Current flows treated by the WPCP are approximately 11.4 mgd. The addition of Draft LUTE flows to existing flows would equate to approximately 14.42 mgd, which would be within the current 29.5 mgd permitted ADWF design flow capacity of the WPCP and would also be within the reduced 19.5 mgd ADWF design flow capacity assumed

under the Water Pollutant Control Plant Master Plan. The Water Pollutant Control Plant Master Plan design of plant improvements assumes flows from build out of the City under the Draft LUTE (see Chapter 5.2 in the Sunnyvale Water Pollutant Control Plant Master Plan Draft EIR, 2016). Further, compliance with water conservation efforts (e.g., General Plan Policy EM-2.1 and CAP Measure WC-2) would help reduce indoor water use and the amount of wastewater requiring treatment.

The type of wastewater generated by development of subsequent projects under the Draft LUTE would be similar to existing flows because new sources of flows would be limited to residential and some industrial/office/commercial uses. No substantial increase in the amount of industrial wastewater would be expected that would change the chemical characteristics of flows or would affect treatment processes. Furthermore, the City would regulate any new industrial or commercial facilities through the pretreatment program.

Therefore, the project would not exceed wastewater treatment requirements, and the impact would be **less than significant**.

Mitigation Measures

None required.

**Wastewater Conveyance and Treatment (Standards of Significance 2 and 3)**

**Impact 3.11.2.2** Subsequent development under the Draft LUTE would increase wastewater flows and require the use of infrastructure and treatment facilities to accommodate anticipated demands. This impact would be **less than significant**.

New growth and development that is projected to occur with implementation of the Draft LUTE would increase overall wastewater flows and could require the upgrading or replacement of existing deficient City sewer mains. Existing infrastructure would likely need upgrading or extension to accommodate the additional population and intensified development allowed under the Draft LUTE. The City's draft Water Pollutant Control Master Plan (2014) (currently under development) will be the tool to identify wastewater infrastructure upgrades.

As noted above, Sunnyvale's wastewater collection system has the capacity to convey all sewage and industrial wastes generated when the city is fully developed in accordance with the development potential (with an approximately 55.7 mgd collection capacity) of the existing General Plan. The City's Wastewater Collection System Master Plan and Capital Improvement Program identify the conveyance improvements projects including improvements to lift stations, pump stations 1 and 2, and pipeline improvements through the year 2020.

Any site-specific environmental impacts associated with wastewater infrastructure improvements needed to serve new development would be determined through project-level CEQA analysis at such time as improvements are proposed and their design and alignment are known. However, the potential physical environmental impacts that could be associated with expansion of these facilities have been programmatically identified and disclosed in this Draft EIR as part of the city's overall development potential. Any potential upgrading of wastewater infrastructure in developed areas of Sunnyvale is addressed programmatically by existing City water quality control measures, construction traffic control requirements, and construction-related air quality measures identified in Section 3.5, Air Quality, in this DEIR. Furthermore, the wastewater hydraulic model will be completed as part of the Wastewater Master Plan by

projecting the 2035 wastewater demand for the population allowed under the Draft LUTE. Wastewater infrastructure improvements will be identified and a financing mechanism will be developed as part of the model update based on the Draft LUTE prior to any project-specific CEQA analysis. Therefore, impacts associated with wastewater conveyance and treatment facilities would be **less than significant**.

Mitigation Measures

None required.

### 3.11.2.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

Because wastewater services are provided by the City, the cumulative setting for wastewater services includes the full buildout of Sunnyvale, which is expected to occur in 2035. It also includes the Rancho Rinconada area in Cupertino. The Rancho Rinconada area is currently zoned mostly for residential use and would retain this zoning under 2035 conditions.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

**Cumulative Wastewater Service Impacts**

**Impact 3.11.2.3** Implementation of the Draft LUTE, along with other existing, planned, proposed, approved, and reasonably foreseeable development in the cumulative setting, would contribute to the cumulative demand for wastewater service. The Draft LUTE's contribution to this impact would be **less than cumulatively considerable**.

The Water Pollutant Control Plant Master Plan plant design is based on flows from buildout of the city under the Draft LUTE (see Chapter 5.2 in the Sunnyvale Water Pollutant Control Plant Master Plan Draft EIR, 2016). There would be sufficient capacity in 2035 to accommodate cumulative flows anticipated with implementation of the Draft LUTE.

Flows are not expected to exceed the capacity of the overall collection system, although specific locations in the collection system may require additional capacity in the future. The City's Wastewater Collection System Master Plan and Capital Improvement Program currently identify the conveyance improvements projects including improvements to lift stations, pump stations 1 and 2, and pipeline improvements through the year 2020. Wastewater infrastructure improvements will be identified and a financing mechanism will be developed as part of the model update prior to any project-specific CEQA analysis. Any site-specific environmental impacts associated with the wastewater infrastructure improvements needed to serve cumulative development would be determined through project-level CEQA analysis at such time as improvements are proposed and their design and alignment are known. As noted under Impact 3.11.2.2, this Draft EIR programmatically evaluates construction impacts associated with potential wastewater improvements. Therefore, the Draft LUTE's contribution to this impact would be **less than cumulatively considerable**.

Mitigation Measures

None required.

## 3.11.3 SOLID WASTE SERVICE

### 3.11.3.1 EXISTING SETTING

The City contracts with Specialty Solid Waste and Recycling to provide solid waste collection services to residents and businesses in the city. Collected waste is transported to the Sunnyvale Materials Recovery and Transfer Station (SMaRT Station), where it is sorted to remove recyclable materials from mixed waste and prepare them and source-separated recyclables and compostable materials for shipment to markets. The SMaRT Station is currently (2015–2021) operated by Bay Counties Waste Services and also serves Mountain View and Palo Alto. The SMaRT Station is permitted to receive 1,500 tons of solid waste (including source-separated materials) per day. The station currently processes approximately 1,000 tons per day and 260,000 tons annually. Recyclable materials and compostable organics are diverted by the materials recovery facility (MRF), and the unrecycled portion of the waste stream is transferred to the Kirby Canyon Landfill in San Jose. Source-separated yard trimmings and MRF-derived organics are also prepared for shipment to composting markets. State of California statistics indicate that, in 2011, Sunnyvale disposed 3.4 pounds per person per day, which equates to diversion of 66 percent of solid waste generated in the city. During the 2013–2014 service year, the SMaRT Station successfully diverted 89,345 tons of solid waste from the Kirby Canyon Landfill (Sunnyvale 2015c). The unused capacity of the station is available, at an appropriate price, to public or private sources of solid waste and recyclable materials generated outside the current three-city service area.

The City of Sunnyvale has an agreement for solid waste disposal with Waste Management of California that currently directs the city's waste to the Kirby Canyon Landfill. If, in the future, Waste Management of California closed the Kirby Canyon Landfill, Waste Management would be required to provide Sunnyvale disposal capacity at an alternative disposal site. This agreement is valid through 2031. The Kirby Canyon Landfill has a remaining capacity of 57,271,507 cubic yards (CalRecycle 2016). In 2014, the City disposed of approximately 96,400 tons of solid waste, of which approximately 85,600 tons were transported to the Kirby Canyon Landfill. Approximately 6,000 tons were disposed of at the Monterey Peninsula Landfill, with the remainder transported to other disposal sites around the state.

**Table 3.11.3-1** summarizes the permitted daily capacity, estimated remaining capacity, and estimated closure dates for a selection of disposal facilities in the region.

**TABLE 3.11.3-1**
**SOLID WASTE DISPOSAL FACILITIES**

| Facility | Permitted Daily Throughput (tons/day) | Permitted Capacity (CY) | Estimated Remaining Capacity (CY)* | Estimated Closure Date |
|---|---|---|---|---|
| SMaRT Station | 1,500 | N/A | N/A | N/A |
| Kirby Canyon Landfill | 2,600 | 36,400,000 | 57,271,507 | 2022 |
| Monterey Peninsula Landfill | 3,500 | 49,700,000 | 48,560,000 | 2107 |
| Guadalupe Sanitary Landfill | 1,300 | 28,600,000 | 11,055,000 | 2048 |
| Newby Island Sanitary Landfill | 4,000 | 57,500,000 | 21,200,000 | 2041 |
| Zanker Material Processing Facility (Landfill) | 350 | 640,000 | 640,000 | 2025 |

*Source: CalRecycle 2015*
*CY=cubic yards; N/A = not applicable*
** Remaining capacity estimates and closure dates as reported by CalRecycle and correspond to current solid waste facility permits, which are periodically reviewed and modified/renewed in accordance with state regulations.*

### 3.11.3.2 REGULATORY FRAMEWORK

STATE

#### California Integrated Waste Management Act

The California Integrated Waste Management Act of 1989 (AB 939) requires all California cities and counties to reduce the volume of waste deposited in landfills by 50 percent by the year 2000 and continue to remain at 50 percent or higher for each subsequent year. As of 2006 (the last year the State required jurisdictions to track diversion as a percentage), Sunnyvale's diversion rate was 63 percent (CalRecycle 2015a).

SB 1016 updated the local jurisdiction diversion requirements in 2006 to use a per capita factor for actual disposal as a measurement to evaluate program effectiveness in meeting AB 939 requirements. Sunnyvale has a per capita disposal target of 5.0 pounds per day per resident and 8.3 pounds per day per employee. The disposal rate in the city is 3.4 pounds per person per day for residents and 5.8 pounds per person per day for employment (CalRecycle 2015b).[5]

#### 2011 Assembly Bill 341

AB 341 established a state policy goal that no less than 75 percent of solid waste generated be source reduced, recycled, or composted by 2020. AB 341 builds on the existing AB 939 requirement that every jurisdiction divert at least 50 percent of its waste. The bill also mandated that local jurisdictions implement commercial recycling by July 1, 2012. AB 341 requires any business (including schools and government facilities) that generates 4 cubic yards or more of waste per week, and multifamily buildings with 5 or more units to arrange for recycling services.[6] A recycling service may include mixed waste processing (such as the processing at the SMaRT Station) that yields diversion results comparable to source separation.

#### 2014 Assembly Bill 1826

The City is now working to comply with AB 1826 (chaptered on 9/28/2014), which requires that businesses separate and arrange for composting the food waste and compostable organics that they generate. The City operates a pilot food waste collection route that is transitioning into a regular collection service for this material. In brief, AB 1826 requires that businesses generating organic waste arrange for recycling services for that waste. A business must take this action if it generates 8 cubic yards or more per week of organic waste on April 1, 2016; 4 cubic yards or more of organic waste on January 1, 2017; and 4 cubic yards or more of commercial solid waste per week on January 1, 2019. The bill also requires jurisdictions to implement an organic waste recycling program for businesses.

[5] The per capita disposal values reflect 2011 data, which are the latest values reviewed and approved by CalRecycle. Per capita data for 2014 are available, but these have not been reviewed or accepted by CalRecycle; therefore, the 2011 data is considered the appropriate value for use in this EIR.

[6] The City offers free consultation to businesses and property owners to assist in arranging recycling services: http://sunnyvale.ca.gov/Departments/EnvironmentalServices/Garbage,RecyclingandWasteReduction.aspx. Accessed November 2015.

### Green Building Standards Code

Effective January 1, 2011, newly constructed buildings are required to develop a waste management plan and divert at least 50 percent of the construction materials generated during project construction (California Green Building Standards Code [CALGreen] Sections 4.408 and 5.408).

The City of Sunnyvale's Building Division requires applicants to obtain a demolition permit for removal of entire buildings and structures prior to the start of any demolition activities. As part of the demolition permitting process, applicants are required to follow a list of general requirements based on the California Green Building Code and the Sunnyvale Municipal Code. A portion of the requirements includes consideration of deconstructing (i.e., building dismantling) and/or salvage of reusable building materials to minimize the amount of demolition materials disposed of at landfills.

## LOCAL

### City of Sunnyvale General Plan

The Environmental Management – Solid Waste subchapter of the General Plan contains the following policies that are relevant to the Draft LUTE's impacts on solid waste facilities.

EM-14.1 Reduce generation of solid waste by providing source reduction programs and promoting reduction behavior.

EM-14.2 Maximize diversion of solid waste from disposal by use of demand management techniques, providing and promoting recycling programs and encouraging private sector recycling.

### Climate Action Plan

The City's Climate Action Plan (CAP) contains the following measures and actions pertaining to solid waste management.

LW-1 Materials Management: Reduce the availability or use of common materials that are not recyclable or that are cost ineffective to recycle.

Action LW-1.1: Reduce the use of plastic bags at grocery stores and convenience stores in the community through incentives or requirements.

Action LW-1.2: Ban the sale or dispersal of disposable, single-use plastic water bottles at public events permitted by the City.

Action LW-1.3: Ban the use of expanded polystyrene (EPS) take-out containers at restaurants and fast-food facilities.

LW-2 Recycling and Composting: Increase the amount of waste recycled and composted by 1% per year according to the City's Zero Waste Strategic Plan.

Action LW-2.1: Require multi-family homes to participate in the City's Multi-family Recycling Program.

Action LW-2.2: Select materials to be targeted for diversion and diversion methods, services, or technologies based on the results of the Zero Waste Strategic Plan.

**Zero Waste Strategic Plan**

In 2013 the City Council approved a Zero Waste Strategic Plan that establishes diversion goals of 70 percent by 2015, 75 percent by 2020, and 90 percent by 2030.

### 3.11.3.3 IMPACTS AND MITIGATION MEASURES

#### STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following State CEQA Guidelines Appendix G standards of significance. A solid waste impact is considered significant if the Draft LUTE would:

1) Be served by a landfill without sufficient permitted capacity to accommodate the project's solid waste disposal needs.

2) Fail to comply with federal, state, and local statutes and regulations related to solid waste.

Hazardous waste sites and disposal issues in the city, including potential impacts resulting from the Draft LUTE, are discussed in Section 3.3, Hazards and Human Health, of this Draft EIR.

#### METHODOLOGY

Information on landfill disposal data, capacity, and disposal rates were obtained from California Department of Resources Recycling and Recovery (CalRecycle) databases. The analysis assumes the following per capita rates: 3.4 pounds per person per day for residents and 5.8 pounds per person per day for employment uses, and a conversion rate of 0.22 tons of uncompacted solid waste per cubic yard.[7] These factors were applied to the population and employment assumptions presented in **Table 2.0-2** in Section 2.0, Project Description, of this EIR.

#### PROJECT IMPACTS AND MITIGATION MEASURES

**Increased Solid Waste Disposal (Standard of Significance 1)**

**Impact 3.11.3.1** Subsequent development under the Draft LUTE would generate increased amounts of solid waste that would need to be disposed of in landfills or recycled. This impact would be **less than significant**.

Occupancy and use of projects developed in accordance with Draft LUTE policies would generate approximately 25.7 tons per days of solid waste for residential uses and 123 tons per day associated with employees.[8] The combined total (approximately 148 tons per day) would represent approximately 10 percent of the transfer station's permitted throughput and 6 percent of the daily throughput for the Kirby Canyon Landfill. On an annual basis, the Draft LUTE would

[7] Conversion factor from CalRecycle (2015c).

[8] Calculated as follows: 15,100 population x 3.4 pounds per day per person/2,000 pounds/ton = 25.7 tons per day; 42,410 employees x 5.8 pounds per day per person/2,000 pounds/ton = 123 tons per day

generate approximately 54,020 tons (approximately 245,545 cubic yards) of solid waste.[9] The Kirby Canyon Landfill has the capacity to accommodate this amount of the solid waste. However, if the landfill closes in 2022, there would be sufficient capacity at the Monterey Peninsula Landfill.

Although the Kirby Canyon Landfill's current plan shows it closing in 2022, it is anticipated that the plan will be modified (one or more times) to extend that date well into the future. If the Kirby Canyon Landfill were to actually close prior to 2031, the City's contract with Waste Management would require Waste Management to provide the City with disposal capacity at an alternate disposal facility. For example, there is available combined remaining capacity of 32.8 million tons at three local landfills that currently have a remaining life over 10 years. This includes the Waste Management–owned Guadalupe Landfill, which has 11,055,000 tons of remaining capacity.

Specialty Solid Waste and Recycling is contracted to provide collection service in Sunnyvale and is required to acquire additional equipment and/or employees as needed to accommodate growth. Landfill capacity, either at Kirby Canyon Landfill or at an alternate site provided by Waste Management, is expected to be available through at least 2031 under the terms of the current disposal agreement. Any additional City costs related to collection, transfer, or disposal as a result of increased tonnage collected or a change in disposal site will be incorporated into refuse collection rates charged to customers. Any future landfill expansion options would be subject to CEQA compliance obligations.

The Draft LUTE includes a policy that addresses solid waste impacts.

Policy 78: Encourage businesses to emphasize resource efficiency, environmental responsibility, and minimize pollution and waste in their daily operations.

The City continues to strive for additional reductions in solid waste. The City has historically met and exceeded its goals for waste diversion, as defined in the Sustainable City Plan, achieving a diversion rate of 66 percent in 2011. The City has developed a new Zero Waste Strategic Plan, intended to identify the new policies, programs, and infrastructure that will enable the City to reach its zero waste goals of 75 percent diversion by 2020 and 90 percent diversion by 2030. This would ensure that construction of new solid waste disposal facilities or substantial expansion of existing facilities would not be required. Therefore, this impact would be **less than significant**.

Mitigation Measures

None required.

### Compliance with Solid Waste Regulations (Standard of Significance 2)

**Impact 3.11.3.2** Implementation of the Draft LUTE would not result in conflicts with any federal, state, or local solid waste regulations. This impact would be **less than significant**.

State law requires that 50 percent of solid waste be diverted from landfills. As discussed in the Existing Setting subsection above, Sunnyvale had a waste diversion rate of 66 percent in 2011, and under current methods for tracking progress with AB 939, per capita disposal rates in Sunnyvale are less than the targets. Therefore, the City is in compliance with the AB 939 diversion

[9] Calculated as follows: 54,020 tons/0.22 tons per cubic yard = 245,545 cubic yards

mandate. Additionally, the City of Sunnyvale has committed to the waste reduction programs, plans, and policies discussed above, and such requirements would apply to new development under the Draft LUTE. Construction of projects developed under the Draft LUTE that would result in demolition or renovation of existing structures would generate solid waste, and the City would require the recycling and reuse of materials to reduce landfill disposal. Therefore, the Draft LUTE would not conflict with a federal, state, or local statute or regulation related to solid waste disposal. This impact would be **less than significant**.

Mitigation Measures

None required.

### 3.11.3.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

#### CUMULATIVE SETTING

The cumulative setting for solid waste generation consists of jurisdictions in Santa Clara County that dispose of solid waste at the Guadalupe, Kirby Canyon, and Newby Island landfills, which receive the majority of the solid waste generated countywide. Most of Sunnyvale's solid waste is disposed at the Kirby Canyon Landfill.

#### CUMULATIVE IMPACTS AND MITIGATION MEASURES

**Cumulative Solid Waste Impacts**

**Impact 3.11.3.3** Implementation of the Draft LUTE, along with other existing, planned, proposed, approved, and reasonably foreseeable development in the region, would result in increased demand for landfill capacity. The Draft LUTE's contribution to this impact would be **less than cumulatively considerable**.

Additional growth in surrounding communities, such as Mountain View, Santa Clara, and Cupertino, would also generate solid waste. New development estimated to occur under the Draft LUTE would increase the generation of solid waste in Sunnyvale. By 2035, approximately 412,979 pounds (206.49 tons) of solid waste would be generated per day in Sunnyvale (including the Draft LUTE, Peery Park Specific Plan, and Lawrence Station Area Plan). This amount of waste represents approximately 12.6 percent of the permitted daily throughput of the Kirby Canyon Landfill or 5.9 percent of the throughput at the Monterey Peninsula Landfill. Regional landfill facilities would be able to serve both the growth expected to occur under the Draft LUTE and anticipated growth in surrounding jurisdictions that share the same landfill facilities.

Therefore, the Draft LUTE's contribution to impacts on solid waste management would be **less than cumulatively considerable**.

Mitigation Measures

None required.

## 3.11.4 ELECTRICITY, NATURAL GAS, AND ENERGY USE

### 3.11.4.1 EXISTING SETTING

#### Electricity and Natural Gas Services

The Pacific Gas and Electric Company (PG&E) supplies electricity and natural gas services to Sunnyvale through State-regulated public utility contracts. Electricity and natural gas service is available to locations where housing units and industrial/office/commercial space could be developed under the Draft LUTE.

The City's ongoing development review process includes a review and comment opportunity for privately owned utility companies, including PG&E, to allow informed input from each utility company on all development proposals. This input facilitates a detailed review of all projects by service providers to assess potential demands for utility services on a project-by-project basis.

PG&E's ability to provide services concurrently with each project is evaluated during the development review process. The utility company is bound by contract to update the systems to meet any additional demand. PG&E's Electric and Gas Rules 15 and 16 establish guidelines for the extension of distribution lines necessary to furnish permanent services to customers. PG&E also outlines responsibilities for installation and extension allowances, as well as financial contributions by project applicants.

#### ENERGY

Energy use is typically quantified using the British thermal unit (BTU). As a point of reference, the approximate amounts of energy contained in common energy sources are shown in **Table 3.11.4-1.**

**TABLE 3.11.4-1**
**BRITISH THERMAL UNIT EQUIVALENTS FOR COMMON ENERGY SOURCES**

| Energy Source | BTUs |
|---|---|
| Gasoline | 120,388–124,340 per gallon |
| Diesel Fuel | 138,490 per gallon |
| Natural Gas (compressed gas) | 22,453 per pound |
| Electricity | 3,414 per kilowatt-hour |

*Source: USDOE 2014*

Total energy use in California was 7,641 trillion BTUs in 2012, which equates to an average of 201 million BTUs per capita. Of California's total energy use, the breakdown by sector is 38.5 percent transportation, 22.8 percent industrial, 19.3 percent commercial, and 19.2 percent residential. Electricity and natural gas in California are generally consumed by stationary users such as residences and commercial and industrial facilities, whereas petroleum consumption is generally accounted for by transportation-related uses (EIA 2015). In 2014, taxable gasoline sales (including aviation gasoline) in California accounted for 14,702,632,422 gallons (BOE 2015).

Santa Clara County's electricity and natural gas consumption from 2006 to 2013 is shown in **Tables 3.11.4-2** and **3.11.4-3**. As indicated, demand has remained relatively constant, with no substantial increase, even as the population has increased.

**TABLE 3.11.4-2**
**SANTA CLARA COUNTY ELECTRICITY CONSUMPTION (IN MILLIONS OF KWH) 2006–2013**

| Year | Residential | Nonresidential | Total |
|---|---|---|---|
| 2007 | 3,898 | 12,555 | 16,453 |
| 2008 | 3,953 | 12,767 | 16,721 |
| 2009 | 3,970 | 12,582 | 16,552 |
| 2010 | 3,924 | 12,326 | 16,251 |
| 2011 | 3,923 | 12,636 | 16,560 |
| 2012 | 3,884 | 12,611 | 16,496 |
| 2013 | 3,907 | 12,705 | 16,613 |
| 2014 | 3,830 | 12,840 | 16,670 |

*Source: ECDMS 2015*

**TABLE 3.11.4-3**
**SANTA CLARA COUNTY NATURAL GAS CONSUMPTION (IN MILLIONS OF THERMS) 2006–2013**

| Year | Residential | Nonresidential | Total |
|---|---|---|---|
| 2007 | 263 | 210 | 473 |
| 2008 | 268 | 199 | 468 |
| 2009 | 264 | 189 | 453 |
| 2010 | 260 | 186 | 446 |
| 2011 | 271 | 194 | 465 |
| 2012 | 257 | 192 | 450 |
| 2013 | 265 | 199 | 465 |
| 2014 | 213 | 188 | 402 |

*Source: ECDMS 2015*

Sunnyvale's electricity consumption in 2014 was approximately 268 million kilowatt-hours (kWh) for residential uses and approximately 1,330 million kWh for nonresidential uses, for a combined total of approximately 1,598 million kWh (just under 10 percent of the countywide total for 2013). Residential natural gas consumption in 2014 was approximately 17 million therms and nonresidential use was approximately 22 million therms, for a combined total of 39 million therms (also just under 10 percent of the countywide total for 2013) (Sunnyvale 2016).

### 3.11.4.2 REGULATORY FRAMEWORK

#### STATE

#### California Building Energy Efficiency Standards

In general, the California Building Energy Efficiency Standards require the design of building shells and building components to conserve energy. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods.

The California Energy Commission adopted changes to the 2013 Building Energy Efficiency Standards contained in the California Code of Regulations, Title 24, Part 6 (also known as the California Energy Code) and associated administrative regulations in Part 1 (collectively referred to here as the standards). The amended standards took effect in the summer of 2014. The Building Energy Efficiency Standards are 25 percent more efficient than previous standards for residential construction and 30 percent more efficient for nonresidential construction. The standards offer builders better windows, insulation, lighting, ventilation systems, and other features that reduce energy consumption in homes and businesses. Energy-efficient buildings require less electricity, and increased energy efficiency reduces fossil fuel consumption.

### California Green Building Standards

The California Green Building Standards Code (California Code of Regulations, Title 24, Part 11), commonly referred to as the CALGreen Code, is a statewide mandatory construction code that was developed and adopted by the California Building Standards Commission and the California Department of Housing and Community Development. The CALGreen standards require new residential and commercial buildings to comply with mandatory measures under the topics of planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and environmental quality. CALGreen also has voluntary tiers and measures that local governments may adopt that encourage or require additional measures in the five green building topics. The most recent update to the CALGreen Code was adopted in 2013 and went into effect July 1, 2014.

### California Environmental Quality Act Guidelines

CEQA Guidelines Appendix F, Energy Conservation, requires consideration of project impacts on energy and focuses particularly on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy (Public Resources Code Section 21100[b][3]). The potentially significant energy implications of a project must be considered in an EIR to the extent relevant and applicable to the project.

## LOCAL

### City of Sunnyvale Climate Action Plan

The City's Climate Action Plan (CAP) contains several action items that address energy use.

Action Item EC-1.3 Use of energy-efficient lighting technologies for parking lot lighting.

Action Item EC-2.2 Requirement of energy-efficient orientation of buildings (a building's orientation coupled with landscape material considerations shall be designed for maximum energy efficiency).

Action Item EC-5.1 Installation of interior real-time energy monitors.

Action Item EC-6.2 Require new multi-family buildings and re-roofing projects to install "cool roofs" consistent with the current California Green Building Code (CALGreen) standards for commercial and industrial buildings.

Action Item EP-2.1 Pre-wiring for solar water heating and solar electricity.

Action Item OR-1.2 Installation of electrical outlets on the exterior of buildings at an accessible location to charge electric-powered lawn and garden equipment.

Action Item OVT-1.1 Designation of preferred parking stalls for electric, hybrid, and other alternative-fuel vehicles in all public and private parking lots consistent with the California Green Building Code.

Action Item OVT-1.3 Require sufficient electrical service in the garages/parking facilities of new residential development to support electric vehicle charging.

### 3.11.4.3 IMPACTS AND MITIGATION MEASURES

#### STANDARDS OF SIGNIFICANCE

According to Appendix F of the CEQA Guidelines, significant long-term operational or direct energy impacts would occur if implementation of the Draft LUTE would:

1) Cause wasteful, inefficient, and unnecessary consumption of energy during project construction, operation, and/or maintenance, or preempt future energy development or future energy conservation.

2) Place a substantial demand on regional energy supply or require significant additional capacity, the construction of which could result in environmental impacts or significantly increase peak and base period electricity demand.

#### METHODOLOGY

The impact analysis focuses on the three sources of energy that are relevant to subsequent projects which could be developed under the Draft LUTE: electricity, natural gas, and transportation fuel for vehicle trips associated with new development.

The analysis of electricity and natural gas use is based on California Emissions Estimator Model (CalEEMod) air quality and greenhouse gas emissions modeling, which quantifies energy use for occupancy with and without mitigation. The results of CalEEMod modeling are included in **Appendix F** of this Draft EIR. Modeling was based primarily on the default settings in the computer program for Santa Clara County. The amount of fuel use was estimated using the California Air Resources Board's EMFAC2014 computer program, which also includes assumptions for typical daily fuel use in Santa Clara County.

**Energy Consumption Impacts (Standards of Significance 1 and 2)**

**Impact 3.11.4.1** Development of subsequent projects under the Draft LUTE would result in increased energy demand under both project and cumulative conditions. This Draft LUTE's contribution to this impact would be **less than cumulatively considerable**.

Energy Consumption

Energy consumption associated with residential and employment uses under the Draft LUTE is summarized in **Table 3.11.4-4**. This level of energy use would constitute approximately 1.3 percent of the typical annual energy consumption of residential units and nonresidential square footage in the county as reported by the California Energy Consumption Data Management

System (ECDMS 2015). (1,239,656,856,600 BTUs for project/97,101,784,000,000 BTUs for all residential and nonresidential uses in Santa Clara County = 1.3 percent.)

**TABLE 3.11.4-4**
**ENERGY CONSUMPTION FROM DRAFT LUTE BUILDOUT**

| Source | Kilowatt-Hours Annually (electricity) | kBTU Annually (natural gas) | BTU Equivalent Annually (all energy combined) |
|---|---|---|---|
| Draft LUTE | 232,631,900 | 445,451,550 | 1,239,656,856,600 |

*Source: CalEEMod 2013.2.2*

Subsequent projects would be required to comply with Title 24 Building Energy Efficiency Standards, which provide minimum efficiency standards related to various building features, including appliances, water and space heating and cooling equipment, building insulation and roofing, and lighting. Implementation of the Title 24 standards significantly reduces energy use. Future development projects in the city would also be required to comply with applicable provisions of the Sunnyvale Climate Action Plan, which are listed in the Regulatory Framework subsection, above.

Further, the electricity provider in Santa Clara County, PG&E, is subject to California's Renewables Portfolio Standard (RPS). The RPS requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020, and to 50 percent of total procurement by 2030. Renewable energy is generally defined as energy that comes from resources that are naturally replenished within a human timescale such as sunlight, wind, tides, waves, and geothermal heat. The increase in reliance on such energy resources further ensures projects will not result in the waste of finite energy resources.

The exact timing and extent of construction of development projects under the Draft LUTE are unknown. However, it is acknowledged that construction activities would involve the temporary use of energy in the form of fuel for construction equipment and vehicles, as well as electricity. However, it would be speculative to quantify construction energy use.

### Vehicle Trips Fuel Consumption

According to the traffic analysis prepared for the project by Hexagon Transportation Consultants (2015), implementation of the Draft LUTE would increase total daily vehicle miles traveled (VMT) beyond current conditions. These additional daily traffic trips in Santa Clara County would result in the consumption of 44,207 gallons of automotive fuel daily (see **Appendix F**). Per EMFAC2014, overall automotive gasoline consumption in Santa Clara County is projected to decline by approximately 32 percent between 2015 and 2035, from 2,214,420 gallons of gasoline consumed daily in 2015 to 1,507,094 gallons of gasoline consumed daily in 2035. The addition of 44,207 gallons of automotive fuel consumed daily would not inhibit the rate of this projected decline.

Implementation of the Draft LUTE would improve Sunnyvale and Santa Clara County VMT per capita as compared to the current LUTE in 2035 (see **Table 3.4-1** in Section 3.4, Transportation and Circulation).

For the reasons described above, the Draft LUTE would not cause wasteful, inefficient, and unnecessary consumption of energy during project construction, operation, and/or maintenance, nor would it preempt future energy development or future energy conservation. The Draft LUTE's contribution to this impact would be **less than cumulatively considerable**.

Energy Infrastructure

PG&E currently provides electrical and natural gas services to Sunnyvale and would continue to provide these services to future development resulting from projects developed under the Draft LUTE. PG&E is required by the California Public Utilities Commission to update existing systems to meet any additional demand. PG&E builds new infrastructure on an as-needed basis. Any electrical and natural gas distribution lines, substations, transmission lines, delivery facilities, and easements required to serve buildout of the Draft LUTE would be subject to CEQA review by PG&E. However, it is expected that much of the distribution infrastructure would be co-located with other utilities underground within roadway rights-of-way in order to minimize the extent of potential environmental effects. Potential environmental effects for the construction of transmission lines include, but are not limited to: air quality (during construction), biological resources (depending on location), cultural resources (depending on location), hazardous materials, land use, noise and vibration (during construction), traffic, visual resources, and health hazards. Potential environmental effects of obtaining more power through the development of power plants include, but are not limited to: air quality, biological resources, cultural resources (depending on location), hazardous materials, land use, noise and vibration, traffic, visual resources, waste management, water and soil resources, and health hazards. Because the specific facilities, if any, that would be required cannot be identified with any certainty, such impacts would be speculative and do not require evaluation in this EIR. The Draft LUTE's contribution to this impact would be **less than cumulatively considerable**.

Mitigation Measures

None required.

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# 3.12 Visual Resources and Aesthetics

This section describes the existing visual resources in Sunnyvale, summarizes its landscape characteristics, and discusses the impacts associated with implementation of the Draft LUTE. The analysis focuses on the anticipated alteration of the landscape characteristics and potential visual resource impacts in Sunnyvale. Key issues addressed in this section include alteration of existing scenic resources (potential degradation of scenic resources or views of scenic resources), visual character, and urban lighting characteristics (increased nighttime light and daytime glare).

A summary of the impact conclusions related to visual resources and aesthetics is provided below.

| Impact Number | Impact Topic | Impact Significance |
|---|---|---|
| 3.12.1 | Substantial Adverse Effect on a Scenic Vista | Less than significant |
| 3.12.2 | Alteration of Scenic Resources in a Scenic Highway | No impact |
| 3.12.3 | Alteration of Visual Character | Less than significant |
| 3.12.4 | Nighttime Light and Increased Overall Lighting and Glare | Less than significant |
| 3.12.5 | Cumulative Impacts to Visual Character and Scenic Resources | Less than cumulatively considerable |

## 3.12.1 EXISTING SETTING

### REGIONAL AND LOCAL CONTEXT

The Santa Clara Valley has a diversity of natural settings and landscapes that are unique in the San Francisco Bay Area. The valley is defined by San Francisco Bay to the north, the coastal mountain range to the west and south, and the Diablo Range to the east. San Francisco Bay and the mountain ranges that define the valley provide scenic views of lush evergreen forests, oak woodlands, bay lands, wetlands, and other natural features. The valley floor features a wide variety of settings, including high-technology employment centers, residential neighborhoods, and downtown settings, both large and small. There are also open space areas throughout the valley, including active and passive parks, golf courses, natural rivers, and stream corridors.

Sunnyvale is almost entirely surrounded by the cities of Santa Clara, Cupertino, Los Altos, and Mountain View. Ninety-eight percent of Sunnyvale is built out. Continuing growth has resulted in diminishing vacant land in the city.

The most visible landmarks in Sunnyvale are the Moffett Federal Airfield dirigible hangars. These hangars are often difficult to see from within Sunnyvale but are highly visible throughout the Bay Area and orient air travelers flying into the region. Other landmarks in Sunnyvale include vertical landmarks such as the Libby Water Tower, historic landmarks such as the Murphy Avenue Commercial District, and horizontal landmarks such as the cherry orchards on Mathilda Avenue near El Camino Real.

There are no designated scenic vistas or viewsheds in the Planning Area.

## SIGNIFICANT FEATURES

### Waterways

The northern tip of Sunnyvale is located along the southern shoreline of San Francisco Bay. Stevens Creek traverses along the western border of the city south of West El Camino Real. Homes have been built all along this creek, obscuring most views and limiting access. Calabazas Creek traverses the eastern border of Sunnyvale north of Central Expressway (see **Figure 3.8-1**). Other waterways in the city, as identified in **Figure 3.8-1**, include the Moffett Channel and levees surrounded by canals/ditches in the northern part of the city.

Refer to Section 3.8, Hydrology and Water Quality, for a more detailed discussion of the area's waterways.

### Tree Resources

The city is dominated by many native tree types, such as valley oak, blue oak, interior live oak, cottonwood, sycamore, and willow. These tree types, found in rural and urban areas, propagate and grow under natural conditions. These trees also provide a visual break from the uniformity of urban development. Non-native trees are also found in the city, mostly planted for ornamental value, shade, resistance to particular pests, or proven adaptation to the urban environment.

There are no woodland corridors in Sunnyvale, except riparian corridors along area waterways. Several roadways in the city are lined with mature trees.

Sunnyvale maintains a Heritage Resources Inventory of landmarks, trees, residential and commercial districts, and individual structures of local importance. The Vargas redwood trees are a Local Landmark (Sunnyvale 2015). These coast redwoods were planted in 1900 at the entrance to the Vargas family home (see **Table 3.10-1** in Section 3.10, Cultural Resources). The Heritage Resources Inventory also identifies 15 heritage tree locations (see **Table 3.10-2** in Section 3.10).

### Scenic Highways

According to the California Scenic Highway Mapping System (Caltrans 2014), Interstate 280 (the Junipero Serra Freeway), traversing the south border of Sunnyvale, is an eligible state scenic highway, but it is not officially designated. No other scenic highways traverse the city. The status of a scenic highway changes from eligible to officially designated when the local jurisdiction adopts a scenic corridor protection program, applies to the California Department of Transportation (Caltrans) for scenic highway approval, and receives notification from Caltrans that the highway has been designated as a scenic highway (Caltrans 2014). The City has not taken action to officially designate Interstate 280 as a scenic highway.

### Historic Visual Resources

Historic visual resources are important features of a community's history, providing a link between the visual landscape of the past and the urbanized landscape that characterizes the present. Examples of historic visual resources include buildings, structures, landmarks, monuments, and other visually prominent features. **Table 3.10-1** in Section 3.10, Cultural Resources, of this Draft EIR lists the heritage resources in the city, as described in the Heritage Resources Inventory. For discussion on historic resources in Sunnyvale, refer to Section 3.10.

### Light and Glare

Nighttime lighting and glare in Sunnyvale mostly occur in and around the more densely developed areas in the city, although residential and industrial areas produce limited amounts of nighttime lighting. Existing sources of ambient nighttime lighting generally include neon and fluorescent signs in developed areas; exterior lighting installed along buildings for safety, architectural accent, or to illuminate nighttime operations; lights in buildings that illuminate the exteriors of buildings through windows; landscape and wayfinding sign lighting; street and parking lot lighting; vehicle headlights; sports field lighting; and freeway lighting. Glare is generally created by the reflection of natural (i.e., sunlight) and artificial light off existing windows and building surfaces associated with the built-out environment.

## 3.12.2 REGULATORY FRAMEWORK

### STATE

### State Scenic Highway Program

In 1963, the California legislature created the Scenic Highway Program to preserve and protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to state highways. The state regulations and guidance governing the Scenic Highway Program are found in Streets and Highways Code Section 260 et seq. A highway may be designated scenic depending on how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes on the traveler's enjoyment of the view. A scenic corridor is the land generally adjacent to and visible from the highway and is identified using a motorist's line of vision. A reasonable boundary is selected when the view extends to the distant horizon.

### Nighttime Sky – Title 24 Outdoor Lighting Standards

The California Energy Commission regulates the energy efficiency of outdoor lighting for residential and nonresidential development. The standards, put in place in 2005, have helped to improve the quality of outdoor lighting and help to reduce the impacts of light pollution, light trespass, and glare. The standards regulate lighting characteristics such as maximum power and brightness, shielding, and sensor controls to turn lighting on and off. Different lighting standards are set by classifying areas by lighting zone. The classification is based on population figures of the 2000 Census. Areas can be designated as LZ1 (dark), LZ2 (rural), or LZ3 (urban). Sunnyvale is classified LZ3.

### LOCAL

### City of Sunnyvale General Plan

The General Plan Community Character chapter is divided into five sub-chapters: Design, Heritage Preservation, Library, Arts, and Recreation. The Design sub-chapter addresses the quality of the city's physical environment in both the public and private realms. This sub-chapter establishes design policies and action statements to guide future growth and to enhance the visual quality of new development. The policies and action statements are grouped by the following topics or goals:

- Distinguished City Image

- Attractive Street Environment
- Well-Designed Sites and Buildings
- Accessible and Attractive Public Facilities

### City of Sunnyvale Zoning Code

Sunnyvale Municipal Code Title 19 (Zoning Code) includes development standards and regulations that are meant to enhance the visual quality of new development through building height limits, building density, building design and landscaping standards, architectural features, setback requirements, sign regulations, lighting and illumination requirements, usable open space requirements, and public artwork in private developments.

The Zoning Code promotes good design and careful planning of development projects to enhance the visual environment. The City's development review process includes the review of preliminary plans and the consideration of public input by the Zoning Administrator, the Planning Commission, and the City Council. Sunnyvale's Planning Division reviews private and public development applications for conformance with City plans, ordinances, and policies related to zoning, urban design, subdivisions, and the California Environmental Quality Act (CEQA).

The Zoning Administrator makes recommendations to the City Council for large development projects and makes final decisions for permits and variances, and the City Council makes final decisions on most large projects and issues affecting the city. The development review process ensures that the architecture and urban design of new developments would protect Sunnyvale's visual environment. Other boards and commissions with oversight and authority in regulating city architectural and visual design issues include the Arts Commission, Bicycle and Pedestrian Advisory Commission, Heritage Preservation Commission, and Parks and Recreation Commission.

Sunnyvale Municipal Code Chapter 19.42.050 provides restrictions on lighting would ensure that all lights, spotlights, floodlights, reflectors, and other means of illumination are shielded or equipped with special lenses in such a manner as to prevent any glare or direct illumination on any public street or other property.

### City of Sunnyvale Design Guidelines

The City of Sunnyvale established Citywide Design Guidelines in 1992 and has subsequently established other design guideline documents in order to provide a sufficient level of development guidance for future projects in various areas of the city. The design guidelines are intended to supplement (not replace) the building standards in the City's Zoning Code. The design guidelines establish only the minimum acceptable design standards for Sunnyvale. Future, individual projects in specific areas of the city would be required to comply with the relevant Citywide Design Guidelines and other applicable design guidelines as a condition of project approval. The following is a list of established design guidelines in Sunnyvale:

- Citywide Design Guidelines
- Industrial Design Guidelines
- Murphy Avenue Design Guidelines

- Murphy Avenue Sidewalk Use Regulations
- Single-Family Home Design Techniques
- Taafe Frances Heritage Neighborhood Design Guidelines
- Eichler Design Guidelines
- Tasman/Fair Oaks Area Pedestrian and Bicycle Design Guidelines

## 3.12.3 IMPACTS AND MITIGATION MEASURES

### STANDARDS OF SIGNIFICANCE

An aesthetic or visual resource impact is considered significant if implementation of the Draft LUTE would result in any of the following:

1) Have a substantial adverse effect on a scenic vista.
2) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.
3) Substantially degrade the existing visual character of quality of the site and its surroundings.
4) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

### METHODOLOGY

The visual resource analysis is based on field review of Sunnyvale, review of topographic conditions, and review of the Draft LUTE. This analysis is based on anticipated changes in Sunnyvale from implementation of the Draft LUTE as well as other anticipated development in the city.

### PROJECT IMPACTS AND MITIGATION MEASURES

**Substantial Adverse Effect on a Scenic Vista (Standard of Significance 1)**

**Impact 3.12.1** Implementation of the Draft LUTE would not have a substantial effect on a scenic vista. The impact is **less than significant**.

Implementation of the Draft LUTE could result in intensified development and increased building heights in Village Centers and other locations experiencing land use change, and future implementation actions could change community aesthetics (see Impact 3.12.2). These actions have the potential to result in alteration of Sunnyvale's visual features and existing urban conditions.

Sunnyvale does not have any designated scenic vistas, but there are several trees and historic resources detailed in the Existing Setting subsection, as well as the Libby Water Tower, the Murphy Avenue Commercial District, and the cherry orchards on Mathilda Avenue, that comprise important local scenic attributes. However, these views and resources would not be

significantly obstructed because of policies in place that would protect these resources, including zoning regulations, standard development conditions, the Citywide Design Guidelines, and the Murphy Avenue Design Guidelines noted above. The General Plan also includes policies that require preservation of existing landmarks and cultural resources and their environmental setting. Specifically, Policy CC-5.1 states that the City will preserve existing landmarks and cultural resources and their environmental settings, Policy CC-5.3 seeks to identify and work to resolve conflicts between the preservation of historic resources and alternative land uses

Subsequent development consistent with the Draft LUTE would not occur in protected natural areas, including the San Francisco Bay shoreline. In addition, streets and existing open spaces would be retained under the Draft LUTE in their existing configuration. Views from these publicly accessible viewpoints would remain unobstructed. Therefore, implementation of the Draft LUTE would not have a substantial adverse effect on scenic views and vistas. This impact is considered **less than significant.**

Mitigation Measures

None required.

### Alteration of Scenic Resources (Standard of Significance 2)

**Impact 3.12.2** Implementation of the Draft LUTE would not result in the significant alteration of scenic resources associated with a scenic highway. **No impact** would occur.

As previously described, there are no officially designated state scenic highways in Sunnyvale, and no portions of the city encompass the viewshed of a state scenic highway. Therefore, the Draft LUTE would not damage scenic resources within a state scenic highway. **No impact** would occur.

Mitigation Measures

None required.

### Alteration of Visual Character (Standard of Significance 3)

**Impact 3.12.3** Implementation of the Draft LUTE would not result in substantial alteration of the city's visual character. This impact would be **less than significant**.

In areas proposed for land use change under the Draft LUTE, new development would mostly be concentrated around transit nodes and other areas that are visually appropriate for increased development intensities in regards to densities and structure height similar to existing developed conditions along Mathilda. The Draft LUTE would result in new urban uses that would complement the city's existing urban character.

New development anticipated subsequent to adoption of the Draft LUTE would generally not affect areas with a high degree of scenic value, including areas with a concentration of historic structures, open space areas, and single-family residential neighborhoods. The visual character of change areas would be affected primarily through the intensification of existing urban uses, including mixed-use development along transit corridors and infill development, where such development is visually compatible with the existing urban fabric. Intensification of uses on these

sites would not have an adverse effect on visual character, as the city would retain its existing urban character.

Because development sites are limited in Sunnyvale, redevelopment encouraged under the Draft LUTE would be limited in scale and spatial coverage. In addition, this redevelopment would occur primarily in already developed areas and would not displace natural environments with a high level of visual quality.

Draft LUTE policies and associated actions address implementation of design guidelines to ensure the compatibility of land uses for protection of residential neighborhoods from incompatible activities. The proposed policies and actions identified below would require the use of design guidelines for subsequent development under the Draft LUTE and provide support for high-density and mixed-use residential development when the size, scale, and design of the projects are consistent with the character of surrounding neighborhoods.

The following Draft LUTE policies and actions address potential alteration of visual character.

Policy 51: Enforce design review guidelines and zoning standards that ensure the mass and scale of new structures are compatible with adjacent structures, and also recognize the City's vision of the future for transition areas such as neighborhood Village Centers and El Camino Real nodes.

Action 1: Review the City's zoning, building, and subdivision standards to ensure they support and contribute to the urban design principles set forth in General Plan policies.

Action 2: Develop zoning incentives (such as floor area bonuses or height exceptions) for projects that incorporate special architectural and pedestrian design features, such as landscaped courtyards or plazas.

Action 3: Enforce local design guidelines that ensure buildings and monuments to respect the character, scale, and context of the surrounding area.

Action 4: Ensure that new construction and renovation contribute to the quality and overall image of the community.

Action 5: Use the development review and permitting processes to promote high-quality architecture and site design.

Policy 52: Avoid monotony and maintain visual interest in newly developing neighborhoods, and promote appropriate architectural diversity and variety. Encourage appropriate variations in lot sizes, setbacks, orientation of homes, and other site features.

Action 1: Develop design guidelines that address the pedestrian scale of development.

Policy 53: Strengthen the image that the community is composed of cohesive residential neighborhoods, each with its own individual character and Village Center; allow change and reinvestment that reinforces positive neighborhood concepts and standards such as walkability, positive architectural character, site design, and proximity to supporting uses.

Action 1: Promote land use patterns and urban design in Village Centers that reflect context and iconic aspects of the surrounding neighborhood to strengthen the sense of uniqueness and community.

Action 2: Develop an area plan, development standards, or other guidelines for each Village Center to assist in achieving desired objectives and preserving or enhancing surrounding neighborhood values.

Action 5: Seek opportunities to create distinctive landmark features or focal elements at Village Centers and at points of entry or gateways into neighborhoods.

Policy 55: Require new development, renovation, and redevelopment to be compatible and well-integrated with existing residential neighborhoods.

Action 1: Utilize adopted City design guidelines to achieve compatible and complementary architecture and scale for new development, renovation, and redevelopment.

Action 2: Consider land use transitions, such as blended mixed-use zoning and graduated densities, in areas to be defined around Village Centers.

Action 3: Where an opportunity arises, consider integrating or co-locating a Village Center with a neighborhood park or open space.

Policy 56: Improve and preserve the character and cohesiveness of existing residential neighborhoods.

Action 1: Support neighborhood associations throughout Sunnyvale to facilitate community building and neighborhood identity and to encourage participation in land use and transportation decisions.

Action 2: Explore developing design standards and guidelines, similar to the Eichler Design Guidelines, to preserve the defining character of existing distinctive neighborhoods.

Action 3: Use land use and transportation policies, guidelines, regulations, and engineering specifications to respect community and neighborhood identities and values for quality and design.

Action 4: Establish standards and promote and support programs that result in the maintenance and rehabilitation of existing housing and residential neighborhoods.

Action 5: Develop special area plans and neighborhood preservation programs to guide change in neighborhoods that need special attention.

Action 6: Look for opportunities to reclaim unneeded and underperforming paved areas (public and private) that could be converted to neighborhood-enhancing features, such as additional tree coverage, gathering areas, pocket parks, or community gardens.

Policy 57: Limit the intrusion of incompatible uses and inappropriate development in and near residential neighborhoods, but allow transition areas at the edges of neighborhoods.

Action 1: Where appropriate, use higher-density residential and higher-intensity uses as buffers between neighborhood commercial centers and transportation and rail corridors.

Action 2: Require appropriate noise attenuation, visual screening, landscape buffers, or setbacks between residential areas and dissimilar land uses.

Action 3: While respecting the character of existing residential neighborhoods, consider interspersing duets, paired homes, and similar housing that are designed to appear as one dwelling in new single-family subdivisions to introduce greater housing choices.

Policy 89: Improve the visual appearance of business areas and districts by applying high standards of architectural design, landscaping, and sign standards for new development and the re-use or remodeling of existing buildings.

Policy 91: Support a full spectrum of conveniently located commercial uses and shopping centers that add to the positive image of the community.

Action 1: Utilize adopted City design guidelines to achieve compatible architecture and scale for renovation and new development in shopping centers and commercial buildings.

Action 2: Promote commercial uses and designs that mitigate a boxy appearance or mass of large buildings (e.g., wall offsets, building articulation, or pedestrian scale design).

Action 3: Promote distinctive and well-coordinated master sign programs for commercial centers and Downtown.

Action 4: Develop a toolkit that addresses the pedestrian focus of shopping areas by encouraging pedestrian oriented architecture that addresses the street (e.g. uniform setbacks, continuous building façades, building articulation, and appropriate signage).

Policy 95: Require high design standards for office, industrial, and research and development buildings in all business districts.

Action 1: Utilize adopted City design guidelines to achieve compatible architecture and scale for renovation and new development in business areas.

Action 2: Maintain and review, as needed, criteria for superior quality architecture, landscaping, and site development for office, industrial, and research and development projects that request to develop beyond standard floor area ratio limits.

Action 3: Carefully review the impacts, such as noise, odors, and facility operations, of commercial, office, and industrial uses and development adjacent to residential areas.

Policy 97: Prepare specific area plans and special zoning tools (including but not limited to specific plans, precise plans, design guidelines, specialized zoning, and sense of place plans) to guide change in areas of the planning area that need special attention.

In addition, the existing Citywide Design Guidelines (amended most recently in 2014) would apply to areas that do not have specific design guidelines. These guidelines are based on General Plan goals and policies and mainly address development projects on private properties. The guidelines are intended to enhance the city's overall image, protect and preserve the existing character of the community, communicate the image the community desires, and achieve higher design quality. The Citywide Design Guidelines are also intended to create a balance between protecting existing neighborhood character and accommodating new development.

The Draft LUTE policies and associated actions listed above require compliance with design guidelines for future development subsequent to the Draft LUTE and would maintain compatibility with existing surrounding neighborhoods. These guidelines would further support the direction provided in the Citywide Design Guidelines. This would ensure that the impacts to the alteration of visual character in Sunnyvale are **less than significant**.

Mitigation Measures

None required.

### Nighttime Light and Increased Overall Lighting and Glare (Standard of Significance 4)

**Impact 3.12.4** Implementation of the Draft LUTE could result in an increase of daytime glare and/or nighttime lighting. However, continued compliance with the Citywide Design Guidelines and existing lighting regulations would result in a **less than significant** impact.

Implementation of the Draft LUTE may introduce new sources of daytime glare and may change nighttime lighting and illumination levels. Lighting nuisances typically are categorized as follows:

- Glare – intense light that shines directly or is reflected from a surface into a person's eyes
- "Skyglow"/Nighttime Illumination – artificial lighting from urbanized sources that alters the rural landscape in sufficient quantity to cause lighting of the nighttime sky and reduction of visibility of stars and other astronomical features
- "Spillover" Lighting – artificial lighting that spills over onto adjacent properties, which could interrupt sleeping patterns or cause other nuisances to neighboring residents

The main sources of daytime glare in Sunnyvale are from sunlight reflecting from structures with reflective surfaces such as windows. Subsequent development under the Draft LUTE would include residential, commercial, and office structures and other potential sources of glare. Building materials (i.e., reflective glass, polished surfaces) are the most substantial sources of glare. The amount of glare depends on the intensity and direction of sunlight, which is more

acute at sunrise and sunset because the angle of the sun is lower at those times. New reflective building surfaces (including windows) would be similar to those that characterize existing urban development in Sunnyvale.

A source of glare during the nighttime hours is artificial light. The sources of new and increased nighttime lighting and illumination include, but are not limited to, new residential development, lighting from nonresidential uses, lights associated with vehicular travel (i.e., car headlights), street lighting, parking lot lights, and security-related lighting for nonresidential uses. Increased nighttime lighting and illumination could result in adverse effects to adjacent land uses from light spilling over into these areas and sky glow conditions, as described above. New lighting would be similar to that in existing urban development in Sunnyvale.

Citywide Design Guideline 3.B9 provides guidance on reducing light impacts and associated glare. Guideline 2.E3 provides design considerations to address glare, such as avoiding large expanses of highly reflective surfaces and mirror glass exterior walls. Furthermore, compliance with Sunnyvale Municipal Code Chapter 19.42.050 regarding restrictions on lighting would ensure that all lights, spotlights, floodlights, reflectors, and other means of illumination are shielded or equipped with special lenses in such a manner as to prevent any glare or direct illumination on any public street or other property.

As identified above, compliance with the Citywide Design Guidelines and existing provisions of the Sunnyvale Municipal Code would ensure that the Draft LUTE would result in **less than significant** glare and lighting impacts.

Mitigation Measures

None required.

## 3.12.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

### CUMULATIVE SETTING

The cumulative setting for visual and aesthetic impacts for the Draft LUTE includes 2035 buildout of Sunnyvale and communities surrounding the city, including Cupertino, Mountain View, Santa Clara, and Los Altos.

### CUMULATIVE IMPACTS AND MITIGATION MEASURES

**Cumulative Impacts to Visual Character and Scenic Resources**

**Impact 3.12.5** Implementation of the Draft LUTE, in combination with cumulative development in surrounding communities, could result in potentially significant light and glare impacts. However, the Draft LUTE's contribution to this impact would be **less than cumulatively considerable**.

Subsequent development anticipated under the Draft LUTE could result in changes to the visual environment. These changes would occur in already urbanized areas and would generally complement existing developed conditions. Similar types and intensities of development are anticipated by 2035 in surrounding areas. In conjunction with development associated with the Draft LUTE, this development would not impact views of surrounding visual features. These urbanized areas are characterized by change over time associated with new roadways, maturing vegetation, and infill development. Due to expected growth patterns in Sunnyvale

and in surrounding communities, changes to the visual environment would generally include densification of downtown areas, streetscape improvements, and taller buildings surrounding transit stations and along major transportation corridors. Mountain and bay shoreline scenic open space areas in the Santa Clara County region are generally protected as permanent open space, and scenic views of these areas would remain.

The visual resource policies and associated actions of the Draft LUTE, listed in Impacts 3.12.2 and 3.12.3 above, would protect visual resources in Sunnyvale. These policies are intended to enhance the overall appearance of Sunnyvale and encourage the implementation of sound principles of urban design. In addition, the visual character of established residential neighborhoods would be protected. These policies are expected to enhance the quality of the visual environment in Sunnyvale over time. Similar policies and design review procedures would be implemented in surrounding cities, with similar expected effects.

Future anticipated development in communities surrounding Sunnyvale would increase light and glare. New development in Sunnyvale, which would result in new outdoor lighting and the use of reflective building materials, would contribute to these increased levels of light and glare. These increased levels of light and glare could compromise daytime and nighttime views. This would be considered a potentially significant cumulative impact. However, incremental increases in light and glare in Sunnyvale associated with anticipated future development under the Draft LUTE would not make a significant cumulative contribution to adverse light and glare with compliance with existing Municipal Code Citywide Design Guidelines provisions. Therefore, the Draft LUTE's contribution to this cumulative impact would be **less than cumulatively considerable**.

Mitigation Measures

None required.

## REFERENCES

Caltrans (California Department of Transportation). 2014. California Scenic Highway Mapping System. http://www.dot.ca.gov/hq/LandArch /scenic_highways/index.htm.

Sunnyvale, City of. 2015. City of Sunnyvale Heritage Resources Inventory. http://sunnyvale.ca.gov/Portals/0/Sunnyvale/CDD/Residential/Heritage%20Resources%20and%20Landmark%20Alteration%20%20Inventory-%20%20FINAL.pdf.

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# 3.13 Greenhouse Gases and Climate Change

This section discusses the Draft LUTE's effect on greenhouse gas (GHG) emissions and the associated effects of climate change. The California Environmental Quality Act (CEQA) requires that lead agencies consider the reasonably foreseeable adverse environmental effects of projects they are considering for approval. The reader is referred to Section 3.5, Air Quality, for a discussion of project impacts associated with air quality.

A summary of impact conclusions is provided below.

| Impact Number | Impact Topic | Impact Significance |
|---|---|---|
| 3.13.1 | Generation of Greenhouse Gas Emissions and Compliance with Sunnyvale Climate Action Plan | Less than cumulatively considerable |

## 3.13.1 EXISTING SETTING

### EXISTING CLIMATE SETTING

Since the early 1990s, scientific consensus holds that the world's population is releasing GHGs faster than the earth's natural systems can absorb them. These gases are released as byproducts of fossil fuel combustion, waste disposal, energy use, land use changes, and other human activities. This release of gases, such as carbon dioxide ($CO_2$), methane ($CH_4$), and nitrous oxide ($N_2O$), creates a blanket around the earth that allows light to pass through but traps heat at the surface, preventing its escape into space. While this is a naturally occurring process known as the greenhouse effect, human activities have accelerated the generation of GHGs beyond natural levels. The overabundance of GHGs in the atmosphere has led to a warming of the earth and has the potential to severely impact the earth's climate system.

While often used interchangeably, there is a difference between the terms *climate change* and *global warming*. According to the National Academy of Sciences, climate change refers to any significant, measurable change of climate lasting for an extended period of time that can be caused by both natural factors and human activities. Global warming, on the other hand, is an average increase in the temperature of the atmosphere caused by increased GHG emissions. Use of the term *climate change* is becoming more prevalent because it encompasses all changes to the climate, not just temperature.

To fully understand global climate change, it is important to recognize the naturally occurring greenhouse effect and to define the GHGs that contribute to this phenomenon. Various gases in the earth's atmosphere, classified as atmospheric GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space and a portion of the radiation is absorbed by the earth's surface. The earth emits this radiation back toward space, but the properties of the radiation change from high-frequency solar radiation to lower-frequency infrared radiation. Greenhouse gases, which are transparent to solar radiation, are effective in absorbing infrared radiation. As a result, this radiation that otherwise would have escaped back into space is now retained, resulting in a warming of the atmosphere. This phenomenon is known as the greenhouse effect. Among the prominent GHGs contributing to the greenhouse effect are $CO_2$, $CH_4$, and $N_2O$.

**Table 3.13-1** provides descriptions of the primary GHGs attributed to global climate change, including a description of their physical properties, primary sources, and contribution to the greenhouse effect.

**TABLE 3.13-1**
**GREENHOUSE GASES**

| Greenhouse Gas | Description |
|---|---|
| Carbon Dioxide ($CO_2$) | Carbon dioxide is a colorless, odorless gas. $CO_2$ is emitted in a number of ways, both naturally and through human activities. The largest source of $CO_2$ emissions globally is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, industrial facilities, and other sources. A number of specialized industrial production processes and product uses such as mineral production, metal production, and the use of petroleum-based products can also lead to $CO_2$ emissions. The atmospheric lifetime of $CO_2$ is variable because it is so readily exchanged in the atmosphere.[1] |
| Methane ($CH_4$) | Methane is a colorless, odorless gas and is the major component of natural gas, about 87 percent by volume. It is also formed and released to the atmosphere by biological processes occurring in anaerobic environments. Methane is emitted from a variety of both human-related and natural sources. Human-related sources include fossil fuel production, animal husbandry (intestinal fermentation in livestock and manure management), rice cultivation, biomass burning, and waste management. These activities release significant quantities of $CH_4$ to the atmosphere. Natural sources of $CH_4$ include wetlands, gas hydrates, permafrost, termites, oceans, freshwater bodies, non-wetland soils, and other sources such as wildfires. The atmospheric lifetime of $CH_4$ is about12 years.[2] |
| Nitrous Oxide ($N_2O$) | Nitrous oxide is a clear, colorless gas with a slightly sweet odor. Nitrous oxide is produced by both natural and human-related sources. Primary human-related sources of $N_2O$ are agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuels, adipic acid production, and nitric acid production. Nitrous oxide is also produced naturally from a wide variety of biological sources in soil and water, particularly microbial action in wet tropical forests. The atmospheric lifetime of $N_2O$ is approximately 120 years.[3] |

*Sources: [1] EPA 2011a, [2] EPA 2011b, [3] EPA 2010*

Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime, or persistence, of the gas molecule in the atmosphere; this is known as the global warming potential of the gas. Methane traps over 34 times more heat per molecule than $CO_2$, and $N_2O$ absorbs 298 times more heat per molecule than $CO_2$. Often, estimates of GHG emissions are presented in carbon dioxide equivalents ($CO_2e$), which weigh each gas by its global warming potential. Expressing GHG emissions in $CO_2e$ takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only $CO_2$ were being emitted.

The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; suffice it to say the quantity is enormous, and no single project alone would measurably contribute to a noticeable incremental change in the global average temperature or to global, local, or microclimates. From a CEQA standpoint, greenhouse gas impacts to global climate change are inherently cumulative.

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the transportation, industrial/manufacturing, utility, residential, commercial, and agricultural emissions sectors. California is a significant emitter of $CO_2e$ in the world and produced 441.5 million gross metric tons of $CO_2e$ in 2014. In the state, the transportation sector is the largest emitter of GHGs, followed by electricity generation (CARB 2014).

Emissions of $CO_2$ are byproducts of fossil fuel combustion. $CH_4$, a highly potent GHG, primarily results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) and is largely associated with agricultural practices and landfills.

$N_2O$ is also largely attributable to agricultural practices and soil management. $CO_2$ sinks, or reservoirs, include vegetation and the ocean, which absorb $CO_2$ through sequestration and dissolution ($CO_2$ dissolving into the water), respectively, two of the most common processes for removing carbon dioxide from the atmosphere.

### EFFECTS OF GLOBAL CLIMATE CHANGE

The Intergovernmental Panel on Climate Change (IPCC) was established in 1988 by the World Meteorological Organization and the United Nations Environment Programme to provide the world with a scientific view on climate change and its potential effects. According to the IPCC, global average temperature is expected to increase relative to the 1986–2005 period by 0.3 to 4.8 degrees Celsius (°C) (0.5–8.6 degrees Fahrenheit [°F]) by the end of the twenty-first century (2081–2100), depending on future GHG emission scenarios. According to the California Natural Resources Agency (2012, p. 2), temperatures in California are projected to increase 2.7°F above 2000 averages by 2050 and, depending on emission levels, 4.1–8.6°F by 2100.

Physical conditions beyond average temperatures could be indirectly affected by the accumulation of GHG emissions. For example, changes in weather patterns resulting from increases in global average temperature are expected to result in a decreased volume of precipitation falling as snow in California and an overall reduction in snowpack in the Sierra Nevada. Based on historical data and modeling, the California Department of Water Resources (2008, p. 4) projects that the Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by 2050. An increase in precipitation falling as rain rather than snow also could lead to increased potential for floods because water that would normally be held in the Sierra Nevada until spring could flow into the Central Valley concurrently with winter storm events. This scenario would place more pressure on California's levees and flood control system.

Another outcome of global climate change is sea level rise. The sea level rose approximately 7 inches during the last century and, assuming that sea level changes along the California coast continue to track global trends, the sea level along the state's coastline in 2050 could be 10–18 inches higher than in 2000 and 31–55 inches higher by the end of this century (CNRA 2012, p. 9).

As the existing climate throughout California changes over time, the ranges of various plant and wildlife species could shift or be reduced, depending on the favored temperature and moisture regimes of each species. In the worst cases, some species would become extinct or be extirpated from the state if suitable conditions are no longer available (CNRA 2012, pp. 11 and 12).

Changes in precipitation patterns and increased temperatures are expected to alter the distribution and character of natural vegetation and the associated moisture content of plants and soils. An increase in the frequency of extreme heat events and drought is also expected. These changes are expected to lead to increased frequency and intensity of large wildfires (CNRA 2012, p. 11).

The San Francisco Bay Conservation and Development Commission (BCDC) issued a report on sea level rise which states that sea level along the West Coast rises approximately 7.9 inches per century, or approximately 0.08 inches per year (BCDC 2011). However, the rate of sea level rise is increasing. During the period from 1993 to 2003, the rate was approximately 0.12 inches per year, which could demonstrate the result of human-induced warming on sea level. The BCDC uses the same sea level rise estimates used by California Climate Action Team–funded assessments. These estimates anticipate the sea level in the Bay Area will rise 16 inches by the middle of the century and 55 inches by the end of the century. As noted below, there are continued refinement and modeling of sea level rise estimates in regards to flooding extent and timing.

This data was used to prepare maps of projected flood areas but does not take into consideration existing shoreline protections; if an area is below sea level, it is shown as vulnerable on BCDC maps. By mid-century, approximately 180,000 acres of the Bay Area could be flooded, and 213,000 acres could be flooded by the end of the century. A large amount of development along the shoreline is vulnerable to flooding and erosion. Because of the Bay Area's topography, 100 percent of the development located in 100-year floodplain areas will likely flood by 2050. Also, different parts of the Bay Area are more vulnerable to flooding and erosion than others. Several large commercial and industrial developments are located in the vulnerable areas, including 93 percent of both the Oakland and the San Francisco airports, which may be inundated by 2100. Half of the vulnerable development is residential and approximately 270,000 people would be at risk of flooding and problems associated with erosion. Approximately 4,300 acres of waterfront parks are expected to flood by 2100 (BCDC 2011).

The Bay Area currently has approximately 300 miles of public access to and along the San Francisco Bay shoreline. Eighty-seven (87) percent of that access is in areas vulnerable to flooding and erosion by 2100. It may be difficult to relocate or re-create access points in areas farther inland. Jetties and seawalls may have to be raised and strengthened to protect harbors that are used for shipping, recreation, and tourism. As discussed above, by 2050, 100 percent of 100-year floodplain areas are expected to be flooded, and by 2100 an estimated 213,000 acres of Bay Area land, much of which is in the central Bay Area, could be impacted.

Sunnyvale is located in the southern Bay Area. A portion of the city just north and just east of Moffett Federal Airport could potentially be exposed to sea level rise by 2050. Fortunately, this area is largely undeveloped; however, by 2100 a larger area of Sunnyvale could be exposed, including existing development (generally land areas between the bay and State Route 237) (**Figure 6.0-1**). Much of the developed Bay Area shoreline will require enhanced shoreline protection, which will be developed regionally to maximize safety and minimize impacts on sensitive bay resources, including public access, visual resources, and soil stability. Structural shoreline protections common to the Bay Area include seawalls, riprap revetments, and levees. These protections are reliable, but expensive to build and maintain, and they often cause significant impacts to resources. Incorporating ecosystem elements with engineering elements would provide balanced and long-term shoreline protection. Projections on flooding impacts from sea level rise estimates shown in **Figure 6.0-1** continue to be refined based on modeling updates and refinements.

### City of Sunnyvale Greenhouse Gas Emissions Inventory

The City of Sunnyvale's Climate Action Plan includes a community-wide GHG inventory for the 2008 baseline year. In 2016, the City conducted an updated inventory of GHG emissions for the 2014 calendar year to track the City's progress toward its GHG reduction target. The community-wide GHG inventory identifies sources and estimates quantifies of GHG emissions generated from activities within the Sunnyvale community. The 2008 and 2014 emissions sources calculated in the GHG inventory include commercial, residential, and industrial electricity and natural gas use, on-road transportation and rail transit (Caltrain), solid waste disposal, energy use and direct process emissions related to water and wastewater, and off-road equipment used for construction and lawn and garden activities. GHG emissions from these activities were calculated from activity data such as kilowatt-hours of electricity, therms of natural gas, tons of waste disposed, and vehicle miles traveled from trips with an origin or destination in Sunnyvale. In 2008, the community emitted approximately 1,153,970 metric tons of $CO_2e$, while the 2014 community emissions totaled 971,140 metric tons (15.8 percent lower than 2008 emissions).

## 3.13.2 REGULATORY FRAMEWORK

The State of California has adopted various administrative initiatives and legislation relating to climate change, much of which set aggressive goals for GHG emissions reductions in the state. Although lead agencies must evaluate climate change and greenhouse gas emissions of projects subject to CEQA, the CEQA Guidelines do not require or suggest specific methodologies for performing an assessment or specific thresholds of significance and do not specify GHG reduction mitigation measures. Instead, the guidelines allow lead agencies to choose methodologies and make significance determinations based on substantial evidence, as discussed in further detail below. In addition, no state agency has promulgated binding regulations for analyzing GHG emissions, determining their significance, or mitigating significant effects in CEQA documents. Thus, lead agencies exercise their discretion in determining how to analyze greenhouse gases.

### CALIFORNIA GLOBAL WARMING SOLUTIONS ACT (ASSEMBLY BILL 32)

The primary act that has driven GHG regulation and analysis in the state is the California Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32) (Health and Safety Code Sections 38500, 38501, 28510, 38530, 38550, 38560, 38561–38565, 38570, 38571, 38574, 38580, 38590, 38592–38599), which instructs the California Air Resources Board (CARB) to develop and enforce regulations for the reporting and verifying of statewide GHG emissions. The act directed CARB to set a greenhouse gas emissions limit based on 1990 levels, to be achieved by 2020. The bill set a timeline for adopting a scoping plan for achieving GHG reductions in a technologically and economically feasible manner. The heart of the bill is the requirement that statewide GHG emissions be reduced to 1990 levels by 2020.

#### AB 32 Scoping Plan

CARB adopted the Scoping Plan to identify how the state would achieve the goals of AB 32. The Scoping Plan establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. CARB determined that achieving the 1990 emissions level would require a reduction of GHG emissions of approximately 29 percent below what would otherwise occur in 2020 in the absence of new laws and regulations (referred to as "business as usual"). The Scoping Plan evaluates opportunities for sector-specific reductions, integrates all CARB and Climate Action Team early actions and additional GHG reduction measures by both entities, identifies additional measures to be pursued as regulations, and outlines the role of a cap-and-trade program. Additional development of these measures and adoption of the appropriate regulations occurred through the end of 2013.

Key elements of the first Scoping Plan included:

- Expanding and strengthening existing energy efficiency programs, as well as building and appliance standards.
- Achieving a statewide renewables energy mix of 33 percent.
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and cap sources contributing 85 percent of California's GHG emissions.
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets.

- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, heavy-duty truck measures, and the Low Carbon Fuel Standard.

- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State of California's long-term commitment to AB 32 implementation (CARB 2008).

In 2012, CARB released revised estimates of expected 2020 emissions reductions. The revised analysis relies on emissions projections updated in light of current economic forecasts that account for the economic downturn since 2008, reduction measures already approved and put in place relating to future fuel and energy demand, and other factors. This reduced the projected 2020 emissions from 596 million metric tons (MMT) $CO_2e$ to 545 $MMTCO_2e$. The reduction in projected 2020 emissions means that the revised business-as-usual (BAU) reduction necessary to achieve AB 32's goal of reaching 1990 levels by 2020 is now 21.7 percent. CARB also provided a lower 2020 inventory forecast that incorporated State-led GHG emissions reduction measures already in place. When this lower forecast is considered, the necessary reduction from BAU needed to achieve the goals of AB 32 is approximately 16 percent.

AB 32 requires CARB to update the Scoping Plan at least once every five years. CARB adopted the first major update to the Scoping Plan on May 22, 2014. The updated Scoping Plan summarizes the most recent science related to climate change, including anticipated impacts to California and the levels of GHG reduction necessary to likely avoid risking irreparable damage. It identifies the actions California has already taken to reduce GHG emissions and focuses on areas where further reductions could be achieved to help meet the 2020 target established by AB 32. The Scoping Plan update also looks beyond 2020 toward the 2050 goal established in Executive Order S-3-05, though not yet adopted as state law, and observes that "a mid-term statewide emission limit will ensure that the State stays on course to meet our long-term goal." The Scoping Plan update does not establish or propose any specific post-2020 goals, but identifies such goals adopted by other governments or recommended by various scientific and policy organizations. Executive Order B-30-15 (signed April 29, 2015) endorses the effort to set interim GHG reduction targets for year 2030 (40 percent below 1990 levels).

**Table 3.13-2** provides a brief overview of the other California legislation relating to climate change that may affect the emissions associated with the Draft LUTE.

**TABLE 3.13-2**
**CALIFORNIA STATE CLIMATE CHANGE LEGISLATION**

| Legislation | Description |
|---|---|
| Assembly Bill 1493 and Advanced Clean Cars Program | Assembly Bill 1493 (the Pavley Standard) (Health and Safety Code Sections 42823 and 43018.5) aims to reduce GHG emissions from noncommercial passenger vehicles and light-duty trucks of model years 2009–2016. By 2025, when all rules will be fully implemented, new automobiles will emit 34 percent fewer $CO_2e$ emissions and 75 percent fewer smog-forming emissions. |
| Low Carbon Fuel Standard (LCFS) | Executive Order S-01-07 (2007) requires a 10 percent or greater reduction in the average fuel carbon intensity for transportation fuels in California. The regulation took effect in 2010 and is codified at Title 17, California Code of Regulations Sections 95480–95490. The LCFS will reduce greenhouse gas emissions by reducing the carbon intensity of transportation fuels used in California by at least 10 percent by 2020. |
| Renewables Portfolio Standard (Senate Bill X1-2 & Senate Bill 350) | California's Renewables Portfolio Standard (RPS) requires retail sellers of electric services to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020. The 33 percent standard is consistent with the RPS goal established in the Scoping Plan. The passage of Senate Bill 350 in 2015 updated the RPS to require the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources to be increased to 50 percent by December 31, 2030. The bill made other revisions to the RPS Program and to certain other requirements on public utilities and publicly owned electric utilities. |
| Senate Bill 375* | Senate Bill (SB) 375 (codified in the Government Code and the Public Resources Code) took effect in 2008 and provides for a new planning process to coordinate land use planning, regional transportation plans, and funding priorities in order to help California meet the GHG reduction goals established in AB 32. SB 375 requires metropolitan planning organizations (MPOs) to incorporate a Sustainable Communities Strategy in their Regional Transportation Plans that will achieve GHG emissions reduction targets by reducing vehicle miles traveled from light-duty vehicles through the development of more compact, complete, and efficient communities. |
| California Building Energy Efficiency Standards | In general, the California Building Energy Efficiency Standards require the design of building shells and building components to conserve energy. The California Energy Commission adopted changes to the 2013 Building Energy Efficiency Standards contained in the California Code of Regulations, Title 24, Part 6 (also known as the California Energy Code) and associated administrative regulations in Part 1. The amended standards took effect in the summer of 2014. The 2013 Building Energy Efficiency Standards are 25 percent more efficient than previous standards for residential construction and 30 percent better for nonresidential construction. The standards offer builders better windows, insulation, lighting, ventilation systems, and other features that reduce energy consumption in homes and businesses. Energy-efficient buildings require less electricity; and increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. |
| California Green Building Standards | The California Green Building Standards Code (California Code of Regulations, Title 24, Part 11), commonly referred to as the CALGreen Code, is a statewide mandatory construction code that was developed and adopted by the California Building Standards Commission and the Department of Housing and Community Development. The CALGreen standards require new residential and commercial buildings to comply with mandatory measures under the topics of planning and design, energy efficiency, water efficiency/conservation, material conservation and resource efficiency, and environmental quality. CALGreen also provides voluntary tiers and measures that local governments may adopt that encourage or require additional measures in the five green building topics. |

** Senate Bill 375 is codified at Government Code Sections 65080, 65400, 65583, 65584.01, 65584.02, 65584.04, 65587, 65588, 14522.1, 14522.2, and 65080.01, as well as at Public Resources Code Sections 21061.3 and 21159.28 and Chapter 4.2.*

### California Executive Orders

In addition to the legislation identified in **Table 3.13-2**, two Executive Orders, California Executive Order S-03-05 (2005) and California Executive Order B-30-15 (2015), highlight GHG emissions reduction targets, though such targets have not been adopted by the State and remain only a goal of the Executive Orders. Specifically, Executive Order S-03-05 seeks to achieve a reduction of GHG emissions of 80 percent below 1990 levels by 2050 and Executive Order B-30-15 seeks to achieve a reduction of GHG emissions of 40 percent below 1990 levels by 2030. The Executive Orders are not laws but do provide the Governor's direction to state agencies in their actions. For instance, as a result of the AB 32 legislation, the state's 2020 reduction target is backed by the adopted AB 32 Scoping Plan, which provides a specific regulatory framework of requirements for achieving the 2020 reduction target. The State-led GHG reduction measures identified in **Table 3.13-2**, such as the Low Carbon Fuel Standard and the Renewables Portfolio Standard, are largely driven by the AB 32 Scoping Plan. Executive Orders S-03-05 and B-30-15 do not have any such framework and therefore provide no specific emissions reduction mechanisms.

## REGIONAL

### Bay Area Air Quality Management District

The Bay Area Air Quality Management District's (2011) CEQA Air Quality Guidelines were developed to assist lead agencies in evaluating air quality impacts for projects and plans in the San Francisco Bay Area Air Basin. The guidelines were updated in 2010 to include guidance on assessing GHG and climate change impacts as required under CEQA Section 15183.5(b) and to establish thresholds of significance for impacts related to GHG emissions. These thresholds can be used to assess plan- and project-level impacts.

## LOCAL

### City of Sunnyvale Climate Action Plan

The City's (2014) Climate Action Plan (CAP) was prepared consistent with the Bay Area Air Quality Management District's (BAAQMD) expectations for a Qualified GHG Reduction Strategy. The standard elements of a Qualified GHG Reduction Strategy include the following steps:

1) Quantify greenhouse gas emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic range.

2) Establish a level, based on substantial evidence, below which the contribution to greenhouse gas emissions from activities covered by the plan would not be cumulatively considerable.

3) Identify and analyze the greenhouse gas emissions resulting from specific actions or categories of actions anticipated within the geographic area.

4) Specify measures or a group of measures, including performance standards that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level.

5) Monitor the plan's progress.

6) Adopt the greenhouse gas reduction strategy in a public process following environmental review.

The Sunnyvale CAP was developed to satisfy these requirements and will allow future development projects to assess their consistency with the plan. As a qualified GHG reduction strategy, the CAP allows the City to determine that development projects which demonstrate consistency and/or compliance with the CAP could have a less than significant impact on GHG emissions. The framework of the CAP consists of an inventory of GHG emissions that identifies and quantifies existing emissions and projected future emissions; reduction targets to reduce GHG emissions incrementally by 2010, 2020, and 2035; goals, measures, and action items to reduce existing emissions to meet state, regional, and local GHG emissions reduction targets; and an implementation and reporting program.

Specifically, the CAP identifies that communitywide GHG emissions per service population will decrease from 6.1 metric tons per person in 2008, to 3.6 metric tons per person in 2020, and to 2.6 metric tons per person in 2035. The CAP identifies how the City will achieve and exceed the State-recommended GHG emissions reduction target of 15 percent below 2008 levels (equivalent to 1990 emissions) by the year 2020 and make progress toward the Executive Order S-3-05 target for 2050 (i.e., 80 percent below 1990 levels by 2050). The CAP includes targets and associated measures, also referred to as reduction measures, in the sectors of energy use, transportation, land use, water, solid waste, and off-road equipment. Several CAP reduction measures are directly applicable to individual development projects, which are required to adhere to the CAP as a condition of development approval.

Based on revised 2008 estimates and forecasts (per the 2016 CAP Biennial Progress Report), communitywide GHG emissions per service population are expected to decrease from 5.6 metric tons per person in 2008, to 3.7 metric tons per person in 2020, and to 2.7 metric tons per person in 2035.

The City's CAP and its reduction targets are consistent with AB 32, post-2020 statewide GHG reduction goals, and CARB recommendations to ensure that California emissions are reduced.

## 3.13.3 IMPACTS AND MITIGATION MEASURES

### STANDARDS OF SIGNIFICANCE

Per Appendix G of the CEQA Guidelines, the City considers impacts related to climate change significant if implementation of the Draft LUTE would:

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

2) Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

## CEQA Guidance

The BAAQMD publishes CEQA Air Quality Guidelines to assist local jurisdictions and lead agencies in complying with the requirements of CEQA regarding potentially adverse impacts to air quality. The District's guidelines were updated in June 2010 to include new thresholds of significance (2010 thresholds) adopted by the BAAQMD Governing Board on June 2, 2010. The BAAQMD's guidelines were further updated in May 2011. These thresholds included new thresholds of significance for greenhouse gas emissions.

On March 5, 2012, the Alameda County Superior Court issued a judgment in connection with a lawsuit filed by the Building Industry Association, finding that the BAAQMD had failed to comply with CEQA when it adopted the 2010 thresholds. The court did not determine whether the 2010 thresholds were valid on the merits, but found that adoption of the 2010 thresholds was a "project" under CEQA. The court issued a writ of mandate ordering the BAAQMD to set aside the 2010 thresholds and cease dissemination of them until the district had complied with CEQA. However, the court did not address the Building Industry Association's remaining arguments. The BAAQMD appealed the Alameda County Superior Court's decision and the case went to the Court of Appeal, First Appellate District.

After the Alameda County Superior Court's decision, the BAAQMD stopped recommending the 2010 thresholds be used as a generally applicable measure of a project's significant air quality impacts. The BAAQMD released a new version of its CEQA Air Quality Guidelines in May 2012 removing the 2010 thresholds. The BAAQMD, however, provided a recommendation that lead agencies determine appropriate air quality thresholds of significance based on substantial evidence in the record.

On August 13, 2013, the Court of Appeals reversed the Superior Court's decision, finding that the BAAQMD's thresholds were not a "project" under CEQA and as such, did not require CEQA review. On November 26, 2013, the California Supreme Court by unanimous vote granted review to address the legal issue of whether CEQA review is confined to an analysis of a proposed project's impacts on the existing environment or also requires analysis of the existing environment's impacts on the proposed project and its future occupants and users. On December 17, 2015, the Supreme Court of California concluded that agencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents. But when a proposed project risks exacerbating those environmental hazards or conditions that already exist, an agency must analyze the potential impact of such hazards on future residents or users. In those specific instances, it is the *project's* impact on the environment—and not the *environment's* impact on the project that must be considered. Given the recent date of the Supreme Court decision compared with the writing of this EIR, the BAAQMD has yet to announce a recommendation to use its 2010 thresholds. Nevertheless, in the meantime, jurisdictions may exercise their discretion and utilize the thresholds based on an independent determination that they are supported by substantial evidence.

The BAAQMD threshold of significance for plan-level GHG emissions is the generation of 6.6 metric tons of $CO_2e$ per service population (residents + employees) per year during operations OR compliance with a Qualified GHG Reduction Strategy. For the purposes of this assessment, the Draft LUTE was evaluated for compliance with the City of Sunnyvale CAP.

As noted previously, the City's (2014) CAP was prepared consistent with the BAAQMD's expectations for a Qualified GHG Reduction Strategy.

The Draft LUTE establishes the fundamental framework as to how the city would be laid out (streets and buildings) and how various land uses, developments, and transportation facilities would function together. The LUTE includes a series of land use and transportation goals, policies, and actions that provide direction for how much the city would change and grow, and where future growth would take place. For the purposes of this analysis, the increase of GHG emissions projected to be generated with full implementation of the Draft LUTE is compared with the Sunnyvale CAP 2020 threshold of 3.6 (or 3.7 based on the biannual report results) metric tons per service population and the 2035 threshold of 2.6 metric tons (or 2.7 based on the biannual report results) per service population.

Even with significant efforts to mitigate GHG emissions today, future climate projections and scenarios anticipate that climate change may have significant effects on California's and thus on Sunnyvale's precipitation, temperature, and weather patterns. The potential consequences of climate change throughout the state include those described under the Effects of Global Climate Change subsection above. This subsection also analyzes the draft LUTE's impacts on Sunnyvale's ability to adapt to the effects of climate change. The California Natural Resources Agency has noted that impacts of GHG emissions should focus on the cumulative impact on climate change. Thus, CEQA amendments continue to make clear that the significance of GHG emissions is most appropriately considered on a cumulative level.

Addressing GHG generation impacts requires an agency to make a determination as to what constitutes a significant impact. The CEQA Guidelines give authority to lead agencies to determine thresholds of significance that illustrate the extent of an impact and are a basis from which to apply mitigation measures. This means that each agency is left to determine whether a project's GHG emissions will have a significant impact on the environment. The guidelines direct that agencies are to use "careful judgment" and "make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate" the project's GHG emissions (14 California Code of Regulations Section 15064.4(a)).

A number of expert agencies throughout the state, including the BAAQMD, have drafted or adopted varying threshold approaches and guidelines for analyzing 2020 operational greenhouse gas emissions in CEQA documents. The different thresholds include compliance with a qualified GHG reduction strategy, performance-based reductions, numeric "bright-line" thresholds, and efficiency-based thresholds.

The California Supreme Court decision in the *Center for Biological Diversity et al. v. California Department of Fish and Wildlife, the Newhall Land and Farming Company* (November 30, 2015, Case No. S217763) (hereafter Newhall Ranch) confirmed that when an "agency chooses to rely completely on a single quantitative method to justify a no-significance finding, CEQA demands the agency research and document the quantitative parameters essential to that method."

The BAAQMD CEQA Guidelines include guidance on assessing greenhouse gases and climate change impacts as required under CEQA Section 15183.5(b) and establish thresholds of significance for impacts related to GHG emissions. The City of Sunnyvale has determined that these guidelines are based on substantial evidence to "attribute an appropriate share of greenhouse gas emission reductions necessary to reach AB 32 goals to new land use development projects in the BAAQMD's jurisdiction that are evaluated pursuant to CEQA" (BAAQMD 2011). Therefore, the City has elected to apply the BAAQMD CEQA Guidelines to determine the level of impact from the Draft LUTE's contribution of GHG emissions.

CEQA authorizes reliance on previously approved GHG reduction plans (i.e., a climate action plan) prepared as a "Plan for the Reduction of Greenhouse Gas Emissions" per State CEQA Guidelines Section 15183.5. Utilization of an approved program-level GHG reduction document is recommended by the BAAQMD as a preferred method to address GHG emissions in project-level CEQA documents. The Newhall Ranch decision affirmed that the AB 32 Scoping Plan encourages the use of adopted local GHG reduction plans; consistency with a geographically specific GHG reduction plan, or CAP, can relieve some of the burden taken on by local governments in analyzing the cumulative contribution of project-level GHG emissions.

Consequently, if a project is compliant with a local climate action plan and that plan is consistent with AB 32 and future GHG targets, then the project would be considered consistent with statewide GHG reduction goals for 2020 and the trajectory of statewide GHG planning in the post-2020 period. As described in Section 2.0, Project Description, Draft LUTE buildout is anticipated for the year 2035. The CAP has been designed to reduce community-wide GHG emissions by 2035 to levels as part of a trajectory toward the Executive Order S-3-05 target for 2050 (i.e., 80 percent below 1990 levels by 2050).

A discussion of potential physical environmental effects of climate change on the Planning Area is addressed in Section 6.0 (Other CEQA Analysis).

### METHODOLOGY

Greenhouse gas–related impacts were assessed in accordance with methodologies recommended by the BAAQMD. Where quantification was required, emissions were modeled using the California Emissions Estimator Model (CalEEMod). CalEEMod is a statewide land use emissions computer model designed to quantify potential criteria pollutant emissions associated with both construction and operations from a variety of land use projects.

### IMPACTS AND MITIGATION MEASURES

#### Generation of Greenhouse Gas Emissions and Compliance with Sunnyvale Climate Action Plan (Standards of Significance 1 and 2)

**Impact 3.13.1** The Draft LUTE may conflict with the Sunnyvale Climate Action Plan (CAP), as it consists of growth beyond what was utilized in the CAP. The Draft LUTE's contribution to this impact would be **cumulatively considerable**.

The Sunnyvale CAP is a strategic planning document that identifies sources of GHG emissions from within the city's boundary and reduces emissions through energy use, transportation, land use, water use, and solid waste strategies (referred to as reduction measures in the CAP). The policy provisions contained in the CAP were prepared with the purpose of complying with the requirements of AB 32 and achieving the goals of the AB 32 Scoping Plan. In addition, the CAP was designed to initiate GHG emission reductions by 2035 to levels on a trajectory toward the Executive Order S-3-05 target for 2050 (i.e., 80 percent below 1990 levels by 2050). As noted previously, the community emitted approximately 1,153,970 metric tons of $CO_2e$ in 2008, while the 2014 community emissions totaled 971,140 metric tons (15.8 percent lower than 2008 emissions), demonstrating that CAP implementation coupled with other variables (such as improved Renewables Portfolio Standards) led to a reduction in GHG emissions.

The City's CAP used existing General Plan designations when predicting growth. While the Draft LUTE–specific growth was not factored into the CAP growth projections, future development projects under the Draft LUTE would be required to comply with the provisions of the Sunnyvale CAP. Future development would need to comply in the following ways:

- Use of energy-efficient lighting technologies for parking lot lighting (Action Item EC-1.3).
- Requirement for energy-efficient orientation of buildings (a building's orientation coupled with landscape material considerations shall be designed for maximum energy efficiency) (Action Item EC-2.2).
- Installation of interior real-time energy monitors (Action Item EC-5.1).
- Installation of new and resurfaced parking lots, sidewalks, and crosswalks made of materials with high reflectivity, such as concrete or reflective aggregate in paving materials (Action Item EC-6.1).
- Requirement for new multi-family buildings and re-roofing projects to install "cool roofs" consistent with the current California Green Building Code (CALGreen) standards for commercial and industrial buildings (Action Item EC-6.2).
- Pre-wiring for solar water heating and solar electricity (Action Item EP-2.1).
- Reduction of potable indoor water consumption by 30 percent (Tier 1 CALGreen) and outdoor landscaping water use by 40 percent (Action Item WC-2.1).
- Requirement that multi-family homes participate in the City's Multifamily Recycling Program (Action Item LW-2.1).
- Installation of electrical outlets on the exterior of buildings at an accessible location to charge electric-powered lawn and garden equipment (Action Item OR-1.2).
- Provision for cross-parcel access and linkages from school entrances to the public sidewalk system (Action Item CTO-1.3).
- Improvement of pedestrian safety and comfort through design elements such as landscaped medians, pedestrian-level amenities, sidewalk improvements, and compliance with Americans with Disabilities Act (ADA) design standards, particularly for areas serving high volumes of traffic (Action Item CTO-1.4).
- Requirement for sidewalks to be a minimum of 6 feet wide in order to allow side-by-side walking at identified locations that currently serve high pedestrian traffic volumes or locations planned to serve high volumes of pedestrian traffic (Action Item CTO-1.6).
- Promotion of intermodal linkages to and from regional transit options by establishing or improving well-defined, convenient intermodal hubs in downtown and specific plans areas (Action Item CTO-1.7).
- Provisions for bicycle parking consistent with the Valley Transportation Authority Bicycle Technical Guidelines, as amended (Action Item CTO-2.1).

- Requirement that existing and future major employers utilize a variety of transportation demand management (TDM) measures such as flexible work schedules, telecommuting, guaranteed rides home, low- or no-cost transit passes, parking "cash-out" incentives, and other programs that provide employees with alternatives to single-occupant commutes (Action Item CTO-4.1).

- Designation of preferred parking stalls for electric, hybrid, and other alternative-fuel vehicles in all public and private parking lots consistent with the California Green Building Code (Action Item OVT-1.1).

- Requirement for sufficient electrical service in the garages/parking facilities of new residential development to support electric vehicle charging (Action Item OVT-1.3).

- Requirement that new buildings provide electrical outlets on the exterior in an accessible location to charge electric-powered lawn and garden equipment (Action Item OR-1.2).

- Minimization of idling times 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]), or less. Clear signage will be provided at all access points to remind construction workers of idling restrictions (Action Item OR-2.1).

- Maintenance of construction equipment per manufacturer's specifications (Action Item OR-2.2).

- Planning and Building staff will work with project applicants to limit GHG emissions from construction equipment by selecting one of the following measures, at a minimum, as appropriate to the construction project:

    a. Substitute electrified or hybrid equipment for diesel- and gasoline-powered equipment where practical.

    b. Use alternatively fueled construction equipment on-site, where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane, or biodiesel.

    c. Avoid the use of on-site generators by connecting to grid electricity or utilizing solar-powered equipment.

    d. Limit heavy-duty equipment idling time to a period of 3 minutes or less, exceeding CARB regulation minimum requirements of 5 minutes (Action Item OR-2.3).

Action 1 of Draft LUTE Policy 13 states that the City will actively maintain and implement the CAP. Therefore, subsequent development under the Draft LUTE would be required to comply with all applicable CAP policy provisions and requirements. In addition, implementation of the following Draft LUTE policies and actions would further assist in the reduction of GHG emissions:

Policy 12: Enhance the public's health and welfare by promoting the city's environmental and economic health through sustainable practices for the design, construction, maintenance, operation, and deconstruction of buildings, including measures in the Climate Action Plan.

Action 1: Maintain and regularly review and update green building standards for new construction and additions to buildings, including additional incentives where feasible.

Policy 13: Reduce greenhouse gas emissions that affect climate and the environment though land use and transportation planning and development.

Action 1: Actively maintain and implement the Climate Action Plan which outlines impacts, policies, and reduction measures related to public and private land use and transportation.

Policy 14: Accelerate the planting of large canopy trees to increase tree coverage in Sunnyvale in order to add to the scenic beauty and walkability of the community; provide environmental benefits such as air quality improvements, wildlife habitat, and reduction of heat islands; and enhance the health, safety, and welfare of residents.

Action 1: Prepare and implement an Urban Forestry Plan for City properties and street rights-of-way. The plan should promote planting and maintaining large canopy trees.

Action 2: Monitor the success of the City's Urban Forestry Plan by periodically measuring the percentage of tree canopy coverage in the community.

Action 3: Evaluate increasing the level of required tree planting and canopy coverage for new developments and site renovation projects while preserving solar access for photovoltaic systems.

Action 4: Require tree replacement for any project that results in tree removal, or in cases of constrained space, require payment of an in-lieu fee. Fee revenues shall support urban forestry programs.

Policy 18: Provide Sunnyvale residents and businesses with opportunities to develop private, renewable energy facilities.

Action 1: Maintain and regularly review and update uniform and comprehensive standards for the development, siting, and installation of solar, wind, and other renewable energy and energy conservation systems on private property which address public health, safety, community welfare, and the aesthetic quality of the city.

Action 2: Consider deviations from development standards such as setbacks, design guidelines, or heights to encourage innovative energy-efficient building design.

Action 3: Participate in a Community Choice Energy (CCE) program through the Silicon Valley Clean Energy Authority in partnership with neighboring jurisdictions.

Policy 19: Use land use planning, including mixed and higher-intensity uses, to support alternatives to the single-occupant automobile such as walking and bicycling and to attract and support high investment transit such as light rail, buses, and commuter rail.

Action 1: As part of the development project review process in mixed-use and other high-intensity use areas, require that adequate off-street loading areas for transit stops are provided, even if bus stops are not yet located there. Ensure that off-street loading areas do not conflict with adjacent uses or impede pedestrian, bicycle, or transit access.

Action 2: Establish reduced parking requirements for transit, corridor, and village mixed-use developments and for developments with comprehensive TDM programs that are consistent with the City's established goals.

As stated in Section 2.0, Project Description, the Draft LUTE is intended to implement local land use and transportation planning efforts in a manner consistent with the Metropolitan Transportation Commission's (MTC) Sustainable Communities Strategy (SCS), Plan Bay Area. Plan Bay Area is a regional growth strategy required under Senate Bill (SB) 375 that, in combination with transportation policies and programs, strives to reduce GHG emissions. SB 375 requires metropolitan planning organizations (MPOs), such as the MTC, to incorporate an SCS in their Regional Transportation Plans that will achieve GHG emissions reduction targets by reducing vehicle miles traveled from light-duty vehicles through the development of more compact, complete, and efficient communities. It is designed to achieve regional GHG reduction targets set by CARB. The Draft LUTE conforms to the SCS by increasing the viability of walking, biking, and transit. The Draft LUTE supports the development of projects that facilitate and enhance the use of alternative modes of transportation, including pedestrian-oriented retail and activity centers and dedicated bicycle lanes and paths. For example, the Draft LUTE states that the areas of focused change include nodes on El Camino Real, newly identified Village Centers, the Lawrence Station area, and the Peery Park industrial/office area. The focus of future development goals in these areas includes transforming older shopping centers and office areas into new mixed-use development centers that provide close-in services and residential diversity. (Mixed-use projects provide land use arrangements that reduce reliance on the automobile and improve opportunities for pedestrian, bicycle, and transit use.) Future development goals under the Draft LUTE also include developing a transit village near the Caltrain Lawrence Station with increased housing and business intensity and supporting services, and developing pockets of more intensive industrial and office development on corridors such as Mathilda Avenue in anticipation of future improved north/south transit, and along Tasman Avenue near the Reamwood light rail station in the Woods business area.

These goals would be implemented with the proposed actions of Draft LUTE Policy 1, which seek to promote transit-oriented and mixed-use development near transit centers such as Lawrence Station, Downtown, and El Camino Real and in neighborhood villages by zoning the appropriate sites for mixed-use development. Additionally, Draft LUTE Policy 19 proposes the use of land use planning, including mixed and higher-intensity uses, to support alternatives to the single-occupant automobile such as walking and bicycling and to attract and support high investment transit such as light rail, buses, and commuter rail. Policy 19 would require that as part of the development

project review process in mixed-use and other high-intensity use areas, adequate off-street loading areas for transit stops must be provided, even if bus stops are not yet located there.

Other examples of GHG-reducing policy provisions proposed under the Draft LUTE include Policy 2, which seeks to minimize regional sprawl by endorsing strategically placed development density in Sunnyvale and by utilizing a regional approach to providing and preserving open space for the broader community. Also, Policy 33 proposes to prioritize transportation subsidies and project financing over time to the most environmentally friendly modes and services. This policy supports bicycling through planning, engineering, education, encouragement, and enforcement. Policy 46 seeks to support statewide, regional, and subregional efforts that provide for a safe, effective transportation system that serves all travel modes consistent with established service standards. Specifically, Policy 46 proposes increased expansion and enhancement of bus, light rail, commuter rail, and shuttle services in Sunnyvale.

Therefore, in order to determine whether the Draft LUTE would result in similar GHG reduction targets as set by the City's CAP, the estimated emissions resulting from operation of the new land uses allowed in Sunnyvale beyond existing conditions were quantified and compared with the GHG reduction targets for 2035 estimated for the CAP.

Under the Draft LUTE, GHG emissions would be generated over the short term from construction activities, consisting primarily of emissions from equipment exhaust. There would also be long-term regional emissions associated with new vehicle trips and indirect source emissions, such as electricity usage for lighting. Quantifying the GHG emissions from future, short-term, temporary construction activities allowed under the Draft LUTE is not possible due to project-level variability and uncertainties related to future individual projects in terms of detailed site plans, construction schedules, equipment requirements, etc., which are not currently determined. The Sunnyvale CAP does not establish a process to evaluate construction-related GHG emissions. As previously listed, CAP provisions require that all construction in the city minimize construction equipment idling times either by shutting equipment off when not in use or by reducing the maximum idling time to 5 minutes or less. Clear signage needs to be provided at all access points to remind construction workers of idling restrictions. The CAP requires that that all construction activities adhere to at least one of the measures listed in Action Item OR-2.3. Once construction is complete, generation of GHG emissions would cease.

**Table 3.13-3** is presented in order to show estimated GHG emissions resulting from operation of the new land uses allowed in Sunnyvale under the Draft LUTE beyond existing conditions.

**TABLE 3.13-3**
**GREENHOUSE GAS EMISSIONS – DRAFT LUTE OPERATIONS (METRIC TONS PER YEAR)**

| Emissions Source | Full Development Potential in the Year 2035 |
|---|---|
| Area Source | 589 |
| Residential and Nonresidential Energy | 47,570[2] |
| Mobile[3] | 114,537 |
| Waste | 9,263 |
| Water & Wastewater | 4,713 |
| **Total** | **176,672** |

*Source: CalEEMod 2013.2.2 (see **Appendix F**)*

*Notes:*

1. *Emission projections account for 15,100 new residential units and 12.5 million square feet of nonresidential square footage.*
2. *Emission projections account for 2015 CALGreen standards and the Renewables Portfolio Standard year 2030 target.*
3. *Emission projections account for the trip generation rates and vehicle miles traveled identified in the transportation impact analysis prepared for the project (Hexagon 2016).*

As shown, the full realization of the new development potential allowed under the Draft LUTE would result in approximately 176,672 metric tons of $CO_2e$ annually under year 2035 conditions. It is important to note that these estimates reflect combined emissions from all the potential new development allowed under the Draft LUTE. However, the Draft LUTE does not include any provisions requiring that its growth potential be attained.

As described in Section 2.0, Project Description, full realization of the net new development potential allowed under the Draft LUTE could result in a population increase of up to 27,445 beyond current conditions as well as an additional 42,410 jobs. Therefore, the service population associated with the net new development potential allowed under the Draft LUTE would be 69,855.

As shown in **Table 3.13-4**, dividing the GHG emissions for each time period by the anticipated service population for each time period yields a metric ton per service population ratio of 2.5 for year 2035 conditions. These service population ratios are below CAP thresholds for 2035.

**TABLE 3.13-4**
**DRAFT LUTE GHG EMISSIONS PER SERVICE POPULATION**

| Per Capita Emissions | Emissions | Jobs | Population | Service Population Increase | $MTCO_2e$/ SP/Year | Sunnyvale CAP Threshold | CAP Threshold (updated from biannual report) |
|---|---|---|---|---|---|---|---|
| Full Development Potential in the Year 2035 | 176,672 | 42,410 | 27,445 | 69,855 | 2.5 | 2.6 | 2.7 |

The Sunnyvale CAP greenhouse gas reduction targets were developed based on substantial evidence that such targets represent quantitative levels of GHG emissions, compliance with which means that the environmental impact of the GHG emissions would not be cumulatively considerable. Compliance with such thresholds will be part of the solution to the cumulative GHG emissions problem. The Draft LUTE is intended to implement local land use and transportation planning efforts in a manner consistent with the MTC's Sustainable Communities Strategy and seeks to reduce the environmental impact (including GHG emissions) of land use development as described above.

However, the Draft LUTE has different growth projections than what were utilized in the CAP. The GHG modeling used above (CalEEMod) uses different assumptions and inputs than the activity-based modeling used for the Sunnyvale CAP, and results of each cannot equivalently be compared to demonstrate compliance with GHG reduction targets in the CAP for 2035.

Therefore, this impact would be **cumulatively considerable**.

Mitigation Measures

**MM 3.13.1** Upon adoption of the Draft LUTE, the City will update the Climate Action Plan to include the new growth projections of the Draft LUTE and make any necessary adjustments to the CAP to ensure year 2020 and 2035 greenhouse gas emission reduction targets are attained.

As noted previously, implementation of the Climate Action Plan has assisted in the reduction of GHG emissions in the city by approximately 15.8 percent from 2008 emissions and **Table 3.13-4** shows that the Draft LUTE could result in comparable GHG emission efficiencies as anticipated by the CAP for the year 2035 and meet GHG reduction percentages specified in the CAP. Implementation of the above mitigation measure would ensure that the CAP incorporates the Draft LUTE growth projections to ensure GHG emissions are reduced consistent with CAP greenhouse gas reduction targets and percentages that are consistent with state reduction targets and result in a **less than cumulatively considerable** impact**.**

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# 4.0 PUBLIC SERVICES

This section describes public services in Sunnyvale. Specifically, this section evaluates fire protection and emergency medical services, law enforcement, schools, and parks. Each subsection includes a description of existing facilities, applicable service goals, and potential environmental impacts resulting from implementation of the Draft LUTE. California Environmental Quality Act (CEQA) Guidelines Section 15131 states that economic effects of a project, such as the cost of providing public services, shall not be treated as significant effects on the physical environment requiring analysis in the EIR.

A summary of the impact conclusions related to public services is provided below.

| Impact Number | Impact Topic | Impact Significance |
|---|---|---|
| 4.1.1 | Increased Demand for Fire Protection and Emergency Medical Services | Less than significant |
| 4.1.2 | Cumulative Fire Protection and Emergency Medical Services Impacts | Less than cumulatively considerable |
| 4.2.1 | Increased Demand for Law Enforcement Services | Less than significant |
| 4.2.2 | **Cumulative Law Enforcement Impacts** | Less than cumulatively considerable |
| 4.3.1 | Increased Demand for Public Schools | Less than significant |
| 4.3.2 | Cumulative Schools Impacts | Less than cumulatively considerable |
| 4.4.1 | Increased Demand for Parks and Recreation Facilities | Less than significant |
| 4.4.2 | Cumulative Parks and Recreation Demands | Less than cumulatively considerable |

## 4.1 FIRE PROTECTION AND EMERGENCY MEDICAL SERVICES

### 4.1.1 EXISTING SETTING

#### SUNNYVALE DEPARTMENT OF PUBLIC SAFETY FIRE SERVICES BUREAU

The Sunnyvale Department of Public Safety Bureau of Fire Services (Fire Bureau) is an all-hazard/full-service bureau within the Department of Public Safety (DPS) that provides emergency medical services, fire suppression, hazardous material incident mitigation, rescue operations, fire prevention/Investigations, and statewide mutual aid response. The Fire Bureau has six stations and 13 frontline pieces of apparatus, including three aerial apparatus, 9 fire engines and one Rescue/OES Type II Hazardous Materials apparatus. Each piece of apparatus is staffed with two persons in Sunnyvale, with additional staffing coming from the ranks of on-duty patrol officers. The Rescue/OES Type II Hazardous Materials apparatus is alternatively staffed based on available personnel with either one or two public safety officers. In addition, off-duty public safety officers can respond to an emergency to further enhance staff needs (Sunnyvale 2011).

On average, the Fire Bureau responds to approximately 7,500 calls for service annually. Of those calls, approximately 76 percent are emergency medical (EMS) calls. The Fire Bureau responds to approximately 36 hazardous material calls and 140 structure fires per year. There are six fire stations in the city, five of which were remodeled between 1998 and 1999. One station was built in 2016. The stations are situated throughout Sunnyvale, with locations based on a combination of call volume and response time. The department has mutual aid and/or auto aid agreements with Santa Clara County Fire, San Jose Fire, Mountain View Fire, and Santa Clara (City) Fire. These agreements cover responses to freeway incidents and structure fire incidents, in areas of common shared boundaries between jurisdictions (Sunnyvale 2011).

An often-cited measure of fire suppression capability is the rating assigned to a department by the nationally recognized Insurance Services Office (ISO). The ISO is a subsidiary of a publicly traded company and acts as an advisory organization which provides information that insurance companies may use to establish premium costs. The rating is based on fire alarm and communications systems, telephone and dispatching systems, fire equipment, staffing, training, and geographic distribution of fire stations, among other things. Based on all this information, the ISO assigns a classification rating from 1 to 10. Sunnyvale has an ISO rating of 2, which is in the "superior" category (Sunnyvale 2011).

Seventeen Fire Bureau vehicles are equipped with Mobile Dispatch Terminals (MDTs), with funding provided by the Assistance to Firefighters grant. The MDTs improve Fire Bureau response capabilities through the use of state-of-the-art technology, which provides field response data and field mapping. This technology allows fire personnel to reduce the response time to fire and EMS emergencies (Sunnyvale 2011).

### EMERGENCY MEDICAL SERVICES

The Department of Public Safety participates in an emergency medical services system that is integrated into the larger Santa Clara County Emergency Medical Services System. This system provides for Basic Life Support (BLS) response by Department of Public Safety resources, followed by Advanced Life Support (ALS) response by the County of Santa Clara.

This tiered response system efficiently utilizes resources in a cost-effective manner. The EMS system in California is governed by county and state regulations as well as court decisions. Through this regulatory system, the County of Santa Clara holds the exclusive rights to operate the ALS paramedic transport system. The County is responsible for the medical oversight of the EMS system, including the care provided by Department of Public Safety personnel. Public Safety maintains a physician medical director to meet regulatory and statutory requirements for equipment purchases and mandatory internal quality improvement activities. The Department of Public Safety is a State of California Certifying Entity and an approved EMT-Basic Training Program and is able to train, certify, and recertify its personnel as EMT-Basic providers (Sunnyvale 2011).

In 1996, the Department of Public Safety implemented an early defibrillation program, which allowed public safety personnel to utilize an automated external defibrillator (AED) to treat patients in cardiac arrest. Changes in California law provide the opportunity to add AEDs to City facilities for use by nontraditional responders and laypersons. Sunnyvale was one of the first communities in California to implement the program. Many cardiac arrest victims, as well as residents and visitors to City facilities, have been saved by Department of Public Safety personnel as well as citizen responders through the use of these AEDs (Sunnyvale 2011).

The County of Santa Clara contracts with a vendor to provide a fee-for-service paramedic transport system for all of Santa Clara County, with the exception of the City of Palo Alto, which maintains its own fire department–based paramedic transport service. The Santa Clara County paramedic ambulance contract sets response time standards for the vendor that apply throughout the county (Sunnyvale 2011).

Sunnyvale is the only city in Santa Clara County that does not provide paramedic services through its own or a contracted fire service provider. This provides the City little opportunity to effect change. Since the inception of paramedic services in Santa Clara County, the Department of Public Safety has brought to the City Council options to provide paramedic services within the Public Safety model. The department will continue to monitor the County's paramedic service

provision, will evaluate the options/opportunities to deliver paramedic services in the Department of Public Safety, and will periodically report its findings to the City Council (Sunnyvale 2011).

### 4.1.2 REGULATORY FRAMEWORK

STATE

#### California Fire Code

The 2013 California Fire Code (Title 24, Part 9 of the California Code of Regulations) establishes regulations to safeguard against hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures, and premises. The Fire Code also establishes requirements intended to provide safety and assistance to firefighters and emergency responders during emergency operations. Code provisions apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of every building or structure throughout California. The Fire Code includes regulations regarding fire-resistance-rated construction, fire protection systems such as alarm and sprinkler systems, fire services features such as fire apparatus access roads, means of egress, fire safety during construction and demolition, and wildland-urban interface areas.

#### California Health and Safety Code

Additional state fire regulations are set forth in Sections 13000 et seq. of the California Health and Safety Code, which include regulations for building standards, fire protection and notification systems, fire protection devices such as extinguishers, smoke alarms, high-rise building and child-care facility standards, and fire suppression training.

#### California Occupational Safety and Health Administration

In accordance with the California Code of Regulations, Title 8, Sections 1270, Fire Prevention, and 6773, Fire Protection and Fire Fighting Equipment, the California Occupational Safety and Health Administration (Cal/OSHA) has established minimum standards for fire suppression and emergency medical services. The standards include, but are not limited to, guidelines on the handling of highly combustible materials, fire hose sizing requirements, restrictions on the use of compressed air, access roads, and the testing, maintenance, and use of all firefighting and emergency medical equipment.

#### Fire Hazard Severity

California has enacted statewide laws aimed at reducing wildfire hazards in wildland-urban interface areas. These regulations cover topics such as fire prevention, vegetation management, notification and penalties, fire hazard severity zones, defensible space, setbacks, and exemptions.

LOCAL

#### City of Sunnyvale Municipal Code

Municipal Code Chapter 16.52, Fire Code, prescribes regulations governing conditions hazardous to life and property from fire or explosion through adoption of the 2013 California Fire Code.

### 4.1.3 IMPACTS AND MITIGATION MEASURES

#### STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following CEQA Guidelines Appendix G threshold of significance. A fire protection and emergency services impact is considered significant if implementation of the Draft LUTE would:

1) Create substantial adverse physical impacts associated with the provision of new or physically altered fire related facilities or services, the construction and/or provision of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection and emergency services.

The reader is referred to Section 3.3, Hazards and Human Health, regarding emergency access and wildland fire impacts.

#### METHODOLOGY

Evaluation of potential fire service impacts was based on consultation with the Sunnyvale Fire Services Bureau, as well as review of the Sunnyvale General Plan (2011) and other relevant literature. The analysis is based on whether the Draft LUTE would require the construction of new or altered fire-related facilities or services that would result in a significant impact on the physical environment.

#### PROJECT IMPACTS AND MITIGATION MEASURES

**Increased Demand for Fire Protection and Emergency Medical Services (Standard of Significance 1)**

**Impact 4.1.1** Implementation of the Draft LUTE would increase the demand for fire protection and emergency medical services. Any new or expanded fire or emergency medical facilities associated with increased demand have been programmatically considered in the technical analyses of this DEIR as part of overall development of the city. This impact would be **less than significant**.

Implementation of the Draft LUTE would increase both population and the number of housing units in Sunnyvale, which would increase demand for fire protection and emergency medical services. Furthermore, subsequent development under the Draft LUTE would result in additional commercial and industrial development, which would also increase the need for fire protection services, including an increased need for additional inspectors, permit issuance, etc.

The Fire Bureau does not maintain a staffing ratio goal based directly on population or employment (staffing levels are instead based on service demand and other factors). It is anticipated that population and employment growth resulting from implementation of the Draft LUTE would increase the demand for fire protection services. The physical environmental effects of any new facilities that may ultimately be required due to this increase in demand are considered as part of the development potential of the Draft LUTE, and have therefore been programmatically evaluated in the technical analyses of this Draft EIR. The City would be required to conduct subsequent project review and address project-level environmental effects prior to expanding existing fire facilities or developing new fire facilities. Any future fire facilities would be constructed on previously disturbed sites within the existing urban area of the city and are not expected to result in significant ground disturbance impacts to natural resources.

The Draft LUTE does not contain policies regarding the provision of fire protection services; however, the following policy provides general direction regarding how public services should be provided.

Policy 104: Ensure that development projects provide appropriate improvements or resources to meet the future infrastructure and facility needs of the City, and provide development incentives that result in community benefits and enhance the quality of life for residents and workers.

Additionally, the Sunnyvale General Plan (2011) contains the following fire protection policies:

Policy SN-3.1: Provide rapid and timely response to all emergencies.

Policy SN-5.1: Assure that equipment and facilities are provided and maintained to meet reasonable standards of safety, dependability and compatibility with fire service operations.

Implementation of the above policies would ensure that equipment and facilities are provided and maintained to meet reasonable standards of safety, dependability, and compatibility with fire service operations and that rapid emergency response times are met. The impacts to fire protection and emergency medical services would be **less than significant**.

Mitigation Measures

None required.

### 4.1.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

#### CUMULATIVE SETTING

The cumulative setting for fire protection and emergency medical services includes the City boundaries.

#### CUMULATIVE IMPACTS AND MITIGATION MEASURES

**Cumulative Fire Protection and Emergency Medical Services Impacts**

**Impact 4.1.2** Implementation of the Draft LUTE, along with potential development in the city, would increase cumulative demand for fire protection and emergency medical services. The Draft LUTE's contribution to this impact is **less than cumulatively considerable**.

Potential future development in Sunnyvale would increase cumulative demand for fire protection and related services. Cumulative impacts associated with fire protection services that would occur under the Draft LUTE would occur entirely within the Fire Bureau's service area. Implementation of the Draft LUTE would require additional fire-related services and equipment to adequately serve the city under conditions anticipated in 2035.

The proposed buildout could result in the need for additional Fire Bureau personnel and facilities. However, any subsequent development that would occur would be subject to developer fees, which would provide sufficient resources to serve the projected needs of the Fire Bureau under buildout conditions in Sunnyvale. The physical environmental effects of any new facilities that may

be ultimately required due to this increase in demand are considered as part of the development potential of the Draft LUTE, and have therefore been programmatically evaluated in the technical analyses of this Draft EIR. Any future fire facilities would be constructed on previously disturbed sites within the existing urban area of the city and are not expected to result in any significant ground disturbance impacts to natural resources. Therefore, the Draft LUTE's contribution to this impact would be **less than cumulatively considerable**.

Mitigation Measures

None required.

## 4.2 LAW ENFORCEMENT

### 4.2.1 EXISTING SETTING

SUNNYVALE DEPARTMENT OF PUBLIC SAFETY BUREAU OF POLICE SERVICES

Police services are provided by the Sunnyvale Department of Public Safety Bureau of Police Services (Police Bureau). Five patrol squads cover the city 24 hours a day. The number of officers in each of the squads changes depending on the time of day the shift covers. Services provided by the Police Bureau also include a traffic safety unit, a SWAT team, a crisis negotiations team, a canine unit, desk officers, a police training lieutenant, a crime scene investigator unit, bicycle patrol, , a crisis intervention team, a mobile field force team, and technical services (Sunnyvale 2016).

From 2015 to 2016, the average police response time in emergency events was 4 minutes and 42 seconds (Sunnyvale 2016).

### 4.2.2 REGULATORY FRAMEWORK

STATE

**Emergency Response/Evacuation Plans**

Government Code Section 8607(a) directs the Governor's Office of Emergency Services (OES) to prepare a Standard Emergency Management System (SEMS) program that sets forth measures by which a jurisdiction should handle emergency disasters. The program is intended to provide effective management of multi-agency and multijurisdictional emergencies in California. SEMS consists of five organizational levels, which are activated as necessary: (1) Field Response, (2) Local Government, (3) Operational Area, (4) Regional, and (5) State.

LOCAL

**City of Sunnyvale Emergency Plan**

The City's Emergency Plan addresses the planned response that will be coordinated from the Emergency Operations Center (EOC) to emergency situations associated with natural disasters and technological incidents. The operational concepts reflected in the plan focus on potential large-scale emergencies that can generate unique situations requiring unusual response. Such emergencies pose major threats to life and property and can affect the well-being of large numbers of people. The intent of the plan is to save lives and protect property by developing

operational capabilities that mitigate, prepare for, respond to, and recover from any emergency or disaster.

### 4.2.3 IMPACTS AND MITIGATION MEASURES

#### STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following State CEQA Guidelines Appendix G threshold of significance. A law enforcement services impact is considered significant if implementation of the Draft LUTE would:

1) Create substantial adverse physical impacts associated with the provision of new or physically altered police facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for law enforcement services.

#### METHODOLOGY

Evaluation of potential law enforcement impacts was based on review of the City's General Plan (2011) and other relevant literature and consultation with the Police Bureau. The analysis is based on whether the Draft LUTE would require the construction of new or altered law enforcement–related facilities or services that would result in a significant impact on the physical environment.

#### PROJECT IMPACTS AND MITIGATION MEASURES

**Increased Demand for Law Enforcement Services (Standard of Significance 1)**

**Impact 4.2.1** Implementation of the Draft LUTE would increase the demand for law enforcement services. Any new or expanded law enforcement facilities associated with increased demand have been programmatically considered in the technical analyses of this Draft EIR as part of overall development of the city. This impact would be **less than significant**.

Implementation of the Draft LUTE would increase both population and the number of housing units in Sunnyvale, which would increase demand for law enforcement services. Furthermore, subsequent development under the Draft LUTE would result in additional commercial and industrial development, which would also increase the need for law enforcement services. Subsequent development under the Draft LUTE is projected to increase the number of jobs in the city. Employees associated with these jobs, who would spend at least a portion of each workday in the city, would also increase demand for police services.

The Police Bureau has minimum staffing requirements for the five different squads that work during a 24-hour cycle, and staffing levels vary depending on the time of day. The physical environmental effects of any new facilities that may ultimately be required due to an increase in demand are considered as part of the development potential of the Draft LUTE, and have therefore been programmatically evaluated in the technical analyses of this Draft EIR. The City would be required to conduct subsequent project review and address project-level environmental effects prior to expanding existing law enforcement facilities or developing new law enforcement facilities. Any future law enforcement facilities would be constructed on previously disturbed sites within the existing urban area of the city and are not expected to result in significant ground disturbance impacts to natural resources.

The Draft LUTE does not contain policies regarding the provision of law enforcement services; however, the following policy provides general direction regarding how public services should be provided.

Policy 104: Ensure that development projects provide appropriate improvements or resources to meet the future infrastructure and facility needs of the City, and provide development incentives that result in community benefits and enhance the quality of life for residents and workers.

Additionally, the Sunnyvale General Plan (2011) contains the following policy related to police services:

Policy SN-3.1: Provide rapid and timely response to all emergencies.

Implementation of the above policies would ensure that equipment and facilities are provided and maintained to meet reasonable standards of safety, dependability, and compatibility with law enforcement operations and that rapid emergency response times are met. The impacts to law enforcement services would be **less than significant**.

Mitigation Measures

None required.

### 4.2.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

#### CUMULATIVE SETTING

The cumulative setting for law enforcement services includes the Police Bureau's service area boundaries. The Police Bureau provides services within the Sunnyvale city limits. Therefore, the cumulative setting is limited to the city and does not extend to the region. The cumulative analysis includes all existing, planned, proposed, approved, and reasonably foreseeable development in the city.

#### CUMULATIVE IMPACTS AND MITIGATION MEASURES

**Cumulative Law Enforcement Impacts**

**Impact 4.2.2** Implementation of the Draft LUTE, along with potential development in the city, would increase cumulative demand for law enforcement services. The Draft LUTE's contribution to this impact is **less than cumulatively considerable**.

Potential future development in Sunnyvale would increase cumulative demand for law enforcement services. Cumulative impacts associated with police services that would occur under the Draft LUTE would occur entirely within the Police Bureau's service area. Expected increases in demand for police services would thus be geographically limited. The physical environmental effects of any new facilities that may be ultimately required due to this increase in demand are considered as part of the development potential of the Draft LUTE, and have therefore been programmatically evaluated in the technical analyses of this Draft EIR. Any future law enforcement facilities would be constructed on previously disturbed sites within the existing urban area of the city and are not expected to result in any significant ground disturbance impacts to natural resources. Therefore, the Draft LUTE's contribution to cumulative law enforcement impacts would be **less than cumulatively considerable**.

Mitigation Measures

None required.

## 4.3 PUBLIC SCHOOLS

### 4.3.1 EXISTING SETTING

Sunnyvale residents are served by four public school districts: Sunnyvale School District, Cupertino Union School District, Santa Clara Unified School District, and Fremont Union High School District.

About two-thirds of the K–8 students who live in Sunnyvale are within the attendance boundary of the Sunnyvale School District, the boundaries of which are entirely in Sunnyvale. The district has experienced modest enrollment growth over the past few years, and this trend is expected to continue for the foreseeable future. The district operates eight elementary schools, serving students in grades kindergarten through fifth grade (K–5) (4,904 students), and two middle schools, serving students in grades six, seven, and eight (6–8) (1,883 students) (CDE 2015). Residents located primarily north of Fremont Avenue and west of the Santa Clara Unified School District boundary are served by the Sunnyvale School District.

The Cupertino Union School District boundaries are in six cities, including Cupertino and parts of San Jose, Sunnyvale, Saratoga, Santa Clara, and Los Altos. The district has three K–5 schools (2,572 students) and one 6–8 school (1,434 students) in Sunnyvale (CDE 2015). Sunnyvale residents located primarily south of Fremont Avenue are served by this district (there are also a number of properties north of Fremont Avenue between Sunnyvale-Saratoga Road, Wolfe Road, and El Camino Road, which are in the Cupertino Union School District). District enrollment in 2015 was 18,924 students and is projected to be 18,018 students by the year 2020.

Residents located generally on the eastern edge of the city are served by the Santa Clara Unified School District (K–12). The Santa Clara Unified School District has schools in Santa Clara, the Alviso neighborhood of San Jose, and three schools in Sunnyvale: two K–5 schools (1,016 students) and one 6–8 school (898 students). High school students in this district attend either Santa Clara High School or Wilcox High School, neither of which is located in Sunnyvale. K–5 students may also attend SCUSD schools located outside of Sunnyvale.

The Fremont Union High School District boundaries overlay the combination of the Sunnyvale School District and the Cupertino Union School District and serves residents in most of Sunnyvale, and parts of San Jose, Los Altos, Saratoga, and Santa Clara. Fremont High School is located in Sunnyvale and had a 2014–15 enrollment of 1,965 students (CDE 2015). The enrollment capacity is 2,142 students, and a capacity deficit is projected by 2020 (Schoolhouse Services 2014). Other high school students in the FUHSD attend Homestead High School, which is located on the south side of Homestead Road, in Cupertino. The Fremont Union High School District Measure K Bond program was designed to address future projected enrollment needs. The program includes the construction of additional classrooms and other facilities that would increase capacity and reduce the potential for overcrowding.

#### FUNDING AND FINANCING MECHANISMS

The Sunnyvale School District currently levies fees of $2.08 per square foot for residential units, $0.33 per square foot for new commercial development, and $0.08 per square foot for commercial parking and storage (Sunnyvale School District 2015). The Fremont Union High School District

collects fees of $1.28 per square foot for residential units and $0.21 per square foot for most commercial uses in Sunnyvale (FUHSD 2015). Santa Clara Unified School District currently levies fees of $3.36 per square foot for residential units and $0.54 per square foot for new commercial development, while Cupertino Union School District current collects $3.48 per square foot for residential units and $0.56 per square foot for new commercial development.

### 4.3.2 REGULATORY FRAMEWORK

STATE

#### Leroy F. Greene School Facilities Act of 1998 (SB 50)

Senate Bill (SB) 50 (Leroy Green School Facilities Act) was approved by California voters in November 1998. SB 50 established a comprehensive program for funding school facilities based on 50 percent funding from the State and 50 percent funding from local districts, while limiting the obligation of developers to mitigate the impact of projects on school facilities. California Government Code Section 65995 et seq. establishes the statutory criteria for assessing construction fees. This section also states that the payment of school mitigation impact fees authorized by SB 50 is deemed to provide "full and complete mitigation of impacts" from the development of real property on school facilities.

The three levels of developer fees established by SB 50 are described below.

1) Level 1 fees are base statutory fees.

2) Level 2 fees allow the school district to impose developer fees above the statutory levels, up to 50 percent of certain costs under designated circumstances. The State would match the 50 percent funding if funds are available.

3) Level 3 fees apply if the State runs out of bond funds after 2006, allowing the school district to impose 100 percent of the cost of the school facility or mitigation minus any local dedicated school monies.

In order to levy the alternate (Level 2) fee and qualify for 50 percent state-matching funds, a school district must prepare and adopt a School Facilities Needs Analysis, apply and be eligible for state funding, and satisfy specified criteria. The ability of a city or county to impose fees is limited to the statutory and potential additional charges allowed by the act.

#### California Department of Education

The California Department of Education (CDE) establishes standards for school sites pursuant to Education Code Section 17251 and adopts school site regulations, which are contained in the California Code of Regulations, Title 5, commencing with Section 14001 (CDE 2000). Certain health and safety requirements for school site selection are governed by state regulations and the policies of the CDE School Facilities Planning Division relating to:

- Proximity to airports, high-voltage power transmission lines, railroads, and major roadways;
- Presence of toxic and hazardous substances;
- Hazardous facilities and hazardous air emissions within one-quarter mile;

- Proximity to high-pressure natural gas lines, propane storage facilities, gasoline lines, pressurized sewer lines, or high-pressure water pipelines;
- Noise;
- Results of geological studies or soil analyses; and
- Traffic and school bus safety issues.

### LOCAL

**Measure P**

In November 2004, voters in the Sunnyvale School District approved Measure P, a $120 million General Obligation Bond measure, to maintain a safe learning environment at Sunnyvale's elementary and middle schools by upgrading infrastructure; improving and expanding school libraries; repairing, replacing, and rehabilitating aging facilities; and constructing and equipping classroom buildings and student support facilities.

Facilities improvements to be funded by Measure P were identified by Sunnyvale School District faculty, staff, students, independent facilities professionals, and community residents. The result of their work is a comprehensive Facilities Standards and Master Plan to be implemented over a period of 10 years. The Facilities Standards and Master Plan provides a cost-effective "road map" to achieve high quality instructional facilities required to accommodate students' future educational programming needs.

Laws governing passage of Measure P require strict accountability, including annual independent audits and public oversight, for the spending of funds received as a result of voter-approved bonds.

## 4.3.3 IMPACTS AND MITIGATION MEASURES

### STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following State CEQA Guidelines Appendix G threshold of significance. A public schools impact is considered significant if implementation of the Draft LUTE would:

1) Result in substantial adverse physical impacts associated with the provision of new or physically altered school 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.

### METHODOLOGY

Several school districts have attendance boundaries in Sunnyvale, and each district has its own student generation rates. The actual number of students who would attend a particular school would depend on the location of a future development project relative to the school's attendance boundaries. As such, there is not a single, standard student generation rate that can be applied citywide to estimate the number of students in any particular school district. For example, the student generation rate is 0.22 students per unit for elementary and middle schools in the Sunnyvale School District, and 0.10 students per unit for the Fremont Union High School

District (Sunnyvale 2015, p. 172). Student generation rates in the Cupertino Union School District are 0.25 for elementary school and 0.07 for middle school. In the Santa Clara Unified School District, the rates are 0.17 for elementary schools and 0.01 for middle and high schools (Schoolhouse Services 2014, pp. 14 and 57). However, most students would be expected to attend schools in the Sunnyvale School District, and a factor of 0.22 is used for elementary and middle schools.

## PROJECT IMPACTS AND MITIGATION MEASURES

### Increased Demand for Public Schools (Standard of Significance 1)

**Impact 4.3.1** Implementation of the Draft LUTE would increase population in the local school districts' service areas, which would subsequently increase student enrollment in local schools. Subsequent development under the Draft LUTE would be subject to school facility fees to pay for additional school facility needs. With payment of school facility fees, this impact would be **less than significant**.

Projected growth under the Draft LUTE would increase student enrollment in local school districts. The anticipated 15,100 new residential units would result in an additional approximately 3,300 elementary and middle school students and an additional approximately 1,500 high school students by 2035. The net additional change in potential enrollment between the existing (2025) General Plan and growth under the Draft LUTE (Horizon 2035) would be approximately 1,217 elementary students and approximately 553 high school students.[1] These estimates are considered conservative because the City anticipates smaller household sizes associated with a changing demographic over the next 20 years. In addition, the number of students enrolled would increase incrementally (i.e., the Draft LUTE would not result in a demand for capacity to accommodate these students all at once).

School districts routinely evaluate enrollment trends and capacity as part of facility planning. New schools, or the expansion of existing schools, would contribute to environmental impacts such as increased traffic, increased noise, degradation of air quality, degradation of water quality, and increased demand for public services and utilities such as water, wastewater, and solid waste services. In addition, new and/or expanded school facilities could result in altered traffic conditions, resulting in operational impacts during school pick-up and drop-off hours. The City of Sunnyvale has no direct control over the location and construction of schools. The school districts would be required to conduct appropriate project-level environmental review prior to expanding existing school facilities or developing new school facilities.

California Government Code Section 65995(h) states, "the payment or satisfaction of a fee, charge or other requirement levied or imposed . . . [is] deemed to be full and complete mitigation of the impacts of any legislative or adjudicative act, or both, involving, but not limited to, the planning, use, or development of real property, or any change in governmental organization or reorganization as defined in Section 56021 or 56073, on the provision of adequate school facilities." As discussed above, each of the school districts levies fees for residential and commercial development.

The Draft LUTE contains the following policies and actions addressing this impact.

[1] Calculated as follows: Adopted General Plan assumes 66,570 residential units by 2025. The Draft LUTE proposes 72,100 units by 2035. The difference is an additional 5,530 units. Applying the 0.22 students per unit for elementary and middle schools = 1,217 (rounded) and 0.1 students per unit for high school = 553.

Policy 104: Ensure that development projects provide appropriate improvements or resources to meet the future infrastructure and facility needs of the City, and provide development incentives that result in community benefits and enhance the quality of life for residents and workers.

Policy 105: Support the provision of a full spectrum of public and quasi-public services (e.g., parks, day care, group living, recreation centers, religious institutions, schools, hospitals, large medical clinics) that are appropriately located in residential, commercial, and industrial neighborhoods and ensure that they do not have a negative effect on the surrounding area.

Action 1: Encourage carpooling, shuttles, and transit access to public and quasi-public services to minimize adverse traffic and parking impacts on neighborhoods.

Policy 111: Recognize schools, both public and private, as integral parts of the community that require special consideration to manage traffic, support residential development, and provide open space.

Action 1: Work with school districts and private school operators during and after the City review and permitting process to minimize negative effects on the surrounding area.

Action 2: Maintain a working relationship with school districts on transportation, pedestrian and bicycle access, safe routes to schools, and other neighborhood issues.

Action 3: Assist public and private schools in neighborhood relations regarding land use and transportation issues.

Action 4: Work closely with school districts to review the impacts of proposed residential development on school capacity and facilities.

Policy 112: Support continuous education (beyond grades K-12) and educational enrichment programs while minimizing impacts on the surrounding land uses.

Implementation of the Draft LUTE policies and actions listed above would ensure that impacts of proposed residential development on school capacity and facilities are analyzed in conjunction with local school districts. In addition, any substantial improvements to existing or future school sites proposed by the school districts would be subject to subsequent project-level environmental review and mitigation by the districts and in accordance with CDE standards for school sites. The CDE standards consider certain environmental, toxic, and other student and staff safety issues during school site selection. These standards would reduce the potential for significant environmental impacts to occur in association with the construction of new school facilities in Sunnyvale.

As noted above, current state law requires that the environmental impact of new development on school facilities be considered fully mitigated through the payment of required development impact fees. Therefore, with payment of required school facilities fees, impacts associated with the provision of public school facilities would be considered **less than significant**.

Mitigation Measures

None required.

### 4.3.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

#### CUMULATIVE SETTING

The cumulative setting for public school impacts includes the boundaries for the school districts with schools in Sunnyvale—Sunnyvale School District, Cupertino Union School District, Santa Clara Unified School District, and Fremont Union High School District.

#### CUMULATIVE IMPACTS AND MITIGATION MEASURES

**Cumulative Schools Impacts**

**Impact 4.3.2** Population growth associated with implementation of the Draft LUTE, in combination with other existing, planned, proposed, approved, and reasonably foreseeable development within the boundaries of the school districts serving Sunnyvale, would result in a cumulative increase in student enrollment and could require new or expanded school facilities to accommodate the growth. The Draft LUTE's contribution to this impact would be **less than cumulatively considerable**.

As discussed under Impact 4.3.1 above, implementation of the Draft LUTE would provide for population growth that would increase student enrollment in the school districts in Sunnyvale. The net additional change in potential enrollment between the existing (2025) General Plan and growth under the Draft LUTE (Horizon 2035) would be approximately 1,217 elementary students and approximately 553 high school students. Similar student generation rates would result in proportionally similar numbers of new students in other portions of these school districts (outside Sunnyvale) that are experiencing similar growth on a per unit or per square foot basis. This cumulative increase in student enrollment could require new or expanded school facilities to accommodate the growth.

However, as noted above, both new development associated with the Draft LUTE and new development in other portions of affected school districts would be required to pay applicable school facility fees in conformance with state law and district requirements. Furthermore, any significant expansion of school facilities or development of new school facilities would be subject to appropriate CEQA environmental review, which would identify any site-specific impacts and provide mitigation as necessary to reduce those impacts. The environmental effects of any required school facility expansion and/or construction have been programmatically addressed associated with the overall development pattern of the city as set forth by the Draft LUTE.

The policies and actions listed under Impact 4.3.1 above would mitigate the LUTE's cumulative contribution to impacts on schools. Additionally, current state law requires that the environmental impact of new development on school facilities is considered fully mitigated through the payment of required school facilities fees. Finally, the school districts will conduct their own project-level environmental analysis to address proposals for new facilities and will address adverse environmental impacts on a case-by-case basis at that time. Therefore, the Draft LUTE's contribution to school facilities impacts would be **less than cumulatively considerable**.

Mitigation Measures

None required.

## 4.4 PARKS AND RECREATIONAL FACILITIES

### 4.4.1 EXISTING SETTING

About 770 acres, over 7 percent of the area within Sunnyvale's incorporated city limits, is devoted to park and recreation facilities owned or maintained by the City for public use, including 22 neighborhood parks (176 acres) and 9 special use facilities (264 acres). The City operates 51 tennis courts, 2 golf courses, and 3 swimming pools, including the Fremont Pool constructed in cooperation with the Fremont Union High School District. The City operates 143 acres of playfields, of which 95 acres are at schools and accessible to the public through joint-use agreements with three school districts. The community can now use nearly 40 baseball and soccer fields on school grounds after school hours. The City recently completed the 1.5-mile Calabazas Creek Trail, a pedestrian and bicycle trail between US Highway 101 and State Route 237. The trail allows residents to connect to the San Francisco Bay Trail, 3.45 miles of which is also in Sunnyvale (Sunnyvale 2011). Because the city is largely built out, there is little additional undeveloped or vacant land that could be used to increase the acreage of public park and recreation facilities beyond 770 acres.

The National Recreation and Park Association (NRPA) developed standards and guidelines in 1990 recommending 4–6 acres of open space per 1,000 residents. The NRPA has since acknowledged the difficulty in setting standards that would be applicable to all communities, given each community's unique characteristics. The 1990 NRPA standard of 4–6 acres per 1,000 residents is, however, still widely used. At 5.2 acres per 1,000 residents (based on a 2016 population of 148,372), Sunnyvale falls within that guideline.

### 4.4.2 REGULATORY FRAMEWORK

STATE

#### Quimby Act

The Quimby Act (California Government Code Section 66477) is a state law, applied at the local level, that specifies the parkland dedication requirements for new residential development. The Quimby Act allows local jurisdictions to require developers of new residential subdivisions to dedicate up to 3 acres of park area per 1,000 persons or, if the amount of existing neighborhood and community park area exceeds that limit, the jurisdiction can require that existing ratio, not to exceed 5 acres of land per 1,000 residents, or the payment of in-lieu fees for park or recreational purposes. Although the Quimby Act requires the dedication of new parkland, it does not address the development, operation, or maintenance of new park facilities. Therefore, the Quimby Act provides open space needed to develop park and recreational facilities, but does not ensure the development of the land or the provision of a park. The City of Sunnyvale has adopted Park Dedication Fees for park facilities in order to acquire and improve parkland consistent with the Quimby Act.

### LOCAL

#### City of Sunnyvale General Plan

The City's General Plan (2011) sets forth the goal of providing and maintaining adequate and balanced open space and recreation facilities for the community (Goal LT-8). The City does not currently have a minimum park ratio standard, but the General Plan references the NRPA's recommendation of between 4 and 6 acres of parkland per 1,000 residents (Sunnyvale 2011).

#### City of Sunnyvale Municipal Code

Municipal Code Chapter 18.10, Parks and Open Space Dedication, establishes that as a condition of approval of any final subdivision map or parcel map, the subdivider must dedicate land or pay a fee in lieu thereof, or both, at the option of the City, for park or recreational purposes. As of July 1, 2014, the land requirement is 5 acres per 1,000 residents. Specific acreage requirements based on residential unit density within a subdivision vary according to the type of development.

## 4.4.3 IMPACTS AND MITIGATION MEASURES

The impact analysis provided below is based on the following State CEQA Guidelines Appendix G thresholds of significance. A parks and recreation impact is significant if implementation of the proposed project would:

1) 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.

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

### METHODOLOGY

Evaluation of potential park and recreation impacts was based on a review of current policies and standards related to parks and recreation that may be impacted by the Draft LUTE. The impact analysis below focuses on whether those impacts would have a significant effect on the physical environment.

### PROJECT IMPACTS AND MITIGATION MEASURES

#### Increased Demand for Parks and Recreational Facilities (Standards of Significance 1 and 2)

**Impact 4.4.1** Implementation of the Draft LUTE would result in an increase in the city's population, which could subsequently increase the use of existing parks and recreational facilities that could result in impacts to the physical environment. This impact is considered **less than significant**.

Implementation of the Draft LUTE could increase the city's population to a total of 174,500 residents by 2035. Under current conditions, Sunnyvale has approximately 5.2 acres of parkland per 1,000 residents. With the projected population of 174,500, there would be approximately 4.3 acres per 1,000 residents if no additional parkland were added prior to 2035. Per the City's Municipal Code, new development would also be required to dedicate land, pay a fee in lieu thereof, or both, for park or recreational purposes at a ratio of 5 acres per 1,000 residents.

Additional use of existing neighborhood and regional parks would be associated with a larger population, which would require continued maintenance, repairs, and could include improvements such as facility expansion. Future development projects would be required to pay Park Dedication Fees for park facilities for the purpose of improving parklands.

Typical environmental effects regarding improvements to and use of parks and recreational facilities may involve issues with noise (during construction and with use of playfields and playgrounds), air quality (during the construction of the facility), biological resources (depending on location), historic/cultural resources (depending on location), public services and utilities (demand for police and fire protection, electric, water, and wastewater service), and traffic on a local neighborhood level. The programmatic environmental effects of construction of such facilities have been considered in the technical analyses of this Draft EIR as part of overall development of the city.

The Draft LUTE contains the following policies and actions that include specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact.

Policy 2: Minimize regional sprawl by endorsing strategically placed development density in Sunnyvale and by utilizing a regional approach to providing and preserving open space for the broader community.

Policy 44: Support proliferation of multi-use trails within Sunnyvale and their connection to regional trails in order to provide enhanced access to open space, promote alternative transportation options, and increase recreational opportunities while balancing those needs with preservation of natural habitat, public safety, and quality of life in residential neighborhoods.

Policy 53: Strengthen the image that the community is composed of cohesive residential neighborhoods, each with its own individual character and Village Center; allow for change and reinvestment that reinforces positive neighborhood concepts and standards such as walkability, positive architectural character, site design, and proximity to supporting uses.

Action 4: Provide public gathering places with appropriate amenities for residents, such as Village Centers and neighborhood and community parks.

Policy 70: Ensure that the planned availability of open space both in the city and the region is adequate.

Action 1: Define a minimum open space standard for residential uses, mixed-use developments, business developments, and Village Centers.

Action 2: Utilize joint agreements between the City and local school districts to create community recreational opportunities.

Action 3: At regular intervals, review the park dedication requirements.

Action 4: Integrate usable open space and plazas into commercial and office developments.

Policy 71: Improve accessibility to parks and open space by removing barriers.

Action 1: Provide and maintain adequate bicycle lockers at parks.

Action 2: Evaluate the feasibility of flood control channels and other utility easements for pedestrian and bicycle greenways.

Action 3: Develop and adopt a standard for a walkable distance from housing to parks.

Policy 72: Protect creeks and wetlands as important parts of the community's natural environment and open space, and for their contribution to flood control.

Action 2: Work with appropriate agencies to identify creek channels and wetlands to use as recreational areas.

Policy 104: Ensure that development projects provide appropriate improvements or resources to meet the future infrastructure and facility needs of the City, and provide development incentives that result in community benefits and enhance the quality of life for residents and workers.

Policy 105: Support the provision of a full spectrum of public and quasi-public services (e.g., parks, day care, group living, recreation centers, religious institutions, schools, hospitals, large medical clinics) that are appropriately located in residential, commercial, and industrial neighborhoods and ensure that they do not have a negative effect on the surrounding area.

Policy 107: Maintain and promote conveniently located public and quasi-public uses and services that enhance neighborhood cohesiveness and provide social and recreational opportunities.

Implementation of the Draft LUTE policies and actions listed above would ensure that the City would secure adequate funding for park and recreation needs for residents, support the expansion of park and open space resources, and maintain existing facilities. Ongoing compliance with these policies and actions, as well as Quimby Act land dedication or in-lieu fees, would ensure that this impact is **less than significant**.

Mitigation Measures

None required.

### 4.4.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

#### CUMULATIVE SETTING

The cumulative setting for parks and recreation consists of the City of Sunnyvale's Parks Division service area boundary and the County of Santa Clara Parks and Recreation Department's jurisdiction. Development in the city that currently places demand on Sunnyvale's parks and recreation facilities, or is expected to place demand on them in the future, could contribute to cumulative impacts.

### Cumulative Parks and Recreation Demands

**Impact 4.4.2** Implementation of the Draft LUTE, along with anticipated future development throughout the region, would increase the use of existing parks and require additional park and recreational facilities. The Draft LUTE's contribution to this impact is **less than cumulatively considerable**.

Future development consistent with the Draft LUTE, along with other existing, planned, proposed, approved, and reasonably foreseeable development in the region, would contribute to the cumulative demand for regional and local parks and recreational facilities and services. As previously discussed, individual development projects associated with the Draft LUTE would be subject to development impact fees to fund the provision of physical parkland. Furthermore, implementation of Draft LUTE policies and actions related to parkland and recreational facilities, as listed above, would ensure sufficient parks and recreational facilities would be provided, which would mitigate the LUTE's cumulative contribution to impacts on park and recreational facilities. Therefore, the Draft LUTE's contribution to regional park and recreational facility impacts would be **less than cumulatively considerable**.

Mitigation Measures

None required.

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# 5.0 ALTERNATIVES

## 5.1 INTRODUCTION

California Environmental Quality Act (CEQA) Guidelines Section 15126.6(a) states that an environmental impact report (EIR) shall describe and analyze a range of reasonable alternatives to a project. These alternatives should feasibly attain most of the basic objectives of the project, while avoiding or substantially lessening one or more of the significant environmental impacts of the project. An EIR need not consider every conceivable alternative to a project, nor is it required to consider alternatives that are infeasible. The discussion of alternatives shall focus on those alternatives which are capable of avoiding or substantially lessening any significant effects of the project, even if they impede the attainment of the project objectives to some degree or would be more costly (CEQA Guidelines Section 15126.6[b]).

According to the CEQA Guidelines, an EIR need only examine in detail those alternatives that could feasibly meet most of the basic objectives of the project. When addressing feasibility, CEQA Guidelines Section 15126.6 states that "among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, jurisdictional boundaries, and whether the applicant can reasonably acquire, control or otherwise have access to alternative sites." The State CEQA Guidelines also specify that the alternatives discussion should not be remote or speculative; however, they need not be presented in the same level of detail as the assessment of the proposed project. The objectives of the Draft LUTE are listed below.

The CEQA Guidelines indicate that several factors need to be considered in determining the range of alternatives to be analyzed in an EIR and the level of analytical detail that should be provided for each alternative. These factors include (1) the nature of the significant impacts of the proposed project; (2) the ability of alternatives to avoid or lessen the significant impacts associated with the project; (3) the ability of the alternatives to meet the objectives of the project; and (4) the feasibility of the alternatives. These factors would be unique for each project. The significant impacts of the Draft LUTE are listed below.

### PROJECT OBJECTIVES

The City of Sunnyvale has identified the following objectives to be achieved through adoption and implementation of the Draft LUTE:

1) **Complete Community.** Create a place to live that is less dependent on automobiles, and reduces environmental impacts, with distinctive activity centers and neighborhoods with character and access to nearby services.

2) **Neighborhood and Transit-Oriented Placemaking.** Develop mixed-use areas that incorporate commercial, public, and residential uses that are compatible with surrounding neighborhoods, create dynamic gathering spaces, establish unique visual character, provide nearby services, and reduce reliance on automobiles.

3) **Economic Development**. Foster an economic development environment which provides a wide variety of businesses and promotes a strong economy that can resist downturns within existing environmental, social, fiscal, and land use constraints**.**

4) **Environmental Sustainability.** Provide environmental leadership through land use patterns, renewable energy opportunities, and a multimodal transportation system.

5) **Multimodal Transportation.** Offer the community a variety of options for travel in and around the city that are connected to regional transportation systems and destinations.

6) **Healthy Living.** Maximize healthy living choices by providing easy access to fresh and healthy food, a range of recreation and open space options for community members of all ages, and convenient and safe biking and walking options throughout the community.

7) **Attractive Design.** Protect the design and feel of buildings and spaces to ensure an attractive community for residents and businesses.

8) **Diverse Housing.** Provide residential options for all incomes and lifestyles, including a variety of dwelling types, sizes, and densities that contribute positively to the surrounding area and the diversity of the community.

9) **Special and Unique Land Uses.** Allow for land uses such as child care, nursing homes, places of worship, etc., that complete the community fabric.

10) **Neighborhood Preservation.** Ensure that all residential areas and business districts in the planning area retain desired character and are enhanced through urban design and compatible mixes of activities.

### DRAFT LUTE SIGNIFICANT IMPACTS SUMMARY

In addition to identifying feasible mitigation for a proposed project's impacts, a lead agency must consider alternatives that could provide a means of avoiding altogether or reducing the level of impact that would otherwise result from implementation of a project. The following significant impacts would result from the proposed project.

- Impact 3.4.2 – Impacts to Transit Travel Times (significant and unavoidable)
- Impact 3.4.7 – Traffic Operational Impacts (significant and unavoidable)
- Impact 3.5.2 – Violate an Air Quality Standard or Contribute Substantially to an Air Quality Violation During Long-Term Operations (significant and unavoidable)
- Impact 3.5.3 – Violate an Air Quality Standard or Contribute Substantially to an Air Quality Violation During Short-Term Construction Activities (significant and unavoidable)
- Impact 3.5.5 – Exposure of Sensitive Receptors to Substantial Toxic Air Contaminant Concentrations During Construction (less than significant with mitigation)
- Impact 3.5.6 – Exposure of Sensitive Receptors to Substantial Toxic Air Contaminant Concentrations During Operations (less than significant with mitigation)
- Impact 3.5.7 – Creates Objectionable Odor Emissions Affecting a Substantial Number of People (less than significant with mitigation)
- Impact 3.5.8 – Cumulative Air Quality Impacts (cumulatively considerable and significant and unavoidable)
- Impact 3.6.2 – Substantial Increase in Ambient Noise Levels (significant and unavoidable)

- Impact 3.6.3 – Exposure to Groundborne Vibration (less than significant with mitigation)
- Impact 3.6.4 – Exposure to Short-Term Construction Noise Impacts (less than significant with mitigation)
- Impact 3.6.6 – Cumulative Traffic Noise Impacts (cumulatively considerable and significant and unavoidable)
- Impact 3.10.1 – Loss of Historic Resources (significant and unavoidable)
- Impact 3.10.3 – Cumulative Impacts on Historic Resources, Archaeological Resources, and Human Remains (cumulatively considerable and significant and unavoidable)
- Impact 3.13.1 – Generation of Greenhouse Gas Emissions and Compliance with Sunnyvale Climate Action Plan (less than cumulatively considerable with mitigation)

## 5.2 ALTERNATIVES UNDER CONSIDERATION

Based on the environmental impact analysis in Sections 3.1 through 3.13 and 4.0, there are no unique ground disturbance impacts that would identify the need for a modification of the development pattern for the Planning Area. For example, any development activity in the Planning Area is anticipated to result in air quality impacts related to construction emissions, increases in traffic noise, and potential impacts on historic resources. Thus, the alternatives analysis evaluates environmental impacts that involve modification in the type of development in the Planning Area. These alternatives are identified below.

- Alternative 1 – Existing LUTE (No Project Alternative)
- Alternative 2 – Reduced Jobs/Housing Ratio
- Alternative 3 – Redistribute a Portion of Neighborhood Village Growth to Commercial Nodes

These alternatives constitute an adequate range of reasonable alternatives as required under CEQA Guidelines Section 15126.6.

**Table 5.0-1** compares the project alternatives.

**TABLE 5.0-1**
**BUILDOUT CONDITIONS FOR ALTERNATIVES AND DRAFT LUTE**

| Development Assumption | Draft LUTE | Alternative 1 (No Project/Existing LUTE) | Alternative 2 (Reduced Jobs/Housing Raito) | Alternative 3 (Partial Neighborhood Village Growth to Commercial Nodes) |
|---|---|---|---|---|
| Housing Units | 72,100 | 66,570 | 81,151 | 72,095 |
| Nonresidential Growth (square feet) | 59,800,000 | 55,500,000 | 58,327,300 | 59,837,000 |
| Jobs | 124,410 | 115,396 | 121,275 | 124,414 |
| Jobs/Housing Ratio | 1.73 | 1.73 | 1.49 | 1.73 |

## 5.3 ALTERNATIVE 1 – NO PROJECT ALTERNATIVE

### DESCRIPTION OF ALTERNATIVE

Section 15126.6(e) (2) of the State CEQA Guidelines requires an EIR to include an analysis of the No Project Alternative. Evaluation of the No Project Alternative allows decision-makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project. In this Draft EIR, the No Project Alternative assumes that the Draft LUTE would not be approved, but it does not necessarily preclude use or development of the Planning Area. Rather, the No Project Alternative evaluated in this Draft EIR considers "what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services" (State CEQA Guidelines Section 15126.6 [e][2]).

As provided by State CEQA Guidelines Section 15126(e)(3)(A), a discussion of the No Project Alternative will usually proceed along one of two lines: a "plan-to-plan" comparison when the project is the revision of an existing land use plan, such as the proposed project; or—if the project is other than a land use plan (e.g., a development project on identifiable property)—a comparison of the environmental effects of the property remaining in its existing state against the environmental effects if the proposed project is approved. The plan-to-plan comparison is the appropriate analysis for this EIR.

Under this alternative, the Draft LUTE would not be adopted and the current 1997 LUTE (included in the 2011 Consolidated General Plan) would remain in effect. The development potential of this alternative in comparison to the Draft LUTE is shown in **Table 5.0-1**. While the overall extent of urban development for the existing LUTE and the proposed project would be the same, notable differences include the lack of mixed-use land use designations in the existing LUTE. The existing LUTE would also not include new policies (e.g., Environmental Sustainability, Multimodal Transportation, and Village Centers) that support the project objectives.

### ENVIRONMENTAL ANALYSIS

#### Land Use

As identified in Section 3.1, Land Use, the Draft LUTE would not result in any significant land use impacts related to physical division of an established community, conflicts with adopted land use plans, or conflicts with an adopted habitat conservation plan or natural community conservation plan.

Alternative 1 would also avoid significant land use impacts because development would be in accordance with existing General Plan policies and zoning regulations that the City has adopted for the purposes of avoiding and/or mitigating potential land use impacts.

#### Population, Housing, and Employment

The Draft LUTE would not result in any significant environmental impacts associated with substantial increases in population and housing or result in displacement of substantial numbers of people (see Section 3.2, Population, Housing, and Employment).

Alternative 1 would also avoid significant impacts associated with substantial increases in population and housing or displacement of substantial numbers of persons. While Alternative 1

would reduce residential and job development potential compared to the Draft LUTE, it would also result in worsening the city's jobs/housing balance (from 1.44 under existing conditions to 1.73 under year 2035 conditions), (see **Table 5.0-1**).

### Hazards and Human Health

Implementation of the Draft LUTE would not result in any significant hazards or human health impacts (see Section 3.3, Hazards and Human Health).

Development under Alternative 1 would also not result in any significant hazards or human health impacts, similar to the Draft LUTE, as it would be subject to the same local, state, and federal regulations regarding hazardous materials.

### Transportation and Circulation

The Draft LUTE would result in significant traffic operation impacts in year 2035 conditions for study intersections (including Congestion Management Plan facilities and intersections in the City of Santa Clara) and freeway segments, as well as impact transit travel times (see Impacts 3.4.2 and 3.4.6). Mitigation measures **MM 3.4.7a** and **MM 3.4.7b** and implementation of Draft LUTE Transportation Management Demand (TDM) policies would mitigate impacts to the following intersections:

- Lawrence Expressway & Tasman Drive (#11) (CMP intersection)
- Duane Avenue/Stewart Drive & Duane Avenue (#19)
- Wolfe Road & Fremont Avenue (#29)
- Fair Oaks Avenue & Arques Avenue (#31)
- Fair Oaks Avenue & El Camino Real (#34) (CMP intersection)
- Sunnyvale-Saratoga Road & Remington Drive (#40) (CMP intersection)
- Mathilda Avenue & El Camino Real (#48) (CMP intersection)
- Bowers Avenue & Central Expressway (#95) (CMP intersection in the City of Santa Clara)

While improvements to Lawrence Expressway, US Highway 101 (US 101), and State Route (SR) 85 are planned, the City does not have the ability to ensure their construction. Thus, this impact was identified as significant and unavoidable for the Draft LUTE.

Based on the analysis provided in **Appendix C** (Traffic Impact Analysis [TIA]), Alternative 1 would result in the same intersection and freeway segment impacts as the Draft LUTE, with the exception of the following facilities where it would avoid or lessen the following deficient traffic operation impacts identified for the Draft LUTE:

- Fair Oaks Avenue & Arques Avenue (#31) (AM peak only)
- Mathilda Avenue & El Camino Real (#48) (CMP intersection)
- SR 85 Southbound & Fremont Avenue (#60) (AM peak only)

- Bowers Avenue & Central Expressway (#95) (CMP intersection in the City of Santa Clara) (AM peak only)
- US 101 Northbound from Story Road to I-280, and from Lawrence Expressway to Mathilda Avenue (AM peak hour) (mixed-flow segment)
- US 101 Southbound from Ellis Street to Mathilda Avenue, and from Fair Oaks Avenue to Lawrence Expressway (PM peak hour) (mixed-flow segment)
- I-280 Northbound from US 101 to SR 87 (AM peak hour) (mixed-flow segment)
- I-280 Southbound from Page Mill Road to Magdalena Avenue (PM peak hour) (mixed-flow segment)
- SR 85 Northbound from Almaden Expressway to SR 17 (AM peak hour) (mixed-flow segment)
- I-880 Northbound from The Alameda to First Street (PM peak hour) (mixed-flow segment)
- US 101 Southbound from Embarcadero Road to Charleston Road (AM peak hour) (HOV segment)
- US 101 Southbound from San Antonio Road to Shoreline Boulevard (PM peak hour) (HOV segment)
- US 101 Northbound from Shoreline Boulevard to Embarcadero Road (PM peak hour) (HOV segment)
- I-280 Northbound from Blossom Hill Road to SR 87 (AM peak hour) (HOV segment)

Traffic operational impacts would result from implementation of Alternative 1 for the following intersections. These intersections would not result in a substantial contribution to traffic impacts under year 2035 conditions with implementation of the Draft LUTE:

- Lawrence Expressway & Arques Avenue (CMP Facility) – LOS F in PM peak hour
- Lawrence Expressway & Kifer Road (CMP Intersection) – LOS F in AM peak hour
- Wolfe Road & Kifer Road – LOS F in PM peak hour
- Mary Avenue & Maude Avenue – LOS E in PM peak hour
- SR 85 Northbound & Freemont Avenue – LOS E in AM peak hour
- Ellis Street & Middlefield Road (City of Mountain View) – LOS F in PM peak hour
- Grant Road & El Camino Real (City of Mountain View) – LOS F in AM peak hour
- Lawrence Expressway & Interstate 280 Southbound (CMP Facility) - LOS F in AM peak hour and LOS E in PM peak hour
- Oakmead Parkway & Central Expressway (City of Santa Clara) – LOS F in PM peak hour

- Bowers Avenue & Kifer Road (City of Santa Clara) – LOS F in PM peak hour
- Bowers Avenue & Monroe Street (City of Santa Clara) – LOS F in PM peak hour

Alternative 1 would generate a total of 2,804,752 vehicle miles traveled (VMT) daily (12.30 VMT per capita), as compared to the Draft LUTE at 3,082,098 VMT (12.00 VMT per capita) (see **Table 3.4-1** in Section 3.4, Transportation and Circulation).

### Air Quality

Implementation of the Draft LUTE could result in significant and unavoidable air quality impacts associated with the extent of construction activities and operational emissions under project and cumulative conditions (Impacts 3.5.2, 3.5.3, and 3.5.8). The Draft LUTE could also result in sensitive receptors being exposed to toxic air contaminants (TACs) and odors (Impacts 3.5.5, 3.5.6, and 3.5.7), which would be mitigated to less than significant through implementation of mitigation measures **MM 3.5.5, MM 3.5.6,** and **MM 3.5.7**.

Alternative 1 would result in similar construction air quality impacts, given that the extent of construction would be similar to the Draft LUTE. Operational impacts would also be similar under Alternative 1, though total emissions would be reduced by approximately 36–37 percent as a result of the reduced development potential as compared to the Draft LUTE (based on annual emissions using CalEEMod).

Alternative 1 would also result in similar TAC and odor impacts that could be mitigated through implementation of mitigation measures **MM 3.5.5, MM 3.5.6,** and **MM 3.5.7.**

### Noise

The Draft LUTE would result in significant and unavoidable traffic noise impacts (Impacts 3.6.2 and 3.6.6). Construction noise and vibration impacts (Impacts 3.6.3 and 3.6.4) were also identified as significant, but would be mitigated through the implementation of mitigation measure **MM 3.6.3**.

Alternative 1 would also result in similar significant and unavoidable traffic noise impacts, as its traffic generation would not be reduced to the point of substantially reducing noise levels based on traffic data provided in **Appendix C**. This alterative would result in the potential for similar construction noise and vibration impacts as the Draft LUTE, as construction activities would be similar. Mitigation measure **MM 3.6.3** would reduce this impact to less than significant for Alternative 1.

### Geology, Soils, and Paleontological Resources

Implementation of the Draft LUTE would not result in any significant geologic, seismic, or paleontological impacts (see Section 3.7, Geology, Soils, and Paleontological Resources).

Alternative 1 would result in the same less than significant geologic and seismic impacts as the Draft LUTE. However, Alternative 1 would not include Draft LUTE Policy 10, Action 6 that requires work stoppage during construction of subsequent projects if archaeological or paleontological resources are discovered, investigation by a qualified professional, and implementation of measures to protect the resource(s). Thus, Alternative 1 could result in significant impacts to paleontological resources that the Draft LUTE would avoid.

### Hydrology and Water Quality

As identified in Section 3.8, Hydrology and Water Quality, the Draft LUTE would not result in any significant water quality, groundwater, or flooding impacts as a result of implementation of policy provisions of the Draft LUTE and compliance with current City requirements regarding water quality and flood protection.

Alternative 1 would also be subject to current City requirements regarding water quality and flood protection and would avoid these impacts. However, Alternative 1 would not include Draft LUTE Policies 17 and 73 that specifically address sea level rise impacts on flooding and development near creeks in the city.

### Biological Resources

The Draft LUTE would not result in any significant impacts to biological resources through compliance with existing city, state, and federal natural resource regulations and with Draft LUTE Policies 10 and 72 that call for protection of biological resources, creeks, and wetland habitats (see Section 3.8, Biological Resources).

Alternative 1 would have the potential to result in similar biological resource impacts as the Draft LUTE, given that the urban development area for this alternative and the Draft LUTE are the same. However, Alternative 1 would not include the protective measures set forth in Draft LUTE Policies 10 and 72.

### Cultural Resources

Section 3.10, Cultural Resources, identifies that the Draft LUTE could result in significant and unavoidable impacts to historic resources from development activities (see Impacts 3.10.1 and 3.10.3). The Draft LUTE would avoid significant archaeological impacts through implementation of Draft LUTE Policy 10, Action 6 that requires work stoppage during construction of subsequent projects if archaeological or paleontological resources are discovered, investigation by a qualified professional, and measures to protect the resource(s).

Alternative 1 would have the same significant and unavoidable impact on historic resources as the Draft LUTE, given that the urban development area for this alternative and the Draft LUTE are the same. However, Alternative 1 could have significant impacts to archaeological resources that are avoided under the Draft LUTE with Policy 10, Action 6.

### Utilities and Service Systems

As identified in Section 3.11, Utilities and Service Systems, the Draft LUTE would not result in any significant impacts to water supply, wastewater, solid waste, energy, and electrical/natural gas services.

Alternative 1 would have the following reduced demands for services as compared to the Draft LUTE:

- 2,274 acre-feet annually of reduced total water supply demand.
- 1.48 million gallons per day of reduced residential wastewater generation.
- 27.3 tons per day of reduced solid waste generation.

### Visual Resources and Aesthetics

The Draft LUTE would not result in any significant visual impacts involving the substantial alteration of a scenic vista or resources or alteration of visual character, nor would it substantially increase daytime glare and nighttime lighting.

Alternative 1 would also result in less than significant visual impacts. Development would be guided by the current policies in the Land Use and Transportation and Community Character chapters of the General Plan, zoning regulations, and the Citywide Design Guidelines.

### Greenhouse Gases and Climate Change

As identified in Section 3.13, Greenhouse Gases and Climate Change, the Draft LUTE would result in greenhouse gas (GHG) emissions per service population of 2.5 metric tons for year 2035 that would be below the City's Climate Action Plan (CAP) target of 2.6 metric tons for that same year. However, the growth anticipated in the Draft LUTE is beyond the growth projections of the CAP. Mitigation measure **MM 3.13.1** would address this issue by updating the CAP to incorporate growth anticipated in the Draft LUTE.

Alternative 1 would be consistent with the City's CAP because the Climate Action Plan is based on current General Plan assumptions.

### Public Services

As identified in Section 4.0, Public Services, implementation of the Draft LUTE would not result in any public service provision impacts that would trigger a significant environmental impact.

Alternative 1 would also avoid significant public service impacts with a reduction in demands as a result of lower development potential. Specifically, this alternative would result in 1,195 fewer elementary and middle school students, 543 fewer high school students, and 21.5 acres of reduced park demand.

## 5.4 ALTERNATIVE 2 – REDUCED JOBS/HOUSING RATIO ALTERNATIVE

### DESCRIPTION OF ALTERNATIVE

Alternative 2 would be similar to the proposed project except that the residential development potential of the Draft LUTE would be increased and the employment potential reduced in order to achieve a jobs/housing ratio of approximately 1.49. This alternative would increase the number of housing units in all areas of growth (Downtown, Industrial to Residential (ITR) sites, planned mixed-use areas, El Camino Real, and other areas) by 60 percent. Alternative 2 would also reduce planned nonresidential floor area at the ITR 5 site (Northrop Grumman) by 40 percent. The proposed employment potential of all other project areas would be retained. **Table 5.0-1** shows a breakdown of the development potential of Alternative 2. The policy provisions of the Draft LUTE would be included in this alternative.

## ENVIRONMENTAL ANALYSIS

### Land Use

As identified in Section 3.1, Land Use, the Draft LUTE would not result in any significant land use impacts related to physical division of an established community, conflicts with adopted land use plans, or conflicts with an adopted habitat conservation plan or natural community conservation plan.

Alternative 2 would also avoid significant land use impacts and would implement Draft LUTE policies that integrate existing and new development. Draft LUTE Policies 54, 55, 56, 57, and 59 would require that new development and redevelopment preserve and enhance existing areas of Sunnyvale and its neighborhoods through land use and transportation improvement designed to integrate with existing uses and provide land use transition for uses to ensure compatibility.

### Population, Housing, and Employment

The Draft LUTE would not result in any significant environmental impacts associated with substantial increases in population and housing or result in displacement of substantial numbers of people (see Section 3.2, Population, Housing, and Employment).

Alternative 2 would provide an improved jobs/housing balance (1.49), which is similar to existing conditions. It would also not result in any significant impacts associated with substantial increases in population and housing or result in displacement of substantial numbers of people.

### Hazards and Human Health

Implementation of the Draft LUTE would not result in any significant hazards or human health impacts (see Section 3.3, Hazards and Human Health).

Development under Alternative 2 would also not result in any significant hazards or human health impacts, similar to the Draft LUTE, as it would be subject to the same local, state, and federal regulations regarding hazardous materials.

### Transportation and Circulation

The Draft LUTE would result in significant traffic operation impacts in year 2035 conditions for study intersections (including Congestion Management Plan facilities and intersections in the City of Santa Clara) and freeway segments, as well as impact transit travel times (see Impacts 3.4.2 and 3.4.6). Mitigation measures **MM 3.4.7a** and **MM 3.4.7b** and implementation of Draft LUTE Transportation Management Demand (TDM) policies would mitigate impacts to the following intersections:

- Lawrence Expressway & Tasman Drive (#11) (CMP intersection)
- Duane Avenue/Stewart Drive & Duane Avenue (#19)
- Wolfe Road & Fremont Avenue (#29)
- Fair Oaks Avenue & Arques Avenue (#31)
- Fair Oaks Avenue & El Camino Real (#34) (CMP intersection)

- Sunnyvale-Saratoga Road & Remington Drive (#40) (CMP intersection)
- Mathilda Avenue & El Camino Real (#48) (CMP intersection)
- Bowers Avenue & Central Expressway (#95) (CMP intersection in the City of Santa Clara)

While improvements to Lawrence Expressway, US 101, and SR 85 are planned, the City does not have the ability to ensure their construction. Thus, this impact was identified as significant and unavoidable.

Alternative 2 would reduce the jobs/housing ratio from 1.73 under the proposed Draft LUTE to 1.49 by increasing housing units and decreasing jobs. This means that the number of Sunnyvale residents also working in Sunnyvale (internal-internal work trips) could increase, and the number of jobs in Sunnyvale filled by non-Sunnyvale residents could decrease. According to Census 2000, approximately 23 percent of Sunnyvale residents work in Sunnyvale, which translates to approximately 19 percent of jobs within Sunnyvale filled by Sunnyvale residents. Assuming the same percentages in year 2035, Alternative 2 could potentially shift a net 621 peak-hour work trips of Sunnyvale residents working outside of the city to internal-internal trips. These trips would not be new trips. However, an increase in housing units would also increase work trips to locations outside of Sunnyvale, as well as non-work-related trips. The increase of 9,056 housing units could potentially generate an additional 5,700 trips during each peak hour, and the decrease of 3,139 jobs could potentially reduce 660 trips during each peak hour. Overall, Alternative 2 could potentially increase Sunnyvale-generated trips by 5,040 during each peak hour, compared to the proposed Draft LUTE.

Compared to the Draft LUTE, the changes in housing and jobs under Alternative 2 would represent an approximate 17 percent increase in trips in the Lawrence Station area, a 1 percent increase in trips in the Peery Park area, and a 10 percent increase in trips in the rest of the city. Alternative 2 would result in the same impacted intersections and transit travel times identified above for the Draft LUTE. This alternative could also potentially generate two additional significant intersection impacts (as well as transit travel times) at the intersections of Hollenbeck Avenue and El Camino Real and of Mary Avenue and El Camino Real that would not occur under the Draft LUTE. Alternative 2 would also result in similar freeway segment impacts as the Draft LUTE.

Alternative 2 is expected to result in an increase in VMT as compared to the Draft LUTE. Under Alternative 2, the reduced jobs/housing ratio would mean more jobs in Sunnyvale may be filled by residents of Sunnyvale and could increase the number of internal-internal trips. The increase in residential units could also increase internal-external trips (home to work in the morning) and external-internal trips (work to home in the evening). The decrease in jobs could instead reduce external-internal trips (home to work in the morning) and internal-external trips (work to home in the evening). The increase in peak-hour residential trips is estimated at 5,700 and the decrease in peak-hour work trips is estimated at 660. During the off peak, the number of trips generated for residential trips would also be much larger than work trips. Therefore, the increase in internal-external and external-internal trips due to the increase in homes would outweigh the decrease in trips due to the reduction in jobs.

### Air Quality

Implementation of the Draft LUTE could result in significant and unavoidable air quality impacts associated with the extent of construction activities and operational emissions under project and cumulative conditions (Impacts 3.5.2, 3.5.3, and 3.5.8). The Draft LUTE could also result in sensitive receptors being exposed to TACs and odors (Impacts 3.5.5, 3.5.6, and 3.5.7), which would be

mitigated to less than significant through implementation of mitigation measures **MM 3.5.5, MM 3.5.6,** and **MM 3.5.7.**

Alternative 2 would result in similar construction air quality impacts, given that the extent of construction would be similar to the Draft LUTE. Operational impacts would also be similar to the Draft LUTE. However, this alternative's total emissions would be approximately 20–24 percent higher compared to the Draft LUTE given the increased residential development potential (based on annual emissions using CalEEMod).

Alternative 2 would also result in similar TAC and odor impacts that could be mitigated through implementation of mitigation measures **MM 3.5.5, MM 3.5.6,** and **MM 3.5.7.**

### Noise

The Draft LUTE would result in significant and unavoidable traffic noise impacts (Impacts 3.6.2 and 3.6.6). Construction noise and vibration impacts (Impacts 3.6.3 and 3.6.4) were also identified as significant, but would be mitigated through the implementation of mitigation measure **MM 3.6.3**.

Alternative 2 would also result in similar significant and unavoidable traffic noise impacts, as its traffic generation would not be substantially altered to the point of substantially altering noise levels. Alterative 2 would result in the potential for similar construction noise and vibration impacts as the Draft LUTE, as construction activities would be similar. Implementation of mitigation measure **MM 3.6.3** would reduce this impact to less than significant for Alternative 2.

### Geology, Soils, and Paleontological Resources

Implementation of the Draft LUTE would not result in significant geologic, seismic, or paleontological impacts (see Section 3.7, Geology, Soils, and Paleontological Resources).

Alternative 2 would also not result in significant geologic and seismic impacts, similar to the Draft LUTE. It would be subject to the same current City standards for geologic stability and Draft LUTE Policy 10, Action 6 that requires work stoppage during construction of subsequent projects if archaeological or paleontological resources are discovered, investigation by a qualified professional, and implementation of measures to protect the resource(s).

### Hydrology and Water Quality

As identified in Section 3.8, Hydrology and Water Quality, the Draft LUTE would not result in any significant water quality, groundwater, or flooding impacts as a result of implementation of Draft LUTE policies and compliance with current City requirements regarding water quality and flood protection.

Alternative 2 would also be subject to current City requirements regarding water quality and flood protection and would avoid these impacts. Alternative 2 would also include Draft LUTE Policies 17 and 73 that specifically address sea level rise impacts on flooding and development near creeks in the city.

### Biological Resources

The Draft LUTE would not result in any significant impacts to biological resources through compliance with existing city, state, and federal natural resource regulations and with Draft LUTE

Policies 10 and 72 that call for protection of biological resources, creeks, and wetland habitats (see Section 3.8, Biological Resources).

Alternative 2 would have the potential to result in similar biological resource impacts as the Draft LUTE, given that the urban development area for this alternative and the Draft LUTE are the same. Alternative 2 would include the protective measures of the Draft LUTE set forth in Policies 10 and 72.

### Cultural Resources

Section 3.10, Cultural Resources, identifies that the Draft LUTE could result in significant and unavoidable impacts to historic resources from development activities (see Impacts 3.10.1 and 3.10.3). The Draft LUTE would avoid significant archaeological impacts through implementation of Draft LUTE Policy 10, Action 6 that requires work stoppage during construction of subsequent projects if archaeological or paleontological resources are discovered, investigation by a qualified professional, and implementation of measures to protect the resource(s).

Alternative 2 would have the same significant and unavoidable impact on historic resources as the Draft LUTE, given that the urban development area for this alternative and the Draft LUTE are the same.

### Utilities and Service Systems

As identified in Section 3.11, Utilities and Service Systems, implementation of the Draft LUTE would not result in any significant impacts to water supply, wastewater, solid waste, energy, and electrical/natural gas services.

Alternative 2 would have the following increased demands for services compared to the Draft LUTE:

- 1,344.6 acre-feet annually of increased total water supply demand. As noted in Section 3.11, Utilities and Service Systems (**Table 3.11.1-6a**), there is adequate water in normal years to meet this increased demand. The multiple dry year analysis does not factor increased recycled water production of 2,298 acre-feet per year that would come online by 2030, which would accommodate this increase.

- 2.41 million gallons per day of increased residential wastewater generation. Based on the impact analysis in Impacts 3.11.2.1 and 3.11.2.3, there would be adequate wastewater treatment capacity to accommodate this increase.

- 49.76 tons per day of increased solid waste generation. Based on the impact analysis in Impacts 3.11.3.1 and 3.11.3.3, there would be adequate solid waste capacity to accommodate this increase.

### Visual Resources and Aesthetics

The Draft LUTE would not result in any significant visual impacts involving the substantial alteration of a scenic vista or resources or alteration of visual character, nor would it substantially increase daytime glare and nighttime lighting.

Alternative 2 would also result in less than significant visual impacts similar to the Draft LUTE.

### Greenhouse Gases and Climate Change

As identified in Section 3.13, Greenhouse Gases and Climate Change, the Draft LUTE would result in GHG emissions per service population of 2.5 metric tons for year 2035 that would be below the City's Climate Action Plan target of 2.6 metric tons for year 2035. However, the growth anticipated in the Draft LUTE is beyond the growth projections of the CAP. Mitigation measure **MM 3.13.1** would address this issue by updating the CAP to incorporate growth anticipated in the Draft LUTE.

Alternative 2 would result in a 31 percent increase in greenhouse gas emissions as compared to the Draft LUTE as a result of the increased development potential and anticipated VMT increases. This would equate to a GHG emissions per service population of 2.9 metric tons for year 2035 that would be above the City's CAP target of 2.6 metric tons for that same year.

### Public Services

As identified in Section 4.0, Public Services, implementation of the Draft LUTE would not result in any public service provision impacts that would trigger a significant environmental impact.

Alternative 2 would also avoid significant public service impacts. However, this alternative would result in 2,013 additional elementary and middle school students, 915 additional high school students, and 63.94 acres of additional park demand.

## 5.5 ALTERNATIVE 3 – REDISTRIBUTE A PORTION OF NEIGHBORHOOD VILLAGE GROWTH TO COMMERCIAL NODES

### DESCRIPTION OF ALTERNATIVE

Alternative 3 would relocate 600 housing units (approximately 66 percent) currently identified as in the Village Mixed Use land use designation to the Transit Mixed Use and Corridor Mixed Use land use designations. Specifically, planned housing units in four of the Neighborhood Village areas would be redistributed, resulting in a higher concentration of these uses along transportation corridors (e.g., El Camino Real) and in Transit Village Centers (e.g., Downtown, Lawrence Station). Proposed Neighborhood Village Centers would be retained as neighborhood commercial uses. The development potential of this alternative is identified in **Table 5.0-1**. All other policy provisions of the Draft LUTE would be included in this alternative.

### ENVIRONMENTAL ANALYSIS

### Land Use

As identified in Section 3.1, Land Use, the Draft LUTE would not result in any significant land use impacts related to physical division of an established community, conflicts with adopted land use plans, or conflicts with an adopted habitat conservation plan or natural community conservation plan.

Alternative 3 would also avoid these significant land use impacts and would implement Draft LUTE policies that integrate existing and new development. Draft LUTE Policies 54, 55, 56, 57, and 59 would require that new development and redevelopment preserve and enhance existing areas of Sunnyvale and its neighborhoods through land use and transportation improvements designed to integrate with existing uses and provide land use transitions for uses to ensure compatibility.

### Population, Housing, and Employment

The Draft LUTE would not result in any significant environmental impacts associated with substantial increases in population and housing or result in displacement of substantial numbers of people (see Section 3.2, Population, Housing, and Employment).

Alternative 3 would also result in a jobs/housing balance of 1.73 jobs/housing ratio, which is the same as the Draft LUTE. It would not result in any significant impacts associated with substantial increases in population and housing or result in displacement of substantial numbers of people, similar to the Draft LUTE.

### Hazards and Human Health

Implementation of the Draft LUTE would not result in any significant hazards or human health impacts (see Section 3.3, Hazards and Human Health).

Development under Alternative 3 would also not result in any significant hazards or human health impacts, similar to the Draft LUTE, as it would be subject to the same local, state, and federal regulations regarding hazardous materials.

### Transportation and Circulation

The Draft LUTE would result in significant traffic operation impacts in year 2035 conditions for study intersections (including Congestion Management Plan facilities and intersections in the City of Santa Clara) and freeway segments, and would impact transit travel times (see Impacts 3.4.2 and 3.4.6). Mitigation measures **MM 3.4.7a** and **MM 3.4.7b** and implementation of Draft LUTE Transportation Management Demand (TDM) policies would mitigate impacts to the following intersections:

- Lawrence Expressway & Tasman Drive (#11) (CMP intersection)
- Duane Avenue/Stewart Drive & Duane Avenue (#19)
- Wolfe Road & Fremont Avenue (#29)
- Fair Oaks Avenue & Arques Avenue (#31)
- Fair Oaks Avenue & El Camino Real (#34) (CMP intersection)
- Sunnyvale-Saratoga Road & Remington Drive (#40) (CMP intersection)
- Mathilda Avenue & El Camino Real (#48) (CMP intersection)
- Bowers Avenue & Central Expressway (#95) (CMP intersection in the City of Santa Clara)

While improvements to Lawrence Expressway, US 101, and SR 85 are planned, the City does not have the ability to ensure their construction. Thus, this impact was identified as significant and unavoidable.

Relocating residential units to areas that are closer to major transit centers could potentially increase the number of transit riders by 5 percent and reduce the number of automobile trips. However, 600 housing units translates to approximately 300 peak-hour trips, and the potential 5

percent increase in transit riders would translate to 15 riders. This increase in transit riders and decrease in automobile trips would not be significant when considered at the citywide level. It is thus expected that Alternative 3 would have similar intersection impacts (as well as transit travel time impacts) compared to the Draft LUTE. Alternative 3 would also result in similar freeway segment impacts to the Draft LUTE. This alternative is expected to result in similar VMT compared to the Draft LUTE.

### Air Quality

Implementation of the Draft LUTE could result in significant and unavoidable air quality impacts associated with the extent of construction activities and operational emissions under both project and cumulative conditions (Impacts 3.5.2, 3.5.3, and 3.5.8). The Draft LUTE could also result in sensitive receptors being exposed to TACs and odors (Impacts 3.5.5, 3.5.6, and 3.5.7), which would be mitigated to less than significant through implementation of mitigation measures **MM 3.5.5, MM 3.5.6,** and **MM 3.5.7.**

Alternative 3 would result in similar construction air quality impacts, given that the extent of construction would be similar to the Draft LUTE. Operational impacts would also be similar to the Draft LUTE, with nearly identical total annual air pollutant emissions (based on annual emissions using CalEEMod).

Alternative 3 would also result in similar TAC and odor impacts that could be mitigated through implementation of mitigation measures **MM 3.5.5, MM 3.5.6,** and **MM 3.5.7**.

### Noise

The Draft LUTE would result in significant and unavoidable traffic noise impacts (Impacts 3.6.2 and 3.6.6). Construction noise and vibration impacts (Impacts 3.6.3 and 3.6.4) were also identified as significant, but would be mitigated through the implementation of mitigation measure **MM 3.6.3.**

Alternative 3 would also result in similar significant and unavoidable traffic noise impacts, as its traffic generation would not be altered to the point of substantially altering noise levels. Alterative 3 would result in the potential for similar construction noise and vibration impacts as the Draft LUTE, as construction activities would be similar. Mitigation measure **MM 3.6.3** would reduce this impact to less than significant for Alternative 3.

### Geology, Soils, and Paleontological Resources

Implementation of the Draft LUTE would not result in any significant geologic, seismic, and paleontological impacts (see Section 3.7, Geology, Soils, and Paleontological Resources).

Alternative 3 would also not result in any significant geologic and seismic impacts, similar to the Draft LUTE. It would be subject to the same current City standards for geologic stability and Draft LUTE Policy 10, Action 6 that requires work stoppage during construction of subsequent projects if archaeological or paleontological resources are discovered, investigation by a qualified professional, and implementation of measures to protect the resource(s).

### Hydrology and Water Quality

As identified in Section 3.8, Hydrology and Water Quality, the Draft LUTE would not result in any significant water quality, groundwater, or flooding impacts resulting from implementation of Draft

LUTE policies and compliance with current City requirements regarding water quality and flood protection.

Alternative 3 would also be subject to current City requirements regarding water quality and flood protection and would avoid these impacts. Alternative 3 would also include Draft LUTE Policies 17 and 73 that specifically address sea level rise impacts on flooding and development near creeks in the city.

### Biological Resources

The Draft LUTE would not result in any significant impacts to biological resources through compliance with existing city, state, and federal natural resource regulations and with Draft LUTE Policies 10 and 72 that call for protection of biological resources, creeks, and wetland habitats (see Section 3.8, Biological Resources).

Alternative 3 would have potential to result in similar biological resource impacts as the Draft LUTE, given that the urban development area for this alternative and the Draft LUTE are the same (though Alternative 3 would intensify land uses beyond the Draft LUTE at transit nodes) Alternative 3 would include the protective measures of the Draft LUTE set forth in Policies 10 and 72.

### Cultural Resources

Section 3.10, Cultural Resources, identifies that the Draft LUTE could result in significant and unavoidable impacts to historic resources from development activities (see Impacts 3.10.1 and 3.10.3). The Draft LUTE would avoid significant archaeological impacts through implementation of Draft LUTE Policy 10, Action 6 that requires work stoppage during construction of subsequent projects if archaeological or paleontological resources are discovered, investigation by a qualified professional, and implementation of measures to protect the resource(s).

Alternative 3 would have the same significant and unavoidable impacts to historic resources as the Draft LUTE, given that the urban development area for this alternative and the Draft LUTE are the same (though Alternative 3 would intensify land uses beyond the Draft LUTE at transit nodes).

### Utilities and Service Systems

As identified in Section 3.11, Utilities and Service Systems, the Draft LUTE would not result in any significant impacts to water supply, wastewater, solid waste, energy, and electrical/natural gas services.

Alternative 3 would have the following increased demands for services as compared to the Draft LUTE:

- 77 acre-feet annually of increased total water supply demand. As noted in Section 3.11, Utilities and Service Systems (**Table 3.11.1-6a**), there is adequate water in normal years to meet this increased demand. The multiple dry year analysis does not factor increased recycled water production of 2,298 acre-feet per year that would come online by 2030, which would accommodate this increase.

- 1.00 million gallons per day of increased residential wastewater generation. Based on the impact analysis in Impacts 3.11.2.1 and 3.11.2.3, there would be adequate wastewater treatment capacity to accommodate this increase.

- 37.10 tons per day of increased solid waste generation. Based on the impact analysis in Impacts 3.11.3.1 and 3.11.3.3, there would be adequate solid waste capacity to accommodate this increase.

### Visual Resources and Aesthetics

The Draft LUTE would not result in any significant visual impacts involving the substantial alteration of a scenic vista or resources or alteration of the visual character, nor would it substantially increase daytime glare and nighttime lighting.

Alternative 3 would also not result in any significant visual impacts, similar to the Draft LUTE.

### Greenhouse Gases and Climate Change

As identified in Section 3.13, Greenhouse Gases and Climate Change, the Draft LUTE would result in GHG emissions per service population of 2.5 metric tons for year 2035 that would be below the City's Climate Action Plan target of 2.6 metric tons for year 2035. However, the growth anticipated in the Draft LUTE is beyond the growth projections of the CAP. Mitigation measure **MM 3.13.1** would address this issue by updating the CAP to incorporate growth anticipated in the Draft LUTE.

Alternative 3 would result in a 15 percent increase in greenhouse gas emissions as compared to the Draft LUTE as a result of the increased development potential and VMT increases. This would equate to a GHG emissions per service population of 2.6 metric tons for year 2035 that would be similar to the City's CAP target of 2.6 metric tons for that same year.

### Public Services

As identified in Section 4.0, Public Services, implementation of the Draft LUTE would not result in any public service provision impacts that would trigger a significant environmental impact.

Alternative 3 would also avoid significant public service impacts. However, this alternative would result in 21 additional elementary and middle school students, 10 additional high school students, and 0.06 acre of reduced park demand.

## 5.6 COMPARISON OF ALTERNATIVES

**Table 5.0-2,** at the end of this chapter, summarizes the potential impacts of the alternatives evaluated in this section, compared with the potential impacts of the Draft LUTE. The impact significance is identified for each alternative as well as the ranking of the impact compared to the Draft LUTE. A "B" (better) ranking means that the alternative would either avoid or lessen the identified environmental impacts of the project, while a "W" (worse) ranking means the alternative would result in a greater impact. The "S" (similar) ranking identifies where the alternative has a similar impact as the project.

Based on the evaluation described in this section, Alternative 1 would be the environmentally superior alternative. Alternative 3 would be the next superior alternative, among the remaining alternatives evaluated.

## 5.7 ALTERNATIVES CONSIDERED BUT REJECTED FOR ANALYSIS IN THE DRAFT EIR

### OFF-SITE ALTERNATIVE

Given the nature of the project (adoption of a citywide land use and transportation plan), it would not be appropriate to evaluate another location. Further, this alternative would not meet the basic project objectives identified above. For these reasons, an off-site alternative is considered infeasible pursuant to CEQA Guidelines Section 15126.6(c).

### NO DEVELOPMENT ALTERNATIVE

This alternative would assume that Sunnyvale would remain in its existing condition (year 2015 conditions when the Notice of Preparation was re-issued) and no additional development would occur. This alternative was eliminated from detailed analysis, as it would not meet the basic project objectives identified above. For these reasons, a no development alternative is considered infeasible pursuant to CEQA Guidelines Section 15126.6(c).

**TABLE 5.0-2**
**SUMMARY COMPARISON OF ENVIRONMENTAL IMPACTS OF ALTERNATIVES**

| Environmental Impacts | Draft LUTE | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|
| ***Land Use*** | | | | |
| Physical Division of an Established Community, Conflicts with Adopted Land Use Plans, or Conflicts with an Adopted Habitat Conservation Plan or Natural Community Conservation Plan | Less Than Significant | Less Than Significant | Less Than Significant | Less Than Significant |
| Rank | | S | S | S |
| ***Population, Housing, and Employment*** | | | | |
| Housing and Resident Displacement and Substantial Growth | Less Than Significant | Less Than Significant | Less Than Significant | Less Than Significant |
| Rank | | B | B | S |
| ***Hazards and Human Health*** | | | | |
| Hazardous Materials Handling, School Exposure, Emergency Response | Less Than Significant | Less Than Significant | Less Than Significant | Less Than Significant |
| Rank | | S | S | S |
| ***Transportation and Circulation*** | | | | |
| Traffic Operational Impacts and Transit Travel Times | Significant and Unavoidable | Significant and Unavoidable | Significant and Unavoidable | Significant and Unavoidable |
| Rank | | B | W | S |
| ***Air Quality*** | | | | |
| Project and Cumulative Impacts with Air Quality Violation During Construction and Operation | Significant and Unavoidable | Significant and Unavoidable | Significant and Unavoidable | Significant and Unavoidable |
| Rank | | B | W | S |
| Exposure to Air Toxic Contaminants and Odors | Significant but Mitigable | Significant but Mitigable | Significant but Mitigable | Significant but Mitigable |
| Rank | | S | S | S |

| Environmental Impacts | Draft LUTE | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|
| ***Noise*** | | | | |
| Project and Cumulative Traffic Noise | Significant and Unavoidable | Significant and Unavoidable | Significant and Unavoidable | Significant and Unavoidable |
| Rank | | S | S | S |
| Project Construction Noise and Vibration | Significant but Mitigable | Significant but Mitigable | Significant but Mitigable | Significant but Mitigable |
| Rank | | S | S | S |
| ***Geology, Soils, and Paleontological Resources*** | | | | |
| Geologic or Seismic impacts | Less Than Significant | Less Than Significant | Less Than Significant | Less Than Significant |
| Rank | | S | S | S |
| Paleontological impacts | Less Than Significant | Significant but Mitigable | Less Than Significant | Less Than Significant |
| Rank | | W | S | S |
| ***Hydrology and Water Quality*** | | | | |
| Water Quality, Groundwater, Flood, and Sea Level Rise Impacts | Less Than Significant | Significant but Mitigable | Less Than Significant | Less Than Significant |
| Rank | | W | S | S |
| ***Biological Resources*** | | | | |
| Project and Cumulative Biological Resource Impacts | Less Than Significant | Significant but Mitigable | Less Than Significant | Less Than Significant |
| Rank | | W | S | S |
| ***Cultural Resources*** | | | | |
| Historic Resource Impacts | Significant and Unavoidable | Significant and Unavoidable | Significant and Unavoidable | Significant and Unavoidable |
| Rank | | S | S | S |
| Archaeological and Human Remain Impacts | Less Than Significant | Significant but Mitigable | Less Than Significant | Less Than Significant |
| Rank | | W | S | S |

| Environmental Impacts | Draft LUTE | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|
| ***Utilities and Service Systems*** | | | | |
| Project and Cumulative Water Supply, Wastewater, Solid Waste, Electrical/Natural Gas/Energy Impacts | Less Than Significant | Less Than Significant | Less Than Significant | Less Than Significant |
| Rank | | B | W | B |
| ***Visual Resources and Aesthetics*** | | | | |
| Project and Cumulative Impacts Associated with Substantial Change to Visual Character, Daytime Glare, and Nighttime Lighting | Less Than Significant | Less Than Significant | Less Than Significant | Less Than Significant |
| Rank | | S | S | S |
| ***Greenhouse Gases and Climate Change*** | | | | |
| Conflicts with Greenhouse Gas Reduction Plans and Environmental Effects of Climate Change | Significant but Mitigable | Less Than Significant | Significant | Significant but Mitigable |
| Rank | | B | W | W |
| ***Public Services*** | | | | |
| Project and Cumulative Impacts Associated with Fire, Law Enforcement, Public Schools, and Parks and Recreation Services | Less Than Significant | Less Than Significant | Less Than Significant | Less Than Significant |
| Rank | | B | W | W |

*Notes:*

*B: Alternative would result in better conditions than the project.*
*S: Alternative would result in similar conditions as the project.*
*W: Alternative would result in worse impacts than the project.*

# 6.0 Other CEQA Analysis

This section discusses significant unavoidable impacts, significant irreversible changes, growth-inducing effects, and climate change environmental effects upon the City of Sunnyvale that are associated with the Draft LUTE.

## 6.1 SIGNIFICANT UNAVOIDABLE IMPACTS

CEQA Guidelines Section 15126.2(b) requires an environmental impact report (EIR) to discuss unavoidable significant environmental effects, including those that can be mitigated but not reduced to a level of insignificance. In addition, Section 15093(a) of the CEQA Guidelines allows the decision-making agency to determine whether the benefits of a proposed project outweigh the unavoidable adverse environmental impacts of implementing the project. The City can approve a project with unavoidable adverse impacts if it prepares a Statement of Overriding Considerations setting forth the specific reasons for making such a judgment.

The Draft LUTE would result in the following significant and unavoidable impacts in either the project or cumulative context.

- Impact 3.4.2 – Impacts to Transit Travel Times (significant and unavoidable)
- Impact 3.4.7 – Traffic Operational Impacts (significant and unavoidable)
- Impact 3.5.2 – Violate an Air Quality Standard or Contribute Substantially to an Air Quality Violation During Long-Term Operations (significant and unavoidable)
- Impact 3.5.3 – Violate an Air Quality Standard or Contribute Substantially to an Air Quality Violation During Short-Term Construction Activities (significant and unavoidable)
- Impact 3.5.8 – Cumulative Air Quality Impacts (cumulatively considerable and significant and unavoidable)
- Impact 3.6.2 – Substantial Increase in Ambient Noise Levels (significant and unavoidable)
- Impact 3.6.6 – Cumulative Traffic Noise Impacts (cumulatively considerable and significant and unavoidable)
- Impact 3.10.1 – Loss of Historic Resources (significant and unavoidable)
- Impact 3.10.3 – Cumulative Impacts on Cultural Resources (cumulatively considerable and significant and unavoidable)

## 6.2 GROWTH-INDUCING IMPACTS

### INTRODUCTION

CEQA Guidelines Section 15126.2(d) requires that an EIR evaluate the growth-inducing impacts of a proposed action. A growth-inducing impact is defined by the CEQA Guidelines as:

> *The way in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth. It is not assumed that growth in an area is necessarily beneficial, detrimental, or of little significance to the environment.*

A project can have direct and/or indirect growth-inducement potential. For example, direct growth-inducement potential would result if a project involved construction of new housing. A project would have indirect growth-inducement potential if it established substantial new permanent employment opportunities or if it involved a construction effort with substantial short-term employment opportunities that would indirectly stimulate the need for additional housing and services to support the new employment demand (*Napa Citizens for Honest Government v. Napa County Board of Supervisors*). Similarly, a project would indirectly induce growth if it removed an obstacle to additional growth and development, such as removing a constraint on a required public service. A project providing an increased water supply in an area where water service historically limited growth could be considered growth-inducing.

The CEQA Guidelines further explain that the environmental effects of induced growth are considered indirect impacts of the proposed action. These indirect impacts or secondary effects of growth may result in significant, adverse environmental impacts. Potential secondary effects of growth include increased demand on other community and public services and infrastructure, increased traffic and noise, and adverse environmental impacts such as degradation of air and water quality, degradation or loss of plant and animal habitat, and conversion of agricultural and open space land to developed uses.

Growth inducement may constitute an adverse impact if the growth is not consistent with, or accommodated by, the land use plans and growth management plans and policies for the area affected. Local land use plans provide for land use development patterns and growth policies that allow the orderly expansion of urban development supported by adequate urban public services, such as water supply, roadway infrastructure, sewer service, and solid waste service.

### COMPONENTS OF GROWTH

The timing, magnitude, and location of land development and population growth in a community are based on various interrelated land use and economic variables. Key variables include regional economic trends, market demand for residential and nonresidential uses, land availability and cost, the availability and quality of transportation facilities and public services, proximity to employment centers, the supply and cost of housing, and regulatory policies or conditions. Since the general plan of a community defines the location, type, and intensity of growth, it represents the primary means of regulating development and growth in local jurisdictions within California.

### GROWTH EFFECTS OF THE PROJECT

The Draft LUTE would guide future development in Sunnyvale and would refine existing land use and transportation policy provisions that guide and manage future development and land uses in the city. This would also include policy direction on how to prioritize transportation investments and improvements. The specific environmental effects resulting from the direct growth effects of the Draft LUTE are discussed in Sections 3.1 through 3.13 and 4.0 of this EIR. The following is a discussion of the potential growth-inducing effects of the project.

#### Population Growth

**Table 6.0-1** summarizes buildout conditions that could occur with implementation of the Draft LUTE and the extent of growth inducement as compared to existing conditions. However, it is important to note that the Draft LUTE does not include any policy provisions that require that this buildout potential be attained.

**TABLE 6.0-1**
**LUTE BUILDOUT 2014 TO 2035**

| | Existing Conditions (2014) | Draft LUTE in 2035 |
|---|---|---|
| Population | 147,055 | 174,500 |
| Housing Units | 57,000 | 72,100 |
| Industrial/Office/Commercial (million square feet) | 47.3 | 59.8 |
| Jobs | 82,000 | 124,410 |
| Jobs to Housing Units Ratio | 1.44 | 1.73 |

*Source: Sunnyvale 2015*

### ENVIRONMENTAL EFFECTS OF GROWTH

As described above, the intent of the Draft LUTE would accommodate anticipated growth through compact, walkable, infill, and mixed-use development, as well as to focus redevelopment along transportation corridors and at key locations in the city. The environmental effects of buildout under the Draft LUTE are addressed in Sections 3.1 through 3.13 and 4.0 of this EIR.

## 6.3 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

### INTRODUCTION

Public Resources Code Sections 21100(b)(2) and 21100.1(a) require that EIRs prepared for the adoption of a plan, policy, or ordinance of a public agency must include a discussion of significant irreversible environmental changes that would result from project implementation. In addition, CEQA Guidelines Section 15126.2(c) describes irreversible environmental changes in the following manner:

> *Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.*

Implementation of the Draft LUTE could result in the conversion of undeveloped and/or underutilized development areas to residential, commercial, office, industrial, public, and recreational uses. Subsequent development under the Draft LUTE would constitute a long-term commitment to these uses. It is unlikely that circumstances would arise that would justify the return of those sites to their original condition.

Development in the city would irretrievably commit building materials and energy to the construction and maintenance of buildings and infrastructure. Renewable, nonrenewable, and limited resources that would likely be consumed would include, but are not limited to, oil, gasoline, lumber, sand and gravel, asphalt, water, steel, and similar materials. In addition, development under the Draft LUTE would result in increased demand on public services and utilities (see Section 3.11, Utilities and Service Systems, and Section 4.0, Public Services).

## 6.4 CLIMATE CHANGE ENVIRONMENTAL EFFECTS ON THE CITY OF SUNNYVALE

Subsequent implementation of the measures under the Draft LUTE would serve as both climate change adaptation and greenhouse gas (GHG) reduction measures. Adaptation and reduction measures are closely tied, but differ in that adaptation measures address the *effects* of climate change, whereas reduction measures address the *cause.*

There are two types of adaptation measures: operational changes and increases to adaptive capacity. Operational measures assess climate change vulnerabilities and sensitive populations on a regular basis. They also address climate change adaptation in planning and public safety documents. Adaptive capacity measures are strategies that help prepare for and adjust to the impacts of climate change. Examples include the establishment of cooling centers during heat waves, promotion of energy efficiency and renewable energy to reduce peak load demand, and implementation of low-impact development standards to reduce stormwater runoff and increase groundwater recharge.

The adaptation measures of the Sunnyvale Climate Action Plan (CAP) are meant to serve as a starting point for the City by including measures that would direct operational changes to identify potential climate change impacts and vulnerabilities.

Even with significant efforts to mitigate GHG emissions today, future climate projections anticipate that climate change may have significant effects on California's and therefore Sunnyvale's precipitation, temperature, and weather patterns. Sunnyvale is located in Santa Clara County in close proximity to San Francisco Bay. The potential consequences of climate change in California and Sunnyvale include increased wildfire risk, loss of natural resources, deteriorating public health, decreased supply of fresh water, and increased sea level rise.

### INCREASED WILDLAND FIRE HAZARDS

All development in the city that is at risk for wildland fire hazards is required to comply with the California Fire Code (Title 24, Part 9 of the California Code of Regulations), which requires construction methods that mitigate wildfire exposure to be applied in geographical areas where wildfire burning in vegetative fuels may readily transmit fire to buildings and threaten to destroy life, overwhelm fire suppression capabilities, or result in large property losses. The California Fire Code establishes minimum standards for materials and material assemblies to provide a reasonable level of exterior wildfire exposure protection for buildings in wildland-urban interface areas and requires the use of ignition-resistant materials and design to resist the intrusion of flame or burning embers projected by a vegetation fire.

The California Department of Forestry and Fire Prevention (Cal Fire) has several programs that support vegetation management and fuel hazard reduction activities (mechanical treatments and prescribed burning). These can be used to increase forest health and resilience to climate impacts. In recent years, both state and federal fuel reduction priorities have focused on the wildland-urban interface, the area where at-risk forests and rangelands meet structure and human development. In 2001, federal agencies and the Western Governors' Association approved A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment, a 10-year strategy to improve fire suppression, prevention, fuels reduction, and recovery and to restore fire-adapted ecosystems through collaboration among states, federal agencies, and stakeholders. The plan includes the use of prescribed fire, mechanical treatments, and wildland fire use, and seeks to reduce barriers to treatments through policies and incentives.

As a result, Cal Fire has increased fire suppression readiness to meet changing climate conditions. Recommendations from the Governor's Blue Ribbon Commission are being implemented to replace aging fire engines and to provide a higher level of firefighter safety. Emerging remote sensing technologies are being tested on major fires to provide real-time planning tools to incident commanders and fire managers, and new air tanker platforms, including the DC-10, are being evaluated for large and remote fires.

### LOSS OF NATURAL RESOURCES

The current distribution, abundance, and vitality of species and habitats are strongly dependent on climatic (and microclimatic) conditions. Changes in temperature and precipitation patterns associated with climate change are anticipated to shift California's current climate zones and thus habitats associated with these zones. Global climate change would alter the composition, structure, and arrangement of the vegetation cover of the state (forest and wildland). Species distribution would move geographically as the climate changes, with forest stands, woodlands, and grassland species predicted to move northward and higher in elevation.

The negative ecological impacts of shifting habitats could be more severe than anticipated if species are unable to overcome physical barriers (such as human settlements) to migrate to areas with suitable climatic conditions. One hundred years of historical observations of species behavior suggest that climate is changing conditions so rapidly that some vegetation cannot keep pace. In fact, some climates that currently still exist (such as alpine climates) could disappear entirely in the future, while other regional climates (such as desert climates) could expand significantly, resulting in some species losing and others expanding their habitats. Furthermore, the entire vegetative community may be affected if nonnative invasive species occupy sites and replace native plants, which is a situation exacerbated by climate change. Outbreaks of nonnative insects and diseases compromise forest health and the capability of the forest stands to reproduce and to store carbon on a landscape basis (CCCC 2012).

The Draft LUTE seeks to reduce potential impacts to special-status species and habitats such as forestlands and wetlands. For instance, the following policies and actions generally address wetlands and other natural habitat conditions in the city.

Policy 10: Participate in federal, state and regional programs and processes in order to protect the natural and human environment in Sunnyvale and the region.

Action 1: Protect and preserve the diked wetland areas in the baylands to preserve or enhance flood protection.

Action 2: Coordinate with regional agencies such as the Bay Conservation and Development Commission regarding new and changing land uses proposed along the San Francisco Bay.

Action 4: Work with regional agencies on land use and transportation issues that affect the human environment such as air, water, and noise for Sunnyvale residents and businesses.

Policy 14: Accelerate the planting of large canopy trees to increase tree coverage in Sunnyvale in order to add to the scenic beauty and walkability of the community; provide environmental benefits such as air quality improvements, wildlife habitat, and reduction of heat islands; and enhance the health, safety, and welfare of residents.

Action 1: Prepare and implement an Urban Forestry Plan for City properties and street right-of-ways. The plan should promote planting and maintaining large canopy trees.

Action 2: Monitor the success of the City's Urban Forestry Plan by periodically measuring the percentage of tree canopy coverage in the community.

Action 3: Evaluate increasing the level of required tree planting and canopy coverage for new developments and site renovation projects while preserving solar access for photovoltaic systems.

Action 4: Require tree replacement for any project that results in tree removal, or in cases of constrained space, require payment of an in-lieu fee. Fee revenues shall support urban forestry programs.

Policy 15: Maintain and regularly review and update regulations and practices for the planting, protection, removal, replacement, and long-term management of large trees on private property and City-owned golf courses and parks.

Action 1: Strictly enforce Sunnyvale Municipal Code Chapters 13.16 City Trees and 19.94 Tree Preservation to prevent the unauthorized removal and irreversible damage and pruning of large protected trees.

Policy 16: Recognize the value of protected trees and heritage landmark trees (as defined in City ordinances) to the legacy, character, and livability of the community by expanding the designation and protection of large signature and native trees on private property and in City parks.

Action 1: Expand community education on the value of trees and the benefits of tree planting and preservation.

Action 2: Maintain and publicize a database of designated heritage trees. Require public noticing for proposed removal of heritage trees.

Action 3: Emphasize tree relocation, site redesign, or special construction provisions over removing and irreparably damaging healthy heritage landmark trees and protected trees. Consider more than the economic value of a tree.

Policy 17: Address sea level rise, increased rainfall, and other impacts of climate change when reviewing new development near creeks, and consider the projected flood levels over the economic lifespan of the project.

Policy 72: Protect creeks and wetlands as important parts of the community's natural environment and open space and for their contribution to flood control.

Action 1: Work with other agencies to maintain creeks and wetlands in their natural state.

Action 2: Work with appropriate agencies to identify creek channels and wetlands to use as recreational areas.

Action 3: Minimize or divert pollutants from draining into creeks and wetlands by enforcing best management practices during construction and site development.

Policy 73: Engage in regional efforts to enhance and protect land uses near streams and to respond to sea level rise and climate change.

Action 1: Maintain and regularly review and update a streamside development review and permitting process.

Action 3: Conduct streamside development review as part of a building permit plan check process, design review, the miscellaneous plan permit, and/or the discretionary review process.

Action 4: Minimize effects of development on natural streambeds.

Action 5: When opportunities exist, remove existing structures adjacent to streams that impact the streambed.

The State of California recently released a report entitled California Climate Adaptation Strategy for Biodiversity and Habitat that identifies the concept of adaptive management as a key element of implementing effective conservation programs, especially in light of some of the uncertainties associated with climate change (CCCC 2015). Natural communities, ecosystems, species population dynamics, and the effects of stressors on the environment are inherently complex. Wildlife and resource managers often are called upon to implement conservation strategies or actions based on limited scientific information and despite considerable uncertainties. Adaptive management combines data from monitoring species and natural systems with new information from management and targeted studies to continually assess the effectiveness of, and adjust and improve, conservation actions (CCCC 2015).

Urban forestry has a significant role in adaptation to rising temperature and precipitation runoff events. Increased street tree cover provides shade relief to pedestrians and other residents, absorbs pollutants including ozone and carbon dioxide ($CO_2$) which may increase with climate change, and reduces stormwater pollution and flooding. A 10 percent increase in vegetation cover can reduce ambient temperatures by 1 to 2 degrees (CNRA 2009a, p. 115). Urban forests also provide significant co-benefits, reducing habitat fragmentation and mitigating GHG emissions through sequestration and by reducing energy use for buildings (CNRA 2009a, p. 115). Cal Fire urban forestry activities, funded through state bonds authorized under Propositions 40 and 84, help plant trees and support local agencies and nonprofits in planning, implementing, and monitoring urban forestry programs (CNRA 2009a, p. 115). Cal Fire helped develop urban forestry carbon protocols to provide incentives for increased urban forest development and will continue to work with local and federal agencies and the private and nonprofit sectors to expand and enhance urban forests. Additionally, Sunnyvale CAP Action Item OS-3.4 requires the expansion of existing park, open space, and boulevard trees through the replacement of trees with a greater number of trees when trees are removed as a result of disease, park development, or other reasons.

### ADVERSE IMPACT TO PUBLIC HEALTH

Climate change is expected to lead to an increase in ambient (i.e., outdoor) average air temperature, with greater increases expected in the summer. The potential health impacts from sustained and significantly higher than average temperatures include heat stroke, heat

exhaustion, and the exacerbation of existing medical conditions such as cardiovascular and respiratory diseases, diabetes, nervous system disorders, emphysema, and epilepsy.

Numerous studies have indicated that there are generally more deaths during periods of sustained higher temperatures. The elderly, infants, and socially isolated people with pre-existing illnesses who lack access to air conditioning or cooling spaces are among those most at risk during heat waves. Public health could also be affected by climate change impacts on air quality, food production, the amount and quality of water supplies, energy pricing and availability, and the spread of infectious diseases (CCCC 2012). These impacts could have potentially long-term repercussions, and the severity of their impacts depends largely on how communities and families can adapt (CCCC 2012).

The Public Health Climate Change Adaptation Work Group, in concert with the California Department of Public Health, identified several priorities for public health adaptation for climate change (CNRA 2009a, p. 40), as many climate adaptation opportunities exist for protecting the public welfare, many of which have already proven effective. Strategic placement of cooling centers, for instance, has been clearly shown to save lives during heat waves. Another of these priorities involves the increase of ground cover and shading by expanding urban forests, community gardens, parks, native vegetation cover, and open spaces in order to reduce urban heat islands, which are prone to develop when high ratios of paving material exist compared with natural ground cover. Another priority involves the improvement of disease reporting, management, and surveillance by replacing the current paper-based system with a secure electronic system.

Based on consideration of the cited Draft LUTE policies, as well as the extensive statewide strategies and efforts cited above that address and seek to address the environmental effects of climate change, it is reasonably expected that the environmental effects of global climate change on the city would not result in a substantial increase in severity as a result of the Draft LUTE. To ensure climate change adaptation is adequately incorporated into future planning efforts, the Sunnyvale CAP and the Draft LUTE include measures and policies to guide City staff involvement in coordinating, preparing for, and educating the public on the potential impacts that climate change may have on the community.

### IMPACTS ON WATER SUPPLY

The state's water supply is already under stress and is anticipated to shrink under even the most conservative climate change scenario. Warmer average global temperatures cause more rainfall than snowfall, making the winter snowfall season shorter and accelerating the rate at which the snowpack melts in the spring. The Sierra snowpack is estimated to experience a 25–40 percent reduction from its average by 2050 (CNRA 2009a). With rain and snow events becoming less predictable and more variable, the rate of flooding could increase and California's ability to store and transport fresh water for consumption could decrease. Further, warmer weather will lead to longer growing seasons and increased agricultural demand for water (CNRA 2009a). Climate change effects on water supplies and stream flows are also expected to increase competition among urban and agricultural water users and environmental needs (CCCC 2012).

The following Draft LUTE policies and actions address water supply planning:

Policy 9: Work with regional agencies to ensure an adequate water supply that will allow progress towards Sunnyvale's long-term land use plans.

Action 1: Increase participation in reclaimed water and water conservation programs as part of land use permit review.

Policy 10: Participate in federal, state, and regional programs and processes in order to protect the natural and human environment in Sunnyvale and the region.

Action 4: Work with regional agencies on land use and transportation issues that affect the human environment such as air, water, and noise for Sunnyvale residents and businesses.

Furthermore, the Sunnyvale CAP contains measures and action items for reducing water consumption, which would apply to development anticipated under the Draft LUTE. For instance, CAP Measure WC-2 and its associated action items seek to reduce indoor and outdoor potable water use in residences, businesses, and industry. Specifically, CAP Action Item WC-2.1 requires new development to reduce potable indoor water consumption by 30 percent and outdoor landscaping water use by 40 percent. In addition, under Action Item WC-2.2, development standards would be revised to ensure the use of greywater, recycled water, and rainwater catchment systems is allowed in all zoning districts. CAP Action Item WC-2.3 requires new open space and street trees to be drought-tolerant, and Action Item WC-2.4 implements the City's Urban Water Management Plan to facilitate a 20 percent reduction in per capita water use by 2020. The CAP also includes action items that would help promote the use of recycled water by improving the quality of recycled water (WC-1.1), use of "purple pipe" infrastructure in new construction or major renovation (WC-1.2 and WC-1.3), and by creating flexible provisions that would encourage residents and businesses to collect rainwater for irrigation purposes (WC-1.4).

Climate change can exacerbate ongoing conflicts over water by increasing demand and decreasing supply (CCCC 2012). According to the State's Third Climate Change Assessment, the most important step toward preparing for climate change is to implement and enforce an accurate monitoring system that records who is diverting water, in what quantities, and when. This would significantly improve decision-making compared to current water management strategies in which groundwater is essentially unmanaged (CCCC 2012).

Scientific evidence suggests that the drought experienced in California beginning in 2011 has been intensified by climate change. In response to the ongoing drought, the Governor issued Executive Order B-29-15, which imposed restrictions to achieve a statewide 25 percent reduction in potable urban water usage.

### INCREASED SEVERITY OF FLOODING EVENTS, INCLUDING FROM SEA LEVEL RISE

Increased flood event and tidal inundation could result in the loss of valuable real estate, critical public infrastructure, and natural resources in the city. **Figure 6.0-1** shows anticipated impacts of sea level rise in the area.

Improvements set forth in Sunnyvale Municipal Code Chapter 16.62, Prevention of Flood Damage, as well as compliance with General Plan Policy SN-1.4 and associated actions that address hydraulic changes due to global warming, will improve tidal inundation problems and flooding hazards associated with future sea level rise. Sunnyvale's current levees are adequate to meet some increase in sea level rise; however, further monitoring and additional studies will be necessary to determine the city's future risks and areas of deficient protection from sea level rise.

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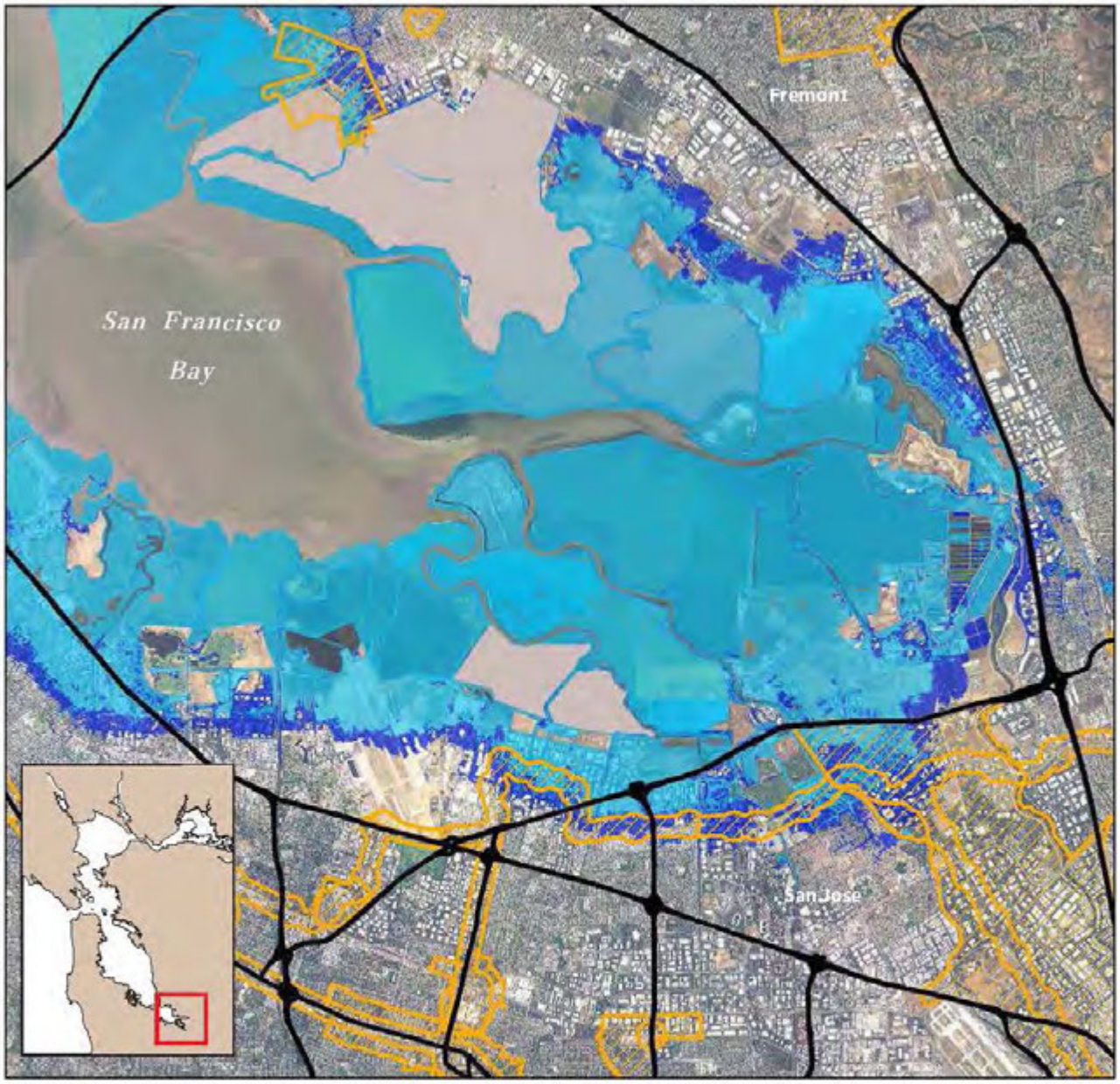
T:_CS\Work\Sunnyvale, City of\LUTE\Figures




Area potentially exposed to an approximate 16-inch sea level rise

Area potentially exposed to an approximate 55-inch sea level rise

No data

Priority Development Area

Major Roads and Highways

***DISCLAIMER:*** *The inundation data used in these maps do not account for shoreline protection or wave activity. These maps are for informational purposes only. Users agree to hold harmless and blameless the State of California and its representatives and its agents for any liability associated with the use of the maps. The maps and data shall not be used to assess actual coastal hazards,insurance requirements, or property values or be used in lieu of Flood Insurance Rate Maps issued by the Federal Emergency Management Agency (FEMA).*

Sources: San Francisco Bay Conservation and Development Commission, USGS

0 1 2

MILES

**FIGURE 6.0-1**

Areas of Sunnyvale Potentially Exposed to Sea Level Rise in the Years 2050 and 2099

Michael Baker INTERNATIONAL

The Draft LUTE includes the following policy provisions that address the impact of sea level rise:

Policy 11: Prepare for risks and hazards related to climate change prior to their occurrence.

Action 1: Monitor and participate in regional meetings focusing on environmental adaptation and resilience.

Action 2: Regularly train and inform the Sunnyvale Department of Public Safety, Office of Emergency Services on potential climate change risks and hazards.

Action 3: Consider potential climate change impacts when preparing local planning documents and processes.

Action 4: Analyze and disclose possible impacts of climate change on development projects or plan areas, with an emphasis on sea level rise.

Action 5: Integrate climate change adaptation into future updates of the Zoning Code, Building Code, General Plan, and other related documents.

Action 6: Monitor climate change science and policy and regularly inform stakeholders of new information.

Action 7: Use the City's communication process, including the website, to discuss climate change and climate change adaptation.

Action 8: On a regular basis, assess adaptation efforts of the city, region, and state and identify goals or gaps to be addressed.

Action 9: Support efforts such as those of the Bay Conservation and Development Commission and the Joint Policy Committee to analyze and prepare for the Impacts of climate change in the Bay Area.

Action 10: Share Sunnyvale's knowledge of climate action planning with other jurisdictions and agencies.

Policy 17: Address sea level rise, increased rainfall, and other impacts of climate change when reviewing new development near creeks, and consider the projected flood levels over the economic lifespan of the project.

Policy 73: Engage in regional efforts to enhance and protect land use near streams and to respond to sea level rise and climate change.

Action 1: Maintain and regularly review and update a streamside development review and permitting process.

Action 2: Apply development standards provided by the Santa Clara Valley Water District.

Action 3: Conduct streamside development review as part of a building permit plan check process, design review, the miscellaneous plan permit, and/or the discretionary review process.

Action 4: Minimize effects of development on natural streambeds.

Action 5: When opportunities exist, remove existing structures adjacent to streams that impact the streambed.

State provisions, in addition to Draft LUTE policy provisions and City CAP measures, address the potential negative effects of climate change.

## REFERENCES

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