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## **3.0 ENVIRONMENTAL ANALYSIS**

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## 3.0 INTRODUCTION TO THE ENVIRONMENTAL ANALYSIS AND ASSUMPTIONS USED

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The following is an introduction to the environmental analysis for the project, including a 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) (Sections 3.1 through 3.14) for further information on the specific assumptions and methodologies used in the analysis for each particular technical subject.

### 3.0.1 APPROACH TO EVALUATING PROJECT IMPACTS

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

The project site is defined as the 3.55-acre parcel located at the southeast corner of Dunford Way and Partridge Avenue, adjacent to Raynor Park. The project area's environmental setting conditions are described in detail in the individual Draft EIR sections (see Sections 3.1 through 3.14). In general, these sections describe the project area setting as it existed when the NOP was released on April 20, 2015, described in the Existing Setting of each Draft EIR section. At the time of the NOP the project site buildings were vacant.

#### ENVIRONMENTAL IMPACT ANALYSIS STRUCTURE

Sections 3.1 through 3.14 and Section 4.0 of this Draft EIR contain a detailed description of current setting conditions (including applicable regulatory setting) and an evaluation of the direct and indirect environmental effects resulting from the project. Each section contains feasible mitigation measures and a determination as to whether significant project environmental effects would remain after application of such measures.

The Draft EIR individual technical sections include the following information:

#### **Existing Setting**

This subsection includes a description of the physical setting associated with the technical area of discussion, consistent with CEQA Guidelines Section 15125. As previously identified, the existing setting is based on conditions as they existed when the NOP for the proposed project was released on April 20, 2015.

#### **Regulatory Framework**

This subsection consists of the identification of 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 the project. 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 3.1.1, Substantial Adverse Effect on a Scenic Vista) and is supported by substantial evidence. Mitigation measures for the Stratford School at Partridge Avenue were developed through a review of the project's

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environmental effects by consultants with technical expertise as well as by environmental professionals. The mitigation measures consist of performance standards that identify clear requirements which would avoid or minimize significant environmental effects (the use of performance standard mitigation is allowed under 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])).

#### Cumulative Setting, Impacts, and Mitigation Measures

Each technical section in the Draft EIR considers whether the project's impact on anticipated cumulative setting conditions would have a significant impact, or be cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with effects of past projects, the effects of other current projects, and the effects of probable future projects (CEQA Guidelines Section 15065[a][3]). Cumulative impacts are based on the proposed project's contribution to development compared with the cumulative baseline condition. The determination of whether the project's impact on cumulative conditions is considerable is based on a number of factors, including consideration of applicable public agency standards, consultation with public agencies, and expert opinion.

Cumulative considerations are based on the City of Sunnyvale's General Plan buildout projections and specific past, present, or future projects in the project area.

#### 3.0.2 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:** 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, or where substantial evidence indicates that the impact would exceed standards of significance. 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.

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**Standards of Significance:** A set of significance criteria to determine at what level or “threshold” an impact would be considered significant. Significance criteria used in this Draft EIR include the 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 analysis in each technical section of the Draft EIR.

### 3.0.3 IMPACTS DETERMINED TO NOT BE SIGNIFICANT

The project would repurpose existing buildings into a private school and would add school amenities, such as a volleyball court and a basketball court. As allowed under CEQA Guidelines Section 15128, this section discusses why impacts to certain environmental topics were determined to be less than significant and are therefore not discussed in detail in the Draft EIR.

#### AGRICULTURE AND FORESTRY RESOURCES

The project site is located in an existing urbanized area and would repurpose existing buildings into a private school. The project site does not contain any agricultural or forestland resources, and the project would not result in the loss of agricultural land or forestland. Therefore, the project would have **no impact** on agriculture and forestry resources.

#### Cumulative Impacts

The project would have **no cumulative impacts** on agricultural and forestry resources.

#### MINERAL RESOURCES

The project is not located in an area known to contain mineral resources. Therefore, **no impact** on the loss of availability of a known mineral resource or a locally important resource recovery site would occur.

#### Cumulative Impacts

The project would have **no cumulative impacts** on mineral resources.

#### POPULATION AND HOUSING

The project would not displace any people or necessitate any new construction of housing. The project site was previously used as a school site and would be updated to function as a private school. Thus, the project would have **no impact** on population and housing in the project area.

#### Cumulative Impacts

The project would have **no cumulative impacts** on population and housing.



## **3.1 AESTHETICS**



This section describes the existing visual character and resources of the project site and discusses the potential impacts associated with the Stratford School at Partridge Avenue project. Key issues addressed in this section include alteration of existing scenic resources, visual character, and lighting and glare.

A summary of the impact conclusions of visual resources and aesthetics is provided below.

Impact Number	Impact Topic	Impact Significance
3.1.1	Adverse Effect on a Scenic Vista	No impact
3.1.2	Degrade Visual Character or Quality	Less than significant
3.1.3	Nighttime Light and Increased Overall Lighting and Glare	Less than significant
3.1.4	Cumulative Impacts to Visual Resources and Aesthetics	Less than cumulatively considerable

### 3.1.1 EXISTING SETTING

#### REGIONAL CONTEXT

Sunnyvale is almost entirely surrounded by the cities of Santa Clara, Cupertino, Los Altos, and Mountain View. 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.

#### PROJECT SITE

Visual character is the overall impression of a landscape created by its unique combination of visual features such as landform, vegetation, water, and structures. Scenic quality is a measure of the degree to which these elements blend together to create a landscape that is visually pleasing to a viewer. Viewer sensitivity informs the degree to which changes in visual quality may be considered significant. Generally, the key factors in determining the potential impact on visual character and quality are based on overall visual change/contrast, dominance, and view blockage. An adverse visual impact may occur when a project (1) perceptibly and substantially changes the existing physical features of the landscape that are characteristic of the region or locale; (2) introduces new features to the physical landscape that are perceptibly uncharacteristic of the region or locale or that become visually dominant from common view points; or (3) block or completely obscure scenic resources within the landscape. The degree of impact depends on how noticeable the adverse change might be to sensitive viewer groups.

The project site is currently occupied by eight buildings, two parking lots, and two play areas. The Santa Clara Unified School District constructed existing buildings between 1952 and 1962 to serve as an elementary school. The buildings have undergone modifications throughout the years to both their interiors and exteriors. The existing buildings are of frame and stucco construction, with 8-foot walls and approximately 14- to 16-foot roof peaks. Half-wall windows are placed on one side of each building as shown in **Figure 3.1A and B**. There are two parking lots, one each at the north and south ends of the project site, that are accessible via three driveways—two on Dunford Way and one on Partridge Avenue. The site features landscaped

### 3.1 AESTHETICS

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planters and turf areas adjacent to the buildings, as well as parking areas including numerous mature trees. Sources of light on the project site include pole-mounted street lighting fixtures, wall-mounted security and wayfinding light fixtures, and interior light escaping through building doors and windows. Source of daytime glare include building windows and parked vehicle windows.

The project site's current visual character is that of institutional buildings, meant for such uses as a school or a community center.

The surrounding area south of Dunford Way is developed as a suburban residential neighborhood characterized by single-story detached homes and accessory uses including the adjacent church and Raynor Park. The neighborhood features sidewalks, street lighting, fencing, and landscaping. The project area's visual character is that of a developed suburban neighborhood with parks and institutional and commercial uses.

#### SENSITIVE VIEWER GROUPS

Potentially impacted viewers can be categorized into groups of shared sensitivity to changes in the existing scenic quality of a landscape. Viewer sensitivity (or public concern) for the scenic quality of a landscape or particular view is informed by the activity in which a user is engaged at the time something is visible. Further considerations include the number of viewers, duration of exposure, and degree of public interest in a particular view. For example, highly sensitive viewers are generally assumed to include residents, recreationists, and motorists traveling on designated scenic highways. Less sensitive viewer groups are assumed to include viewers from commercial or industrial type land uses, or recreational users using motorized equipment such as off-highway vehicles. The project site is visible by two primary sensitive viewer groups—neighborhood residents and park users—and one less sensitive viewer group—motorists using the streets adjacent to the park.

Residents of adjacent homes are considered to be the most sensitive viewer group because of the duration of exposure and their degree of interest in the project site's view. Their exposure is considered long term and their interests in the view are considered to relate to both the visual quality and the character of the area. Park users are also considered to be a sensitive viewer group due to the duration of their exposure and their high degree of interest, similar to residents of adjacent homes. Park users are highly interested in the quality of the Raynor Park landscape, which informs their activities in the park. Park users include passive users as well as active users, like sports teams and others engaged in sports activities. For passive park users, the surrounding aesthetics include trees and vegetation. For active park users, the aesthetics include open views to allow activities like soccer and baseball.

Motorists using adjacent streets are considered less sensitive viewers because of the short duration of exposure to the view and their interest in the view, which is assumed to be primarily for circulation purposes. Motorists have mostly short-range distance views of the project site as they approach Raynor Park from adjacent streets.



Project Site Buildings



Project Site Inner Courtyard



Project Site Inner Courtyard



East Border of Project Site

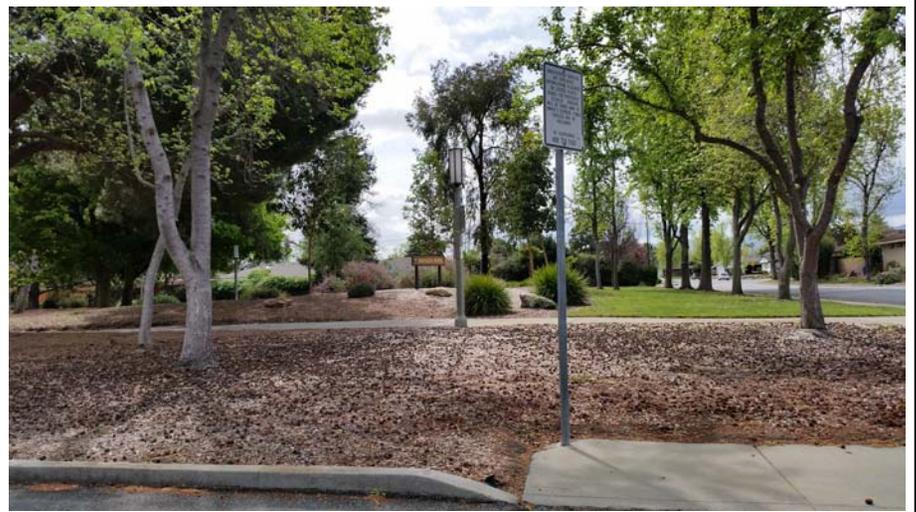
Source: PMC 2015

Figure 3.1a  
Site Photos

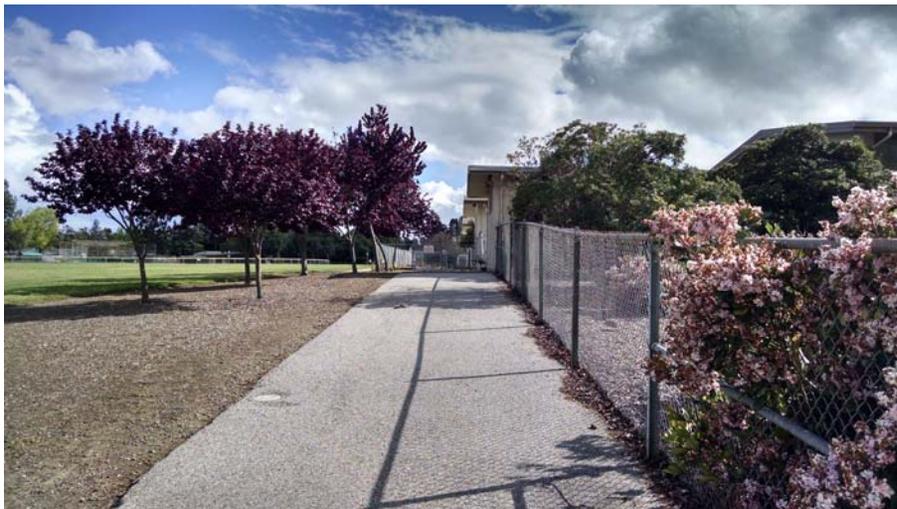




View of Raynor Park on South Border



Raynor Park Entrance on Project Site South Border



Project Site East Border/Future Circulation Driveway



South Parking Lot

Source: PMC 2015

Figure 3.1b

Site Photos





## Scenic Highways

According to the California Scenic Highway Mapping System (Caltrans 2013), Interstate 280 (I-280; the Junipero Serra Freeway), which lies along the south border of Sunnyvale and Santa Clara, is an eligible state scenic highway but is not officially designated. The project site is located over 1 mile from the I-280 corridor and is not visible to passing motorists. There are no other eligible or officially designated state or county scenic highways in proximity to the project site. The project site is not used as a viewing point and therefore is not considered a setting for a visual vista.

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 2013). Neither the City of Sunnyvale nor the City of Santa Clara has taken action to officially designate Interstate 280 as a scenic highway.

### 3.1.2 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 the 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 (CEC) 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 Community Character Chapter – Design Sub-Chapter

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

### **3.1 AESTHETICS**

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establishes design policies and action statements to guide future growth and enhance existing 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

#### **Zoning Code**

Title 19 of the Sunnyvale Municipal Code (Zoning Code) provides 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, 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, subdivision, and the California Environmental Quality Act (CEQA).

The development review process ensures that the architecture and urban design of new developments 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.

#### **Design Guidelines**

The City of Sunnyvale established Citywide Design Guidelines in 1992, updated in 2013, 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 Sunnyvale. The design guidelines are intended to supplement (not replace) the building standards in the City's Zoning Code. The design guidelines establish the minimum acceptable design standards for Sunnyvale. Future individual projects in the project area 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 that could apply to future development projects in the project area:

- Citywide Design Guidelines
- Single-Family Home Design Techniques

### 3.1.3 IMPACTS AND MITIGATION MEASURES

#### STANDARDS OF SIGNIFICANCE

An aesthetic or visual resource impact is considered significant if implementation of the project 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 or 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.

As described in the Existing Setting subsection, the project site is not located in the vicinity of any officially designated state or county scenic highways. Therefore, Standard of Significance 2 is not discussed further, as the project would have **no impact** on this resource area.

#### METHODOLOGY

The following impact analysis is based on field review of the project site, review of topographic conditions and aerial photographs, and review of the project description. This analysis is based on anticipated changes on the site from project implementation.

#### PROJECT IMPACTS AND MITIGATION MEASURES

##### Substantial Adverse Effect on a Scenic Vista (Standard of Significance 1)

**Impact 3.1.1** The project would not have a substantial effect on a scenic vista, and the project would have **no impact**.

The project site and surrounding area do not contain any designated scenic vistas. The surrounding area is largely built out with the exception of the area north of the site, which contains a small, sustainable agricultural operation. Views in the area are primarily suburban in nature and would not be considered scenic or unique.

The project proposes to renovate and renew operation of a school campus which has been used for a variety of purposes without significant physical alterations since the 1970s. The site would be operated as a school facility with only minor alterations and improvements. Therefore, views of the site from the surrounding neighborhood would remain essentially unchanged with the exception of renewed activity (i.e., cars, pedestrians, and lighting). No new structures would be built that could block views from surrounding properties. Therefore, the project would have **no impact** on scenic vistas.

#### Mitigation Measures

None required.

## 3.1 AESTHETICS

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### Degrade Visual Character or Quality (Standard of Significance 3)

**Impact 3.1.2** The project would not substantially degrade the visual character or quality of the project site. This impact would be **less than significant**.

The project site is currently developed in the style of a public elementary school, which was its initial intended use. The project would renovate the existing buildings and construct new features including a circulation drive, fencing, and sports courts. The existing buildings would be renovated to improve their visual appearance and bring them up to current building standards. However, the overall layout and structure of the buildings would remain unchanged. The project would implement additional improvements, including updating landscaping and resurfacing parking lots, which would generally improve the visual appearance of the project site.

The proposed circulation drive would be an extension of the existing drive through the southerly parking area, wrapping around the project site's eastern boundary. The extended driveway would provide better circulation for student drop-off and pick-up. The proposed fencing would also be an extension of the existing, though noncontinuous, fencing present on the site and would replace the existing chain-link fence on the site's south and east borders. The proposed volleyball court would be constructed on the project site, while the proposed basketball court would be constructed within the adjacent park area. Each of these improvements would be consistent with the overall character of the site and would not degrade its visual quality.

Further, the project would be subject to the City's design review process as outlined in Chapter 19.80, Design Review, of the Sunnyvale Municipal Code. As part of the design review process, City staff would review the project plans to ensure they are consistent with the Sunnyvale Citywide Design Guidelines and the visual character of the surrounding neighborhood.

Overall, the project would improve the visual appearance of the project site by modernizing the design and color palette of the existing buildings and upgrading landscaping. The project site would maintain its visual character as institutional buildings, while the project area would maintain its suburban neighborhood character. The project would not involve any notable changes to the project site's appearance for the three identified sensitive viewer groups: neighborhood residents, park users, and motorists. The project site's visual features would remain largely unaltered because the site would retain its line of sight, visual characteristics, and visual cues. The project site would remain dominated by the existing buildings and vegetation.

Therefore, the project would have a **less than significant** impact on the visual character and quality of the project site.

#### Mitigation Measures

None required.

### Nighttime Light and Increased Overall Lighting and Glare (Standard of Significance 4)

**Impact 3.1.3** The project would operate a private school, which would result in an increase in lighting and the introduction of additional potential sources of daytime glare. With implementation of existing City regulations, this impact would be **less than significant**.

The project site is currently lit with pole lights as well as building- and soffit-mounted lighting fixtures. The project would add building-mounted light fixtures to ensure adequate lighting for

safe access to the school buildings and parking areas. Consistent with City standards, all proposed lighting fixtures would be shielded and directed downward to prevent light spillage onto adjacent properties or illumination of the night sky. Renewed operation of the school campus would result in a greater number of parked and idling vehicles on the site, which could generate glare. However, such glare is a typical occurrence in urbanized settings and would be generally limited to those times during which students are being dropped off and picked up. The project would not include the installation of any reflective building materials or other potential sources of glare. Therefore, this impact would be **less than significant**.

Mitigation Measures

None required.

**3.1.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES**

CUMULATIVE SETTING

The project's cumulative setting includes buildout of the city of Sunnyvale as well as buildout of the surrounding communities of Santa Clara, Cupertino, Mountain View, and Los Altos.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

**Cumulative Impacts to Visual Resources and Aesthetics**

**Impact 3.1.4** The project would not result in a significant contribution to the cumulative conversion of open space or illumination of the night sky. This impact would be **less than cumulatively considerable**.

As discussed under Impacts 3.1.1 and 3.1.2, the project would result in relatively minor modifications to a previously developed site, which would not substantially degrade its visual character or quality or impact any scenic vistas. Therefore, the proposed project's contribution to cumulative visual impacts in the region would be **less than cumulatively considerable**.

As discussed under Impact 3.1.3, the project would add new lighting fixtures to the project site that could contribute to a cumulative increase in nighttime lighting and illumination of the night sky. However, the project would comply with the City's lighting standards, which require all fixtures to be shielded and directed downward to avoid light spillage and illumination of the night sky. Therefore, the proposed project's contribution to cumulative lighting impacts in the region would be **less than cumulatively considerable**.

Mitigation Measures

None required.



## **3.2 AIR QUALITY**



## 3.2 AIR QUALITY

This section examines the air quality in Sunnyvale and the region, includes a summary of applicable air quality regulations, and analyzes potential air quality impacts associated with the proposed project.

A summary of the impact conclusions related to air quality is provided below.

Impact Number	Impact Topic	Impact Significance
3.2.1	Violate Air Quality Standards – Short-Term Construction Emissions	Less than significant with mitigation
3.2.2	Violate Air Quality Standards – Long-Term Operational Emissions	Less than significant
3.2.3	Conflict with the Bay Area 2010 Clean Air Plan	Less than significant
3.2.4	Exposure to Carbon Monoxide Pollutant Concentrations	Less than significant
3.2.5	Exposure to Toxic Air Contaminants During Construction	Less than significant
3.2.6	Exposure to Toxic Air Contaminants During Operations	Less than significant
3.2.7	Creation of Odors	Less than significant
3.2.8	Cumulatively Considerable Increase in Nonattainment Criteria Pollutants	Less than cumulatively considerable

### 3.2.1 EXISTING SETTING

#### SAN FRANCISCO BAY AREA AIR BASIN

The proposed project 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 topography of the SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays, all of which distort normal wind flow patterns. This complex terrain, especially the 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

## 3.2 AIR QUALITY

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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

There are eleven major climatological subregions in the SFBAAB. Sunnyvale is located in the Santa Clara Valley Climatological Subregion, which is bounded by the 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 quite 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 increases the impact of the pollutants significantly.

#### 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 Climatological Subregion. The Santa Clara Valley has a high concentration of industry at the northern end, in Silicon Valley. Some of these industries are sources of air toxics as well as criteria air pollutants. In addition, the

## 3.2 AIR QUALITY

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 that are emitted directly from sources. Carbon monoxide (CO), reactive organic gases (ROG), nitrogen oxide (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), coarse particulate matter (PM<sub>10</sub>) and fine particulate matter (PM<sub>2.5</sub>), lead, and fugitive dust are primary air pollutants. Of these, CO, SO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> are criteria pollutants. ROG and NO<sub>x</sub> are criteria pollutant precursors and go on to form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O<sub>3</sub>) and nitrogen dioxide (NO<sub>2</sub>) are the principal secondary pollutants. Presented in **Table 3.2-1** is a description of each of the primary and secondary criteria air pollutants and their known health effects.

**TABLE 3.2-1  
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 <sub>2</sub> )	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 <sub>3</sub> )	Formed by a chemical reaction between reactive organic gases (ROGs) and nitrous oxides (NO <sub>x</sub> ) 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 <sub>10</sub> & PM <sub>2.5</sub> )	Produced by power plants, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles and others.	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 <sub>2</sub> )	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.

Pollutant	Major Man-Made Sources	Human Health Effects
Lead	Metallic element emitted from metal refineries, smelters, battery manufacturers, iron and steel producers, use of leaded fuels by racing and aircraft industries.	Anemia, high blood pressure, brain and kidney damage, neurological disorders, cancer, lowered IQ. Affects animals, plants, and aquatic ecosystems.

Source: CAPCOA 2011

## AMBIENT AIR QUALITY

Ambient air quality in Sunnyvale can be inferred from ambient air quality measurements conducted at nearby air quality monitoring stations. Existing levels of ambient air quality and historical trends and projections in the vicinity of Sunnyvale 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<sub>10</sub>, and PM<sub>2.5</sub> are the primary pollutants affecting the SFBAAB. The 22601 Voss Avenue air quality monitoring station in Cupertino is the closest station to the project site, approximately 3.8 miles to the southwest. This station monitors ambient concentrations of ozone, PM<sub>10</sub>, and PM<sub>2.5</sub>. 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 this station are representative of Sunnyvale because it is the closest monitoring station to the city and is located in the same climatological subregion.

**Table 3.2-2** summarizes the published data since 2012 from the Cupertino-Voss Avenue air quality monitoring station for each year that monitoring data is provided.

**TABLE 3.2-2  
SUMMARY OF AMBIENT AIR QUALITY DATA**

Pollutant Standards	2012	2013	2014
<b>Ozone</b>			
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	* / *
<b>Respirable Particulate Matter (PM<sub>10</sub>)</b>			
Max 24-hour concentration ( $\mu\text{g}/\text{m}^3$ ) (state/federal)	27.5 / *	38.9 / *	* / *
Number of days above state/federal standard	0 / 0	0 / 0	* / *
<b>Fine Particulate Matter (PM<sub>2.5</sub>)</b>			
Max 24-hour concentration ( $\mu\text{g}/\text{m}^3$ ) (state/federal)	27.5 / *	38.9 / *	* / *
Number of days above federal standard	*	*	*

Source: CARB 2015

Notes:

$\mu\text{g}/\text{m}^3$  = micrograms per cubic meter; ppm = parts per million

\* = No data is currently available from CARB to determine the value.

## 3.2 AIR QUALITY

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The attainment status for the Sunnyvale portion of the SFBAAB is included in **Table 3.2-3**. The region is nonattainment for state ozone, PM<sub>10</sub>, and PM<sub>2.5</sub> standards in addition to federal ozone and PM<sub>2.5</sub> standards (CARB 2013b).

**TABLE 3.2-3  
FEDERAL AND STATE AMBIENT AIR QUALITY ATTAINMENT STATUS FOR SUNNYVALE**

Pollutant	Federal	State
Ozone (O <sub>3</sub> )	Nonattainment	Nonattainment
Coarse Particulate Matter (PM <sub>10</sub> )	Unclassified	Nonattainment
Fine Particulate Matter (PM <sub>2.5</sub> )	Nonattainment	Nonattainment
Carbon Monoxide (CO)	Unclassified/Attainment	Attainment
Nitrogen Dioxide (NO <sub>2</sub> )	Unclassified/Attainment	Attainment
Sulfur Dioxide (SO <sub>2</sub> )	Attainment	Attainment

Source: CARB 2013b

### 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 a relatively few compounds.

Most recently, CARB identified diesel particulate matter (diesel PM) as a TAC. 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.

### **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.

### **3.2.2 REGULATORY FRAMEWORK**

During project construction and operation there is potential that gaseous emissions of criteria pollutants and dust into the ambient air would be emitted; therefore, development activities under the project 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 3.2-4**, these pollutants include ozone, CO, NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, 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.

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**TABLE 3.2-4  
AIR QUALITY STANDARDS**

Pollutant	Averaging Time	California Standards	National Standards
Ozone (O <sub>3</sub> )	8 Hour	0.070 ppm (137 μg/m <sup>3</sup> )	0.075 ppm
	1 Hour	0.09 ppm (180 μg/m <sup>3</sup> )	—
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m <sup>3</sup> )	9 ppm (10 mg/m <sup>3</sup> )
	1 Hour	20 ppm (23 mg/m <sup>3</sup> )	35 ppm (40 mg/m <sup>3</sup> )
Nitrogen Dioxide (NO <sub>2</sub> )	1 Hour	0.18 ppm (339 μg/m <sup>3</sup> )	100 ppb
	Annual Arithmetic Mean	0.030 ppm (57 μg/m <sup>3</sup> )	53 ppb (100 μg/m <sup>3</sup> )
Sulfur Dioxide (SO <sub>2</sub> )	24 Hour	0.04 ppm (105 μg/m <sup>3</sup> )	N/A
	3 Hour	—	N/A
	1 Hour	0.25 ppm (665 μg/m <sup>3</sup> )	75 ppb
Particulate Matter (PM <sub>10</sub> )	Annual Arithmetic Mean	20 μg/m <sup>3</sup>	N/A
	24 Hour	50 μg/m <sup>3</sup>	150 μg/m <sup>3</sup>
Particulate Matter – Fine (PM <sub>2.5</sub> )	Annual Arithmetic Mean	12 μg/m <sup>3</sup>	15 μg/m <sup>3</sup>
	24 Hour	N/A	35 μg/m <sup>3</sup>
Sulfates	24 Hour	25 μg/m <sup>3</sup>	N/A
Lead	Calendar Quarter	N/A	1.5 μg/m <sup>3</sup>
	30 Day Average	1.5 μg/m <sup>3</sup> )	N/A
Hydrogen Sulfide	1 Hour	0.03 ppm (42 μg/m <sup>3</sup> )	N/A
Vinyl Chloride (chloroethene)	24 Hour	0.01 ppm (26 μg/m <sup>3</sup> )	N/A
Visibility-Reducing Particles	8 Hour (10:00 to 18:00 PST)	—	N/A

Source: CARB 2013a

Notes: mg/m<sup>3</sup> = milligrams per cubic meter; ppm = parts per million; ppb = parts per billion; μg/m<sup>3</sup> = micrograms per cubic meter

### AIR QUALITY ATTAINMENT PLANS

The BAAQMD is responsible for preparing plans to attain ambient air quality standards in the San Francisco Bay Area Air Basin. 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 PM<sub>2.5</sub>, as well as precursors to secondary PM<sub>2.5</sub>
- 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.

### 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.

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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 San Francisco Bay Area Air Basin 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 the project. 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 3.2-5** identifies the Basic and Additional Construction Mitigation Measures. In addition, all projects must implement any applicable air toxic control measures (ATCM). For example, projects that have the potential to disturb asbestos (from soil or building material) must comply with all the requirements of CARB's ATCM for Construction, Grading, Quarrying, and Surface Mining Operations.

**TABLE 3.2-5  
BAAQMD BASIC AND ADDITIONAL CONSTRUCTION MITIGATION MEASURES**

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

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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

### 3.2.3 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) Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- 2) Conflict with or obstruct implementation of any applicable air quality plan.
- 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. Given the status of the pending litigation, the BAAQMD is not currently recommending its 2010 thresholds until the final court action occurs. Nevertheless, 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. The BAAQMD thresholds of significance for evaluating construction and operational air quality impacts are listed in **Table 3.2-6**.

**TABLE 3.2-6  
BAAQMD SIGNIFICANCE THRESHOLDS**

Air Pollutant	Construction Activities	Operations	
Reactive Organic Gases (ROG)	54 pounds/day	54 pounds/day	10 tons/year
Nitrogen Oxides (NO <sub>x</sub> )	54 pounds/day	54 pounds/day	10 tons/year
Coarse Particulates (PM <sub>10</sub> )	82 pounds/day	82 pounds/day	15 tons/year
Fine Particulates (PM <sub>2.5</sub> )	54 pounds/day	54 pounds/day	10 tons/year
Carbon Monoxide (CO)	None	None	None
Sulfur Oxides (SO <sub>x</sub> )	None	None	None

Source: BAAQMD 2011

### CO Hot-Spot Analysis

In addition to the significance thresholds listed above, the project would be subject to the ambient air quality standards. These are addressed through an analysis of localized CO impacts. The California 1-hour and 8-hour CO standards are:

- 1-hour = 20 parts per million

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- 8-hour = 9 parts per million

The significance of localized impacts depends on whether ambient carbon monoxide levels in the vicinity of the project site 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.

### Toxic Air Contaminant Thresholds

In addition to the above thresholds relating to criteria air pollutants and CO hot spots, this Draft EIR evaluates the project'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. 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 project would result in a significant impact.

### METHODOLOGY

Air quality impacts were assessed in accordance with methodologies recommended by CARB and the BAAQMD, based on the maximum development potential assumptions described in Section 2.0, Project Description. Criteria air pollutant emissions were modeled using the California Emissions Estimator Model (CalEEMod) (see **Appendix D**). CalEEMod is a statewide land use emissions computer model designed to quantify potential criteria pollutant emissions associated with both construction and operation from a variety of land use projects. Project construction-generated emissions were calculated using the CalEEMod computer program accounting for the 5-month construction time frame noted in Section 2.0, Project Description. Operational emissions were based on the estimated traffic trip generation rates from the traffic impact analysis (**Appendix H**). The analysis of operational TAC impacts used the BAAQMD's (2012a) Stationary Source Screening Analysis Tool, Highway Screening Analysis Tool (2012b), and Distance Adjustment Multiplier (2012c). Construction TACs were evaluated qualitatively.

### IMPACTS AND MITIGATION MEASURES

#### Violate Air Quality Standard or Contribute Substantially to an Air Quality Violation: Short-Term Construction Emissions (Standard of Significance 1)

**Impact 3.2.1** The project could result in short-term construction emissions that could violate or substantially contribute to a violation of federal and state standards. This would be a **less than significant with mitigation incorporated** impact.

The project would generate short-term emissions from construction activities such as site grading, asphalt paving, building construction, and architectural coatings (e.g., painting). Common construction emissions 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<sub>10</sub> and PM<sub>2.5</sub> 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. Renovation of buildings can also generate PM<sub>10</sub> and PM<sub>2.5</sub> emissions. Off-road construction equipment is often diesel-powered and can be a substantial source of NO<sub>x</sub> emissions, in addition to PM<sub>10</sub> and PM<sub>2.5</sub> emissions. Worker commute trips and architectural coatings are dominant sources of ROG emissions.

Predicted maximum daily construction-generated emissions for the project are summarized in **Table 3.2-7**.

**TABLE 3.2-7  
CONSTRUCTION-RELATED CRITERIA POLLUTANT AND PRECURSOR EMISSIONS – UNMITIGATED  
(MAXIMUM POUNDS PER DAY)**

Construction Activities	ROG	NO <sub>x</sub>	CO	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Minor Site Grading	3.72	38.51	26.89	0.02	8.89	5.42
Upgrades to Project Site Buildings <sup>1</sup>	3.94	31.32	25.01	0.03	2.80	2.09
Architectural Coatings <sup>2</sup>	8.30	2.43	2.59	0.00	0.31	0.22
Fencing Installation	3.31	23.86	22.40	0.03	2.46	1.78
Hardscape <sup>3</sup>	1.95	18.43	13.65	0.01	1.29	1.06
<b>Maximum Daily Emissions<sup>4</sup></b>	<b>17.54</b>	<b>76.06</b>	<b>63.68</b>	<b>0.10</b>	<b>12.02</b>	<b>7.76</b>
BAAQMD Potentially Significant Impact Threshold	54 pounds/day	54 pounds/day	None	None	82 pounds/day	54 pounds/day
<b>Exceed BAAQMD Threshold?</b>	<b>No</b>	<b>Yes</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

Source: CalEEMod version 2013.2.2. See Appendix D for emission model outputs.

Notes: Project construction activities are assumed to occur over a 5-month time frame.

1 Upgrades to project site buildings account for ADA compliance upgrades, fire code upgrades, seismic safety upgrades, new windows, new doors and other hardware components, and new utilities.

2 Architectural coating emissions account for application on 75,580 square feet of buildings.

3 Hardscape emissions account for the paving of 126,056 (2.9 acres) of hardscape (includes new driveway, basketball court, volleyball court, sidewalks, curbs, and gutters) despite the project proposal to include 66,028 square feet of pervious surfaces (e.g., the proposed volleyball court would be constructed of decomposed granite as opposed to asphalt). This is conservative.

4 Several construction phases are assumed to overlap.

As shown, all criteria pollutant emissions would remain below their respective thresholds with the exception of NO<sub>x</sub> emissions, which would surpass BAAQMD significance thresholds for each alternative. This would be a **significant** impact.

### Mitigation Measures

Because NO<sub>x</sub> emissions are projected to surpass the significance threshold and NO<sub>x</sub> is directly associated with the use of diesel-powered construction equipment, mitigation measure **MM 3.2.1.a** is required. While projected emissions of PM<sub>10</sub> and PM<sub>2.5</sub> would remain below significance thresholds, the project would still be required to adhere to the BAAQMD's Basic Construction Measures, which would further reduce PM<sub>10</sub> and PM<sub>2.5</sub> emissions, and mitigation measure **MM 3.2.1b** is required.

**MM 3.2.1a** During construction activities, the applicant and/or its contractor shall ensure that all off-road diesel-fueled equipment (e.g., rubber-tired dozers, graders,

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scrapers, excavators, asphalt paving equipment, cranes, and tractors) is California Air Resources Board (CARB) Tier 3 Certified or better.<sup>1</sup>

### MM 3.2.1b

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 are noted on the construction documents. These basic construction mitigation measures include the following:

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 miles per hour (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. All construction equipment shall be maintained and properly tuned in accordance with manufacturers' specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
7. A publicly visible sign shall be posted 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 BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.

**Table 3.2-8** identifies the construction-generated emissions with implementation of mitigation measure **MM 3.2.1a**.

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<sup>1</sup> NO<sub>x</sub> 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.

**TABLE 3.2-8  
CONSTRUCTION-RELATED CRITERIA POLLUTANT AND PRECURSOR EMISSIONS – MITIGATED  
(MAXIMUM POUNDS PER DAY)**

Construction Activities	ROG	NO <sub>x</sub>	CO	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Minor Site Grading	0.78	14.88	21.19	0.02	7.47	4.18
Upgrades to Project Site Buildings <sup>1</sup>	1.66	17.10	24.79	0.03	1.78	1.19
Architectural Coatings <sup>2</sup>	8.30	2.43	2.59	0.00	0.31	0.22
Fencing Installation	1.54	14.75	22.16	0.03	1.69	1.10
Hardscape <sup>3</sup>	0.67	9.60	13.65	0.01	0.73	0.59
<b>Maximum Daily Emissions<sup>4</sup></b>	<b>12.21</b>	<b>43.91</b>	<b>64.45</b>	<b>0.10</b>	<b>9.59</b>	<b>5.61</b>
BAAQMD Potentially Significant Impact Threshold	54 pounds/day	54 pounds/day	None	None	82 pounds/day	54 pounds/day
<b>Exceed BAAQMD Threshold?</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

Source: CalEEMod version 2013.2.2. See Appendix D for emission model outputs.

Notes: Project construction activities are assumed to occur over a 5-month time frame.

1 Upgrades to project site buildings account for ADA compliance upgrades, fire code upgrades, seismic safety upgrades, new windows, new doors and other hardware components, and new utilities.

2 Architectural coating emissions account for application on 75,580 square feet of buildings.

3 Hardscape emissions account for the paving of 126,056 (2.9 acres) of hardscape (includes new driveway, basketball court, volleyball court, sidewalks, curbs, and gutters) despite the project proposal to include 66,028 square feet of pervious surfaces (e.g., the proposed volleyball court would be constructed of decomposed granite as opposed to asphalt). This is conservative.

4 Several construction phases are assumed to overlap.

Implementation of mitigation measures **MM 3.2.1a** and **MM 3.2.1b** would reduce NO<sub>x</sub> emissions to a level below the BAAQMD significance threshold. This would reduce the impact to **less than significant**.

### **Violate Air Quality Standard or Contribute Substantially to an Air Quality Violation: Long-Term Operational Emissions (Standard of Significance 1)**

**Impact 3.2.2** The project would not result in long-term operational emissions that could violate or substantially contribute to a violation of federal and state standards. This would be a **less than significant** impact.

The project would result in long-term operational emissions of criteria air pollutants and ozone precursors (i.e., ROG and NO<sub>x</sub>). Project-generated increases in emissions would be predominantly associated with motor vehicle use and area sources such as the use of landscape maintenance equipment.

Long-term operational emissions are summarized in **Table 3.2-9**. As shown, daily or annual emissions thresholds would not be exceeded.

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**TABLE 3.2-9  
LONG-TERM OPERATIONAL EMISSIONS**

Source	Emissions					
	ROG	NO <sub>x</sub>	CO	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Summer Emissions (Pounds per Day)</b>						
Proposed Project	7.52	7.76	36.87	0.07	5.41	1.52
<b>Winter Emissions (Pounds per Day)</b>						
Proposed Project	7.76	8.60	40.81	0.07	5.41	1.52
BAAQMD Potentially Significant Impact Threshold (Daily Emissions)	54 pounds/day	54 pounds/day	None	None	82 pounds/day	54 pounds/day
<b>Exceed BAAQMD Daily Threshold?</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>
<b>Annual Emissions (Tons per Year)</b>						
Proposed Project	1	1	5	0	1	0
BAAQMD Potentially Significant Impact Threshold (Annual Emissions)	10 tons/year	10 tons/year	None	None	15 tons/year	10 tons/year
<b>Exceed BAAQMD Annual Threshold?</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

Source: CalEEMod version 2013.2. See **Appendix D** for emission model outputs.

Notes: Emissions projections account for 1,139 average daily vehicle trips (**Appendix H**).

As identified in **Table 3.2-3**, the SFBAAB is listed as federal nonattainment for ozone and PM<sub>2.5</sub>, and state nonattainment for ozone, PM<sub>10</sub>, and PM<sub>2.5</sub>. Ozone is a health threat to persons who already suffer from respiratory diseases, can cause severe ear, nose, and throat irritation, and increases susceptibility to respiratory infections. Particulate matter can adversely affect the human respiratory system. As shown in **Table 3.2-9**, the proposed project would generate ROG and PM<sub>2.5</sub>; however, the correlation between a project's emissions and increases in nonattainment days, or frequency or severity of related illnesses, cannot be accurately quantified.

The overall strategy for reducing air pollution and related health effects in the air basin is contained in the BAAQMD Bay Area 2010 Clean Air Plan. The plan provides control measures that reduce emissions to attain federal ambient air quality standards by their applicable deadlines such as the application of available cleaner technologies, best management practices, and incentive programs, as well as development and implementation of zero- and near-zero technologies and control methods. CEQA thresholds of significance established by the BAAQMD are designed to meet the objectives of the Clean Air Plan and in doing so achieve attainment status with state standards. As noted above, the project would increase the emissions of these pollutants, but would not exceed the thresholds of significance established by the BAAQMD for purposes of reducing air pollution and its deleterious health effects. Therefore, this impact would be **less than significant**.

### Mitigation Measures

None required.

### Conflict with the Bay Area 2010 Clean Air Plan (Standard of Significance 2)

**Impact 3.2.3** The project would not conflict with implementation of the Bay Area 2010 Clean Air Plan. This would be a **less than significant** impact.

As part of its enforcement responsibilities, the EPA requires each state with nonattainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution in nonattainment areas, using a combination of performance standards and market-based programs. Similarly, under state law, the California Clean Air Act requires an air quality attainment plan to be prepared for areas designated as nonattainment with regard to the federal and state ambient air quality standards. Air quality attainment plans outline emissions limits and control measures to achieve and maintain these standards by the earliest practical date.

As previously stated, the BAAQMD prepared the Bay Area 2010 Clean Air Plan as a multipollutant plan to address the air basin's nonattainment status with the national 1-hour ozone standard and the CAAQS, as well as particulate matter, air toxics, and greenhouse gases. The plan establishes a program of rules and regulations directed at reducing air pollutant emissions and achieving state (California) and national air quality standards. The Clean Air Plan pollutant control strategies are based on the latest scientific and technical information and planning assumptions, updated emission inventory methodologies for various source categories, and the latest population growth projections and vehicle miles traveled (VMT) projections for the region.

Criteria for determining consistency with the Clean Air Plan are defined by the following indicators:

- Consistency Criterion No. 1: The project supports the primary goals of the Clean Air Plan.
- Consistency Criterion No. 2: The project conforms to applicable control measures from the Clean Air Plan and does not disrupt or hinder the implementation of any Clean Air Plan control measures.

The primary goals to which Consistency Criterion No. 1 refer are compliance with the CAAQS and the NAAQS. As evaluated under Impact 3.2.1, the project would not exceed the short-term construction standards with the implementation of mitigation measures and would not violate air quality standards during construction. Similarly, as evaluated under Impact 3.2.2, the project would not exceed the long-term operational standards and would not violate air quality standards during project operation. Thus, **no impact** would occur.

The applicable Bay Area 2010 Clean Air Plan control measures to which Consistency Criterion No. 2 refer include Transportation Control Measures (TCM) C-2 and D-3 as well as Energy and Climate Measures (ECM) 1, 2, and 3. As previously stated, the BAAQMD's 2010 Clean Air Plan provides local guidance for the SIP, which provides the framework for air quality basins to achieve attainment of the state and federal ambient air quality standards (CAAQS and NAAQS). TCM C-2, Safe Routes to Schools and Safe Routes to Transit Programs Brief, seeks to facilitate safe routes to schools and transit through implementation of safe access for pedestrians and cyclists, and TCM D-3, Local Land Use Strategies, promotes land use patterns and infrastructure investments that support mixed-use development to facilitate walking, bicycling, and transit use. ECM 1, Energy Efficiency, seeks to increase energy efficiency at schools, and ECM 4, Shade Tree Planting, attempts to increase shading in urban and suburban communities. No other Clean Air Plan control measures are applicable to the project and even

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the ones listed above pertain more closely to plan-level actions, such as a general plan update, than to an individual development project.

In terms of conformance with Clean Air Plan Transportation Control Measures, the project would bring a new educational use to the area by modernizing several existing buildings and a school campus that are all currently vacant. Campus modernization would provide an educational facility within a built environment (infill development). These aspects of the project would result in the generation of a reduced amount of air pollutants, compared with green field development, commonly defined as development on land that has never been used. According to the EPA, redevelopments produce 32 to 57 percent less air pollutant emissions per capita relative to conventional developments (EPA 2011). This is because the number of daily vehicle trips and daily VMT associated with redevelopments tend to be lower compared with development on vacant land (EPA 2011). Therefore, the project would be consistent with both applicable Transportation Control Measures from the Clean Air Plan (TCM C-2 and TCM D-3).

Regarding conformance with the BAAQMD 2010 Clean Air Plan Energy and Climate Measures (ECM 1 and ECM 4), the project's renovation activities would be required to adhere to the City of Sunnyvale Climate Action Plan (2014), which includes several policy provisions related to energy efficiency. For instance, as required by the City's Climate Action Plan (CAP), the project would have to employ energy-efficient parking lot lighting (CAP provision EC-1.3), provide for energy-efficient building orientation and landscape material (CAP provision EC-2.2), install interior real-time energy monitors (CAP provision EC-5.1), install all new and resurfaced parking lots, sidewalks, and crosswalks with materials with high reflectivity, such as concrete or reflective aggregate in paving materials (CAP provision EC-6.1), and reduce potable indoor water use by 30 percent (Tier 1 CALGreen) and outdoor landscaping water use by 40 percent. For these reasons, the proposed project would conform with the project-applicable control measures in the CAP and would not disrupt or hinder the implementation of any other control measures. Therefore, this impact would be **less than significant**.

### Mitigation Measures

None required.

### **Expose Sensitive Receptors to Substantial Carbon Monoxide Pollutant Concentrations (Standard of Significance 3)**

**Impact 3.2.4** The project would not contribute to localized concentrations of mobile-source CO that would exceed applicable ambient air quality standards. This would be 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.<sup>2</sup> Modeling is therefore typically conducted for intersections that are projected to operate at unacceptable levels of service during peak commute hours.

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).

According to the traffic impact analysis (**Appendix H**), 1,139 average daily trips would be generated under project operations and the highest peak-hour volumes would be 477 trips. Therefore, the project would not increase traffic volumes to more than 44,000 vehicles per hour or 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 **less than significant**.

### Mitigation Measures

None required.

### **Expose Sensitive Receptors to Substantial Toxic Air Contaminant Concentrations During Construction (Standard of Significance 3)**

**Impact 3.2.5** The project would not result in increased exposure of existing or planned sensitive land uses to construction-source toxic air contaminant emissions (i.e., diesel PM). This impact is **less than significant**.

Sensitive land uses are defined as facilities or land uses that include members of the population that 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.

As stated in Section 2.0, Project Description, the project site is approximately 3.55 acres and is located at the southeast corner of Dunford Way and Partridge Avenue. Sensitive receptors near the project site include residential homes to the west, east, and south, the nearest within 65 feet of the construction fence line, a school approximately 350 feet to the northeast, and a park directly adjacent to the site to the east. Sources of construction-related TACs potentially

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<sup>2</sup> Level of service (LOS) is a measure used by traffic engineers to determine the effectiveness of transportation infrastructure. LOS 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.

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affecting the 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 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.

The use of diesel-powered construction equipment would be temporary and episodic and would occur over several locations isolated from one another. Additionally, construction activities would occur within a 3.55-acre area. Construction projects contained in a site of less than 5 acres are generally considered by CARB 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. Diesel PM and fugitive dust emissions would be further reduced considering mass site grading is not necessary because of the existing building pads, foundations, and structures on-site. Campus modernization would require the use of fewer construction materials and less intense usage of construction equipment compared with conventional school construction, built from the ground up on a vacant site. Additionally, future development 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.

According to the BAAQMD (2011), construction-generated diesel PM emissions contribute to negative health impacts when construction is extended over lengthy periods of time. As stated in Section 2.0, Project Description, project construction would take no longer than 5 months.

For these reasons and because diesel fumes disperse rapidly over relatively short distances, diesel PM generated by construction activities, in and of itself, would not be expected to expose sensitive receptors to substantial amounts of air toxics. Therefore, impacts would be **less than significant**.

### Mitigation Measures

None required.

### **Expose Sensitive Receptors to Substantial Toxic Air Contaminant Concentrations During Operations (Standard of Significance 3)**

**Impact 3.2.6** The project would result in the development of a school (sensitive land use) near stationary or mobile-source TACs. This impact would be **less than significant**.

There are many different types of TACs, with varying degrees of toxicity. Sources of TACs potentially affecting sensitive receptors include commercial operations, such as gasoline stations and dry cleaners. Mobile sources of air toxics include freeways and major roadways. These roadways are sources of diesel PM, which CARB has listed as a toxic air contaminant.

Project implementation would not result in the development of any sources of TACs. 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. According

to this guidance document, CARB does not consider schools to be sources of air toxics (CARB 2005). As previously described, areas of high CO concentrations, or “hot spots,” are typically associated with idling vehicles. However, as demonstrated above, the project would not increase traffic volumes to the extent of creating a CO hotspot. Therefore, there would be no impacts on neighbors or neighborhoods due to TAC exposure from school operations.

There is a potential that future students at the school could be exposed to TAC emissions from stationary and/or mobile sources. Per BAAQMD guidance, all TAC sources within 1,000 feet of a proposed sensitive receptor need to be identified and analyzed. According to the BAAQMD's (2012a) Stationary Source Screening Analysis Tool, the only stationary source of TACs within 1,000 feet is one backup diesel-powered generator located at the project site itself. This generator would not be operational during school hours and would only operate during a citywide emergency involving a power outage.

It is noted that diesel-powered generators are regulated by BAAQMD Regulation 2, Rule 5, which provides for the review of TAC emissions in order to evaluate potential public exposure and health risk, to mitigate potentially significant health risks resulting from these exposures, and to provide net health risk benefits by improving the level of control when existing sources are modified or replaced. Pursuant to BAAQMD Regulation 2, Rule 5, stationary sources having the potential to emit TACs, including diesel-powered generators, 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. As part of the permitting process, the BAAQMD estimates the risk and hazard impacts of the particular source based on Health Risk Screening Assessments based on conservative modeling parameters for the particular source, and provides the most site specific data available as part of the Stationary Source Screening Analysis Tool. According to the BAAQMD Stationary Source Screening Analysis Tool (2012a), the cancer risk associated with the backup diesel-powered generator, at the times it is operating, is 0.56 in one million, which is well below the significance threshold of 10 in one million. The non-cancer hazard index identified for the generator, when operational, is 0.0, which is less than the significance threshold of 1.0.

In terms of mobile sources of TACs, the project is approximately 2,500 feet south of State Route 82 and more than 5,000 feet north of Interstate 280, which are beyond the 1,000-foot distance identified by the BAAQMD. Therefore, future sensitive receptors at the site would be exposed to **less than significant** impacts from TACs.

### Mitigation Measures

None required.

### **Create Objectionable Odors Affecting a Substantial Number of People (Standard of Significance 4)**

**Impact 3.2.7** The proposed project would not 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 would be **less than significant**.

The BAAQMD does not have a recommended odor threshold for construction activities. For purposes of this analysis, there is recognition that heavy-duty construction equipment would emit odors. However, construction activities would be short term and finite in nature. Furthermore, equipment exhaust odors would dissipate quickly and are common in an urban environment.

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For these reasons, the project is not anticipated to create objectionable odors affecting a substantial number of people and thus this impact would be **less than significant**.

With respect to operational impacts, the BAAQMD recommends screening criteria based on the distance between the receptor and the types of sources known to generate odor. The land uses identified by the BAAQMD as sources of odors include wastewater treatment plants, wastewater pumping facilities, sanitary landfills, transfer stations, composting facilities, petroleum refineries, asphalt batch plants, chemical manufacturing and fiberglass manufacturing facilities, painting/coating operations, rendering plants, coffee roasters, food processing facilities, confined animal facilities, feedlots, dairies, green waste and recycling operations, and metal smelting plants. For purposes of CEQA analysis, if a source of odors is proposed to be located near existing or planned sensitive receptors, this could have the potential to cause operational-related odor impacts. The project involves modernization of a school site and would not include any of the land uses that have been identified by the BAAQMD as odor sources. Therefore, the project would have a **less than significant** impact.

### Mitigation Measures

None required.

## 3.2.4 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<sub>10</sub>, and PM<sub>2.5</sub> in addition to federal ozone and PM<sub>2.5</sub> 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

#### **Cumulatively Considerable Net Increase in Nonattainment Criteria Pollutants (Standard of Significance 5)**

**Impact 3.2.8** The proposed project, in combination with cumulative development in the SFBAAB, would not result in a cumulatively considerable net increase of criteria air pollutants for which the air basin is designated nonattainment. This would be a **less than 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 would be cumulatively considerable (BAAQMD 2011). Projects that do not exceed significance thresholds would not be considered cumulative considerable. As demonstrated under Impact 3.2.1 and Impact 3.2.2, the project would not exceed BAAQMD thresholds for air pollutant emissions during construction, with the

implementation of mitigation, or operation. Therefore, because the project would not exceed BAAQMD significance thresholds, its contribution would be **less than cumulatively considerable**.

### Mitigation Measures

Implement mitigation measures **MM 3.2.1a** and **MM 3.2.1b**.



### **3.3 BIOLOGICAL RESOURCES**



This section describes the existing biological resources, including special-status species and sensitive habitat, known to occur and/or have the potential to occur on and adjacent to the project site. A summary of the regulations and programs that provide protective measures to special-status species, an analysis of impacts to biological resources that could result from the project, and a discussion of mitigation measures necessary to reduce impacts to a less than significant level are provided in this section, as needed.

A summary of the impact conclusions related to biological resources is provided below.

<b>Impact Number</b>	<b>Impact Topic</b>	<b>Impact Significance</b>
3.3.1	Impacts to Candidate, Sensitive, or Special-Status Species	Less than significant with mitigation
3.3.2	Impacts to Riparian Habitat or Sensitive Natural Communities	No impact
3.3.3	Impacts to Federally Protected Wetlands	No impact
3.3.4	Impacts to Wildlife Movement	No impact
3.3.5	Conflict with Local Policies and Ordinances	Less than significant
3.3.6	Conflict with Conservation Plans	No impact
3.3.7	Cumulative Impacts to Special-Status Species	Less than cumulatively considerable

**3.3.1 EXISTING SETTING**

A reconnaissance-level field survey was conducted on April 7, 2015, to collect site-specific data regarding habitat suitability for special-status species and to identify potential jurisdictional waters. Additional information was obtained from a variety of outside data sources and can be found in the reference list. Preliminary database searches were performed on the following websites to identify special-status species with the potential to occur in the area.

- US Fish and Wildlife Service's (USFWS) Information, Planning, and Conservation (IPaC) System (2015a)
- USFWS's Critical Habitat Portal (2015b)
- California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDDB) (2015a)
- California Native Plant Society's (CNPS) Inventory of Rare, Threatened, and Endangered Plants of California (2015)

A search of the USFWS's IPaC System and Critical Habitat Portal was performed to identify federally protected species and their habitats that may be affected by the project. In addition, a query of the CNDDDB was conducted for the Cupertino, California, US Geological Survey (USGS) 7.5-minute quadrangle (quad) and all adjacent quads (Los Gatos, San Jose West, Milpitas, Palo Alto, Castle Rock Ridge, Big Basin, Mountain View, and Mindego Hill) to identify known processed and unprocessed occurrences for special-status species. Lastly, the CNPS database was queried to identify special-status plant species with the potential to occur within the aforementioned quads. Raw data from the database queries can be found in **Appendix E**. Please see the Special-Status Species subsection below for a summary of the database search results, as well as conclusions regarding the potential for each species to be impacted by project-related activities.

### 3.3 BIOLOGICAL RESOURCES

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#### REGIONAL SETTING

The project site is located within the Central California Coast ecological section of the California Coastal Chaparral Forest and Shrub ecological province (McNab et al. 2007). The climate in this section is modified greatly by marine influences. The regional landscape around the project site consists of parallel ranges and valleys associated with the southern Coast Ranges of California with elevations ranging from sea level to 3,800 feet (1,160 meters) above mean sea level (McNab et al. 2007). Rock formations are derived from a mix of marine and nonmarine sedimentary rocks and alluvial deposits as well as granitic and ultramafic rocks. Common natural communities in the region include oak woodland, grassland, chaparral, and coniferous forest (McNab et al. 2007). Saltwater marshes occur along the coast and bay edges, and numerous slow- and fast-moving streams occur in the region.

#### PHYSICAL SETTING

The project site is located in Sunnyvale between the San Francisco Bay and the eastern slope of the Santa Cruz Mountains. The project site is urbanized and is surrounded by urban residential land uses to the west, a farm to the north, and Raynor Park to the east and south. The topography on the project site consists of flat terrain at an elevation of approximately 130 feet above mean sea level. The soil underlying the project site is an Urban Land-Flaskan complex, a well-drained soil found on the backslopes of alluvial fans (USDA-NRCS 2015).

#### BIOLOGICAL SETTING

The project site is devoid of natural habitats and consists mostly of hardscape and buildings with patches of nonnative landscaped vegetation in between. Ornamental trees and shrubs on the project site include but are not limited to Raywood ash (*Fraxinus oxycarpa* 'Raywood'), Hollywood juniper (*Juniperus chinensis* 'Torulosa'), sweetgum (*Liquidambar styraciflua*), redwood (*Sequoia sempervirens*), purple leaf plum (*Prunus cerasifera*), river sheoak (*Casuarina cunninghamiana*), and Norfolk Island pine (*Araucaria heterophylla*). Areas not covered in hardscape are characterized by turf, tan bark ground covering, or areas of compacted soil supporting sparse weedy cover. Weedy, nonnative species such as tree-of-heaven (*Ailanthus altissima*), bromes (*Bromus* spp.), wild lettuce (*Lactuca* sp.), and milk thistle (*Silybum marianum*) occur throughout the site.

#### SENSITIVE HABITATS

Sensitive habitats evaluated in this Draft Environmental Impact Report (EIR) include those that are of special concern to resource agencies or those that are protected under the California Environmental Quality Act (CEQA), Section 1600 of the California Fish and Game Code (FGC), and/or Sections 401 and 404 of the Clean Water Act, as described more fully below. The entire project site comprises developed lands that support primarily nonnative species. In addition, there are no aquatic features or waters of the United States on the project site. Thus, no sensitive habitats occur on-site or adjacent to the project site.

#### WILDLIFE MOVEMENT CORRIDORS

Wildlife corridors are 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 project site is composed of and completely surrounded by dense urban land uses. There is no potential for the project site to function as a movement corridor. The CDFW BIOS 5 Viewer (2015b) provided the data on movement corridors and linkages. Data reviewed included the Essential Connectivity Areas [ds623] layer and the Missing Linkages in California [ds420] layer. The project site is not within or adjacent to any Essential Connectivity Areas or Missing Linkages.

#### SPECIAL-STATUS SPECIES

Candidate, sensitive, or special-status species are commonly characterized as species that are at potential risk or actual risk to their persistence in a given area or across their native habitat. These species have been identified and assigned a status ranking by governmental agencies such as the CDFW and the USFWS and by private organizations such as the CNPS. The degree to which a species is at risk of extinction is the determining factor in the assignment of a status ranking. Some common threats to a species' or population's persistence include habitat loss, degradation, and fragmentation, as well as human conflict and intrusion. For the purposes of this biological review, special-status species are defined by the following codes:

- Listed, proposed, or candidates for listing under the federal Endangered Species Act (ESA) (50 Code of Federal Regulations [CFR] 17.11 – listed; 61 Federal Register [FR] 7591, February 28, 1996, candidates)
- Listed or proposed for listing under the California Endangered Species Act (CESA) (FGC 1992 Section 2050 et seq.; 14 California Code of Regulations [CCR] Section 670.1 et seq.)
- Designated as Species of Special Concern by the CDFW
- Designated as Fully Protected by the CDFW (FGC Sections 3511, 4700, 5050, and 5515)
- Species that meet the definition of rare or endangered under CEQA (14 CCR Section 15380) including CNPS List Rank 1b and 2

The results of the USFWS, CDFW, and CNPS database queries identified several special-status species with the potential to occur in the vicinity of the project site. Table 1 in **Appendix E** summarizes all special-status species identified in the database results, describes the habitat requirements for each species, and provides conclusions regarding the potential for each species to be impacted by project-related activities. The CNDDDB results within 1 mile of the project are depicted on **Figure 3.3.1**. In addition, the query of the USFWS Critical Habitat Portal revealed that the project site is not within or adjacent to any designated critical habitat.

#### Special-Status Plant Species

Based on site reconnaissance, the project site's developed nature precludes the presence of special-status plants, as does a lack of suitable habitat, urban surroundings, and distance to known special-status plant populations.

#### Special-Status Wildlife Species

Based on the urbanized nature of the project site and its surroundings, none of the special-status wildlife species included in Table 1 of **Appendix E** have the potential to occur on the project site;

### **3.3 BIOLOGICAL RESOURCES**

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however, trees on the project site have the potential to support nesting birds protected under the Migratory Bird Treaty Act. Although no active nests were observed during the reconnaissance-level survey, trees and other vegetation on the project site provide suitable nesting habitat for migratory birds. One inactive hummingbird nest was identified in the river sheoak tree on-site. Trees will be removed as a result of project construction, resulting in the potential for nesting birds and their habitat to be impacted by project-related activities.

Map ID	Scientific Name	Common Name	Federal Listing	State Listing	Rare Plant Rank
1	<i>Athene cunicularia</i>	burrowing owl	None	None	
2	<i>Falco peregrinus anatum</i>	American peregrine falcon	Delisted	Delisted	

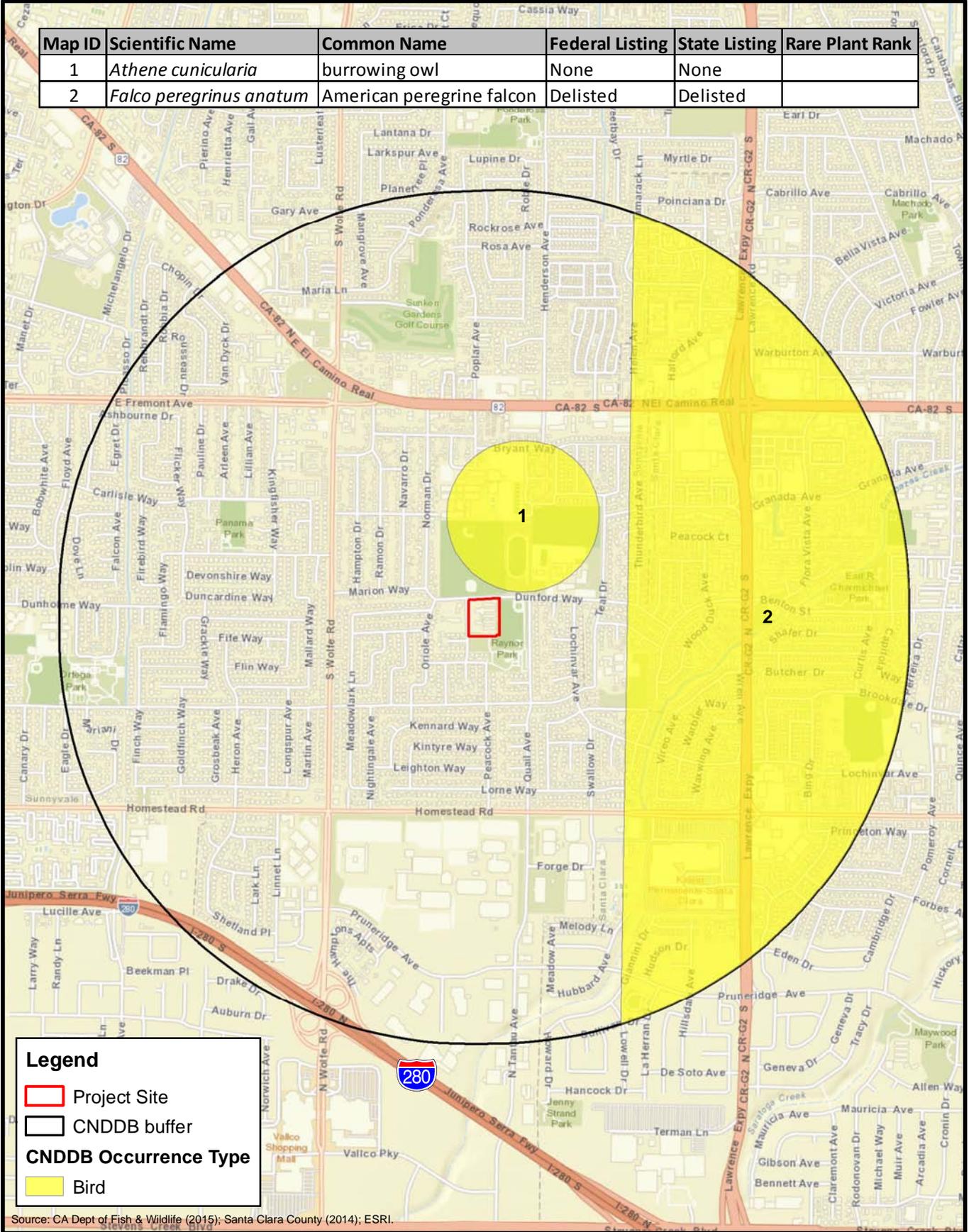


Figure 3.3-1  
CNDDB Occurrences of Special-Status Species  
Within 1 mile of Project Site



### 3.3.2 REGULATORY FRAMEWORK

#### FEDERAL

##### **Endangered Species Act**

The Endangered Species Act of 1973 (ESA), as amended, provides protective measures for federally listed threatened and endangered species, including their habitats, from unlawful take (16 United States Code (USC) Sections 1531–1544). The ESA defines “take” to mean “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” Title 50, Part 222, of the Code of Federal Regulations (50 CFR Section 222) further defines “harm” to include “an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns including feeding, spawning, rearing, migrating, feeding, or sheltering.”

ESA Section 7(a)(1) requires federal agencies to utilize their authority to further the conservation of listed species. ESA Section 7(a)(2) requires consultation with the USFWS or the National Marine Fisheries Service (NMFS) if a federal agency undertakes, funds, permits, or authorizes (termed the federal nexus) any action that may affect endangered or threatened species, or designated critical habitat. For projects that may result in the incidental “take” of threatened or endangered species, or critical habitat, and that lack a federal nexus, a Section 10(a)(1)(b) incidental take permit can be obtained from the USFWS and/or the NMFS.

##### **Clean Water Act**

The basis of the Clean Water Act (CWA) was established in 1948; however, it was referred to as the Federal Water Pollution Control Act. The act was reorganized and expanded in 1972 (33 USC Section 1251), and at this time the CWA became the act's commonly used name. The basis of the CWA is the regulation of pollutant discharges into waters of the United States, as well as the establishment of surface water quality standards.

##### Section 404

CWA Section 404 (33 USC Section 1344) established the program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Under this regulation, certain activities proposed within waters of the United States require that a permit be obtained prior to initiation. These activities include but are not limited to placement of fill for the purposes of development, water resource projects (e.g., dams and levees), infrastructure development (e.g., highways and bridges), and mining operations.

The primary objective of this program is to ensure that the discharge of dredged or fill material is not permitted if a practicable alternative to the proposed activity exists that results in less impact to waters of the United States, or the proposed activity would result in significant adverse impacts to waters of the United States. To comply with these objectives, a permittee must document the measures taken to avoid and minimize impacts to waters of the United States and provide compensatory mitigation for any unavoidable impacts.

The US Environmental Protection Agency (EPA) and the USFWS are assigned roles and responsibilities in the administration of this program; however, the US Army Corps of Engineers (USACE) is the lead agency in the administration of day-to-day activities, including issuance of permits. The agencies will typically assert jurisdiction over the following waters: (1) traditional

### 3.3 BIOLOGICAL RESOURCES

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navigable waters (TNW); (2) wetlands adjacent to TNWs; (3) relatively permanent waters (RPW) that are non-navigable tributaries to TNWs and have relatively permanent flow or seasonally continuous flow (typically three months); and (4) wetlands that directly abut RPWs. Case-by-case investigations are usually conducted by the agencies to ascertain their jurisdiction over waters that are non-navigable tributaries and do not contain relatively permanent or seasonal flow, wetlands adjacent to the aforementioned features, and wetlands adjacent to but not directly abutting RPWs (USACE 2007). Jurisdiction is not generally asserted over swales or erosional features (e.g., gullies or small washes characterized by low volume/short duration flow events), or ditches constructed wholly within and draining only uplands that do not have relatively permanent flows.

The extent of jurisdiction within waters of the United States, which lack adjacent wetlands, is determined by the ordinary high water mark. The ordinary high water mark is defined in 33 CFR Section 328.3(e) as the "line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas." Wetlands are further defined under 33 CFR Section 328.3 and 40 CFR Section 230.3 as "those areas that are inundated or saturated by surface or ground water 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" and typically include "swamps, marshes, bogs, and similar areas." The 1987 Corps Wetland Delineation Manual (1987 Manual) sets forth a standardized methodology for delineating the extent of wetlands under federal jurisdiction.

The 1987 Manual outlines three parameters that all wetlands, under normal circumstances, must contain positive indicators for to be considered jurisdictional. These parameters include (1) wetland hydrology, (2) hydrophytic vegetation, and (3) hydric soils (Environmental Laboratory 1987). In 2006, the USACE issued a series of Regional Supplements to address regional differences that are important to the functioning and identification of wetlands. The supplements present "wetland indicators, delineation guidance, and other information" that is specific to the region. The USACE requires that wetland delineations submitted after June 5, 2007, be conducted in accordance with both the 1987 Manual and the applicable supplement.

#### Section 401

Under CWA Section 401 (33 USC Section 1341), federal agencies are not authorized to issue a permit and/or license for any activity that may result in discharges to waters of the United States, unless a state or tribe where the discharge originates either grants or waives CWA Section 401 certification. CWA Section 401 provides states or tribes with the ability to grant, grant with conditions, deny, or waive certification. Granting certification, with or without conditions, allows the federal permit/license to be issued and remain consistent with any conditions set forth in the CWA Section 401 Certification. Denial of the certification prohibits the issuance of the federal license or permit, and waiver allows the permit/license to be issued without state or tribal comment. Decisions made by states or tribes are based on the proposed project's compliance with EPA water quality standards as well as applicable effluent limitations guidelines, new source performance standards, toxic pollutant restrictions, and any other appropriate requirements of state or tribal law. In California, the State Water Resources Control Board (SWRCB) is the primary regulatory authority for CWA Section 401 requirements (additional details below).

#### **Migratory Bird Treaty Act**

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 USC Sections 703–711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Section 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR Section 21). The majority of birds found in the project vicinity would be protected under the MBTA.

#### **Executive Order 11990, Protection of Wetlands (42 FR 26961, May 25, 1977)**

Executive Order 11990 requires federal agencies to provide leadership and take action to minimize destruction, loss, or degradation of wetlands and to preserve and enhance the natural qualities of these lands. Federal agencies are required to avoid undertaking or providing support for new construction located in wetlands unless (1) no practicable alternative exists, and (2) all practical measures have been taken to minimize harm to wetlands.

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 (FGC Section 2070). The CDFW also maintains a list of “candidate species,” which are species formally noticed as being under review for potential addition to the list of endangered or threatened species, and a list 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 and determine whether the 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 to 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 FGC Section 206.591. Authorization from the CDFW would be in the form of an incidental take permit.

#### **California Fish and Game Code**

##### Native Plant Protection Act

The Native Plant Protection Act (FGC Sections 1900–1913) prohibits the taking, possessing, or sale within the state of any plants with a state designation of rare, threatened, or endangered (as defined by the CDFW). An exception in the act allows landowners, under specified circumstances, to take listed plant species, provided that the owners first notify the CDFW and give that state agency at least 10 days to retrieve the plants before they are plowed under or otherwise destroyed (FGC Section 1913). Project impacts to these species are not considered significant unless the species are known to have a high potential to occur within the area of disturbance associated with construction of the project.

### 3.3 BIOLOGICAL RESOURCES

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#### Birds of Prey

Under FGC Section 3503.5, it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.

#### “Fully Protected” Species

California statutes also afford “fully protected” status to a number of specifically identified birds, mammals, reptiles, and amphibians. These species cannot be taken, even with an incidental take permit. FGC Section 3505 makes it unlawful to take “any egret or egret, osprey, bird of paradise, goura, numidi, or any part of such a bird.” FGC Section 3511 protects from take the following fully protected birds: (a) American peregrine falcon (*Falco peregrinus anatum*); (b) brown pelican (*Pelecanus occidentalis*); (c) California black rail (*Laterallus jamaicensis coturniculus*); (d) California clapper rail (*Rallus longirostris obsoletus*); (e) California condor (*Gymnogyps californianus*); (f) California least tern (*Sterna albifrons browni*); (g) golden eagle (*Aquila chrysaetos*); (h) greater sandhill crane (*Grus canadensis tabida*); (i) light-footed clapper rail (*Rallus longirostris levipes*); (j) southern bald eagle (*Haliaeetus leucocephalus leucocephalus*); (k) trumpeter swan (*Cygnus buccinator*); (l) white-tailed kite (*Elanus leucurus*); and (m) Yuma clapper rail (*Rallus longirostris yumanensis*).

FGC Section 4700 identifies the following fully protected mammals that cannot be taken: (a) Morro Bay kangaroo rat (*Dipodomys heermanni morroensis*); (b) bighorn sheep (*Ovis canadensis*), except Nelson bighorn sheep (subspecies *Ovis canadensis nelsoni*); (c) northern elephant seal (*Mirounga angustirostri*); (d) Guadalupe fur seal (*Arctocephalus townsendi*); (e) ring-tailed cat (genus *Bassariscus*); (f) Pacific right whale (*Eubalaena sieboldi*); (g) salt-marsh harvest mouse (*Reithrodontomys raviventris*); (h) southern sea otter (*Enhydra lutris nereis*); and (i) wolverine (*Gulo gulo*).

FGC Section 5050 protects from take the following fully protected reptiles and amphibians: (a) blunt-nosed leopard lizard (*Crotaphytus wislizenii silus*); (b) San Francisco garter snake (*Thamnophis sirtalis tetrataenia*); (c) Santa Cruz long-toed salamander (*Ambystoma macrodactylum croceum*); (d) limestone salamander (*Hydromantes brunus*); and (e) black toad (*Bufo boreas exsul*).

FGC Section 5515 also identifies certain fully protected fish that cannot lawfully be taken even with an incidental take permit. The following species are protected in this fashion: (a) Colorado River squawfish (*Ptychocheilus lucius*); (b) thicktail chub (*Gila crassicauda*); (c) Mohave chub (*Gila mohavensis*); (d) Lost River sucker (*Catostomus luxatus*); (e) Modoc sucker (*Catostomus microps*); (f) shortnose sucker (*Chasmistes brevirostris*); (g) humpback sucker (*Xyrauchen texanus*); (h) Owens River pupfish (*Cyprinodon radiosus*); (i) unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*); and (j) rough sculpin (*Cottus asperimus*).

None of these species will be affected by the project.

#### LOCAL

#### **Santa Clara Valley Habitat Plan**

The Santa Clara Valley Habitat Plan (SCVHP) serves as 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 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. 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.

The SCVHP includes a program for the collection of development mitigation fees, policies for the review of projects in areas where habitat must be conserved, and policies for the protection of riparian areas, serpentine habitats, oak woodland, and narrow endemic plants. It also includes requirements to perform plant, bird, and mammal surveys in certain areas.

The primary intent of the SCVHP is to provide for the conservation of a range of plants and animals and in return, provide take coverage and mitigation for projects throughout Santa Clara County to avoid the cost and delays of mitigating biological impacts on a project-by-project basis. It would allow the incidental take (for development purposes) of species and their habitat from development. Although other areas in the Santa Clara Valley are covered by the SCVHP, Sunnyvale and the project site are not subject to the plan (Santa Clara Valley Habitat Agency 2012).

#### **City of Sunnyvale Municipal Code**

Municipal Code Chapter 13.16, City Trees, pertains to preserving trees in the public right-of-way (city trees). All city trees with a diameter at breast height (dbh) of 4 inches or greater are protected. Further, Municipal Code Chapter 19.94 consists of the City of Sunnyvale's Tree Preservation Ordinance. The purpose of the ordinance is to “regulate the protection, installation and removal and long term management of significantly sized trees on private property within the city and city owned golf courses and parks; encourage the proper protection and maintenance of significantly sized trees which are located on such property; establish a review and permit procedure to assure the correct planting, maintenance, protection and removal of significant trees on such property; and establish penalties for violation of its provisions” (Sunnyvale, 2015). A significant size tree is defined as “a tree 38 inches or greater in circumference measured 4.5 feet above ground for single-trunk trees. For multi-trunk trees 'significant size' means a tree which has at least one trunk with a circumference 38 inches or greater measured 4.5 feet above ground level, or in which the measurements of the circumferences of each of the multi-trunks, when measured 4.5 feet above the ground level, added together equal an overall circumference 113 inches or greater.” (Sunnyvale, 2015)

Several trees would be removed as a result of project construction, as shown in Appendix E. Although these trees are not within the public right-of-way, trees numbered 5, 8, 9, 10 and 16 have a circumference of 38 inches or greater and are thus subject to protection under the Municipal Code.

#### **City of Sunnyvale General Plan**

The current Sunnyvale General Plan was adopted on July 26, 2011, and includes policies and programs pertaining to the preservation of open space areas and water quality. None of the General Plan policies related to biological resources are applicable to this project.

### 3.3 BIOLOGICAL RESOURCES

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#### NONGOVERNMENTAL AGENCY

##### **California Native Plant Society**

The CNPS is a nongovernmental agency that classifies native plant species according to current population distribution and threat level in regard to extinction. The CNPS utilizes the data to create/maintain a list of native California plants that have low numbers, limited distribution, or are otherwise threatened with extinction. This information is published in the Inventory of Rare, Threatened, and Endangered Plants of California (CNPS 2015). Potential impacts to populations of CNPS-listed plants receive consideration under CEQA review.

The following identifies the definitions of the CNPS listings:

- List 1A: Plants believed to be extinct
- List 1B: Plants that are rare, threatened, or endangered in California and elsewhere
- List 2B: Plants that are rare, threatened, or endangered in California, but are more numerous elsewhere

All of the plant species on List 1 and 2 meet the requirements of the Native Plant Protection Act, Section 1901, Chapter 10, or FGC Sections 2062 and 2067, and are eligible for state listing. Plants appearing on List 1 or 2 are considered to meet the criteria of CEQA Section 15380, and effects on these species are considered "significant." Classifications for plants on List 3 (plants about which more information is needed) and/or List 4 (plants of limited distribution), as defined by the CNPS, are not currently protected under state or federal law. Therefore, no detailed descriptions are provided or impact analysis was performed on species with these classifications.

### **3.3.3 IMPACTS AND MITIGATION MEASURES**

#### STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the CEQA Guidelines Appendix G thresholds of significance. A project is considered to have significant impacts on biological resources if it would:

- 1) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies or regulations, or by the CDFW or the USFWS.
- 2) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the CDFW or the USFWS.
- 3) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- 4) 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.

- 5) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- 6) Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.
- 7) 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 biological resources impact assessment was conducted by identifying areas where project construction may directly impact individuals of a protected species or affect habitat attributes suitable for special-status and other wildlife species. The assessment is based on biological surveys completed for this project and provides a conservative estimate of habitat impacts. If habitat requirements for special-status species were present, the impact assessment assumed the species was also present and that a significant adverse environmental impact could result from habitat impacts or inadvertent direct impacts on the species.

Impacts on biological resources were evaluated by considering potential temporary and permanent impacts of project construction and operation on wildlife habitats, both direct and indirect.

As part of identifying potential biological resources, local plans, policies, and regulations for any locally protected biological resources, including plant communities or species, were researched. The only biological resources identified for protection in local regulations were trees. Trees would be removed as a part of project construction. All wildlife species assessed below are those protected under the ESA, the CESA, or the California Fish and Game Code or that warrant discussion pursuant to the CEQA Guidelines. No federally listed, state-listed, or other special-status plant species were identified within the project area.

#### PROJECT IMPACTS AND MITIGATION MEASURES

##### **Impacts to Candidate, Sensitive, or Special-Status Species (Standards of Significance 1 and 7)**

**Impact 3.3.1** Project implementation could result in substantial adverse effects, either directly or through habitat modifications, to species identified as candidate, sensitive, or special-status species in local or regional plans, policies, regulations, or by the CDFW or the USFWS. This would be a **less than significant with mitigation incorporated** impact.

Habitats on and adjacent to the project site may provide suitable nesting habitat for birds protected under the Migratory Bird Treaty Act and California Fish and Game Code Section 3503.5. Several trees would be removed as part of the project. The clearing of trees and other vegetation during construction activities could result in noise, dust, human disturbance, and other direct/indirect impacts on nesting birds on the project site or in the vicinity. Potential nest abandonment and mortality to individuals would be a **significant** impact on protected species and mitigation measure **MM 3.3.1** would be required.

### 3.3 BIOLOGICAL RESOURCES

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#### Mitigation Measures

**MM 3.3.1 Nesting Bird Preconstruction Surveys.** If clearing and/or construction activities will occur during the raptor or migratory bird nesting season (February 15–August 15), the applicant and/or contractor shall employ a qualified biologist to conduct preconstruction surveys for nesting birds up to 14 days before initiation of construction activities. The qualified biologist shall survey the construction zone and a 500-foot buffer surrounding the construction zone to determine whether the activities taking place have the potential to disturb or otherwise harm nesting birds. Surveys shall be repeated if project activities are suspended or delayed for more than 15 days during nesting season.

If active nest(s) are identified during the preconstruction survey, the qualified biologist shall establish a 100-foot no-activity setback for migratory bird nests and a 250-foot setback for raptor nests. No ground disturbance shall occur within the no-activity setback until the nest is deemed inactive by the qualified biologist.

Implementation of mitigation measure **MM 3.3.1** would reduce this impact to **less than significant**.

#### **Impacts to Riparian Habitat or Sensitive Natural Communities (Standard of Significance 2)**

**Impact 3.3.2** The project would not result in the disturbance, degradation, and/or removal of riparian habitat or sensitive natural communities. There would be **no impact**.

Sensitive habitats include those that are of special concern to resource agencies and those that are protected under CEQA, Fish and Game Code Section 1600, and Clean Water Act Section 404. There are no sensitive habitats within the project site. Project-related activities would not adversely affect riparian habitat or other sensitive natural communities identified in local or regional plans, policies, or regulations or by the CDFW or the USFWS. Thus, project implementation would not result in the disturbance, degradation, and/or removal of riparian habitat or sensitive natural communities. There would be **no impact**.

#### Mitigation Measures

None required.

#### **Impacts to Federally Protected Wetlands (Standard of Significance 3)**

**Impact 3.3.3** The project would not result in the disturbance, degradation, and/or removal of federally protected wetlands or other waters. There would be **no impact**.

Water features were not observed during the reconnaissance-level survey in the project area. As a result, the project would have **no impact** on federally protected wetlands or other waters.

#### Mitigation Measures

None required.

#### Impacts to Wildlife Movement (Standards of Significance 4)

**Impact 3.3.4** The project would not adversely affect the movement of native resident or migratory fish or wildlife species or established migratory corridors. There would be **no impact**.

The project site does not act as a wildlife movement corridor, as it comprises and is completely surrounded by dense urban land cover that impairs corridor functions. The project site may provide very limited wildlife movement opportunities for birds; however, it is unlikely that any other wildlife utilize the site. The project would not result in impacts on the movement of native resident or migratory fish or wildlife species or established migratory corridors. As such, there would be **no impact**.

#### Mitigation Measures

None required.

#### Conflict with Local Policies and Ordinances (Standard of Significance 5)

**Impact 3.3.5** The project would not conflict with any local policies or ordinances protecting biological resources. This would be a **less than significant** impact.

Several trees are proposed for removal including 8 purple leaf plum (*Prunus cerasifera*), 5 Raywood ash (*Fraxinus oxycarpa* 'Raywood'), 4 Hollywood juniper (*Juniperus chinensis* 'Torulosa'), 2 sweetgum (*Liquidambar styraciflua*), 1 Norfolk Island pine (*Araucaria heterophylla*), and 1 pine (*Pinus* sp.). All of the trees on-site are not native to the Sunnyvale area and were planted as ornamental for landscaping. Although several trees are proposed for removal, trees will also be planted as part of the project including large tree species such as scarlet oak (*Quercus coccinea*), and cork oak (*Quercus suber*). In addition, several varieties of accent trees, shrubs and groundcovers are included in the landscape plans. Please refer to **Appendix E** for details regarding the location and size of all on-site trees, as well as which trees will be planned for removal.

Five trees that would be removed are considered protected trees under the City Municipal Code Chapter 19.94 since they are 38 inches or greater in circumference. The project would not remove any heritage trees. As mentioned above the project would also include replacement trees and would comply with all permitting requirements as outlined in City Municipal Code Chapter 19.94. The Municipal Code requires that replanting be included as part of the plan and that the director of community development will approve or require modifications to the plans. By being in compliance with permitting requirements, the project would not conflict with any local policies or ordinances, including the Sunnyvale General Plan and Municipal Code, protecting biological resources. Because tree removal would occur in compliance with city regulations the project would have a **less than significant** impact.

#### Mitigation Measures

None required.

### 3.3 BIOLOGICAL RESOURCES

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#### Conflict with Conservation Plans (Standard of Significance 6)

**Impact 3.3.6** The project would not conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan. There would be **no impact**.

The project site is not located within a habitat conservation plan planning area. As a result, no conflict with an adopted habitat conservation plan would occur, and **no impact** would result.

#### Mitigation Measures

None required.

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

#### CUMULATIVE SETTING

The project site and the surrounding area of Santa Clara County as a whole must be considered for the purpose of evaluating land use conversion issues associated with biological resources on a cumulative level. In particular, this cumulative setting condition includes planned development under the current Land Use Element of the Sunnyvale General Plan, existing land use conditions, and planned and proposed land uses in the project vicinity, as well as consideration of development patterns in the rest of Santa Clara County. These land uses and cumulative development projects have the potential to adversely affect biological resources in the region and could contribute to the loss of potential habitat.

#### CUMULATIVE IMPACTS AND MITIGATION MEASURES

#### Cumulative Impacts to Special-Status Species

**Impact 3.3.7** The project, in combination with other reasonably foreseeable projects, could result in mortality and loss of habitat for special-status species. This impact would be **cumulatively considerable**.

The habitats on the project site represent only a small portion of the habitats available for special-status species in the project vicinity. The project may result in temporary degradation of habitat through a variety of actions that, when combined with other habitat impacts occurring from development in surrounding areas, could conceivably result in significant cumulative impacts.

The project would remove several trees that may provide nesting habitat for birds. Replacement trees would be planted as part of the project landscaping, which would result in additional future nesting habitat.

Project-related construction may result in disturbance to nesting migratory birds. Implementation of mitigation measure **MM 3.3.1** would avoid these impacts, and the project would not combine with other reasonably foreseeable development to create a significant cumulative effect. Implementation of mitigation measure **MM 3.3.1** would reduce the project's impact and therefore result in a **less than cumulatively considerable** impact.

Mitigation Measures

No additional mitigation measures are necessary.



## **3.4 CULTURAL RESOURCES**



## 3.4 CULTURAL RESOURCES

This section considers and evaluates the proposed project's potential impacts on cultural and paleontological resources. Cultural resources include historic buildings and structures, historic districts, historic resource sites, prehistoric and historic archaeological sites, and other prehistoric and historic objects and artifacts. Paleontological resources include vertebrate, invertebrate, and plant fossils.

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).
- *Paleontological resource* is defined as including fossilized remains of vertebrate and invertebrate organisms, fossil tracks and trackways, and plant fossils. A unique paleontological site would include a known area of fossil-bearing rock strata.

A summary of the impact conclusions for cultural and paleontological resources is provided below.

Impact Number	Impact Topic	Impact Significance
3.4.1	Disturb historic resources	No impact
3.4.2	Disturb archaeological or paleontological resources or human remains	Less than significant with mitigation
3.4.3	Cumulative impacts on historic, cultural, and paleontological resources and human remains	Less than cumulatively considerable

### 3.4.1 EXISTING SETTING

#### REGIONAL CONTEXT: PREHISTORY AND ETHNOGRAPHY

The project area is located near the southern shore of San Francisco Bay. Archeological investigations around the San Francisco Bay support the hypothesis that the area was a distinct archaeological region with similar temporal changes in artifact assemblages and other cultural practices evident across the region. The region gives the impression that closely related cultures occupied the margins of the San Francisco Bay system for a considerable length of time (Corte Madera 2008).

The archaeological work in the San Francisco Bay Area generated a significant amount of data that was used to correlate archaeological cultures in the Delta with those in the Bay. The

### 3.4 CULTURAL RESOURCES

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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., Windmill, Berkeley, Borax Lake, Augustine, and Houx) for the North Coast Ranges, the 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) (Corte Madera 2008).

The Paleo-Indian Period began with the first entry of people into California. They 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 begins 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 flat terrain of Sunnyvale. 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, the city 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 (now Moffett Federal Airfield) was built, 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 growth in the school-age population underwent an even greater boom during that time period. In 1950, there were 803 students in the Jefferson School District and one school building. By 1961, there were 10,000 students and 14 schools. The structures on the project site, also known as Raynor School was the second school built during the 1950s by the district. The original Jefferson school was a frame building on Kifer Road on the northeast bank of the Saratoga River built circa 1861. The Jefferson Union School District was formed in 1926 by consolidating four smaller districts. It grew over time, especially during the 1950s, and merged with the Santa Clara School District in 1965 (Santa Clara, 1965).

The last 30 years of the twentieth century saw Sunnyvale's economy experience 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. But the economy has since rebounded, adapting to and developing new industries, jobs, and sources of revenue (Sunnyvale 2011).

### 3.4 CULTURAL RESOURCES

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#### PROJECT SITE

The subject property was built in 1955, placing it within the Midcentury Modern style. The Sunnyvale Historic Context Statement does not address midcentury architecture. The Silicon Valley MidModern website includes a variety of midcentury modern expressions but does not address schools. Further, the San Francisco Modern Architecture and Landscape Design Historic Context Statement does not specifically address schools but does provide guidelines for identifying the existing structure's characteristics (SV Modern, 2015).

According to the San Francisco Modern Architecture and Landscape Design Historic Context Statement (San Francisco, 2010):

*Midcentury Modern style, 1945–1965, incorporates an array of design elements including cantilevered overhangs, projecting eaves, canted windows, projecting boxes that enframe the upper stories, stucco siding, the use of bright or contrasting colors, spandrel glass, large expanses of windows, flat or shed roof forms, stacked brick veneer, asymmetrical façades, and occasionally vertical wood siding. Historic references or revival influences are notably absent from the Midcentury Modern style. The term Midcentury Modern was generated by the public rather than scholars.*

*Character defining features specific to storefronts commercial and institutional buildings:*

- *Spandrel glass*
- *Stacked roman brick veneer*
- *Integrated planters*
- *Angled or deeply recessed vestibules*
- *Terrazzo paving*
- *Projecting vertical elements*
- *Metal awnings or canopies (zigzag, corrugated metal, or sheet metal)*
- *Small geometric tiles set in geometric patterns*
- *Slightly projecting vertical mullions*
- *Jalousie windows, particularly at the transom*
- *Base mounted signage or advertising front lettering*
- *Textile block screens or metal sheathing*

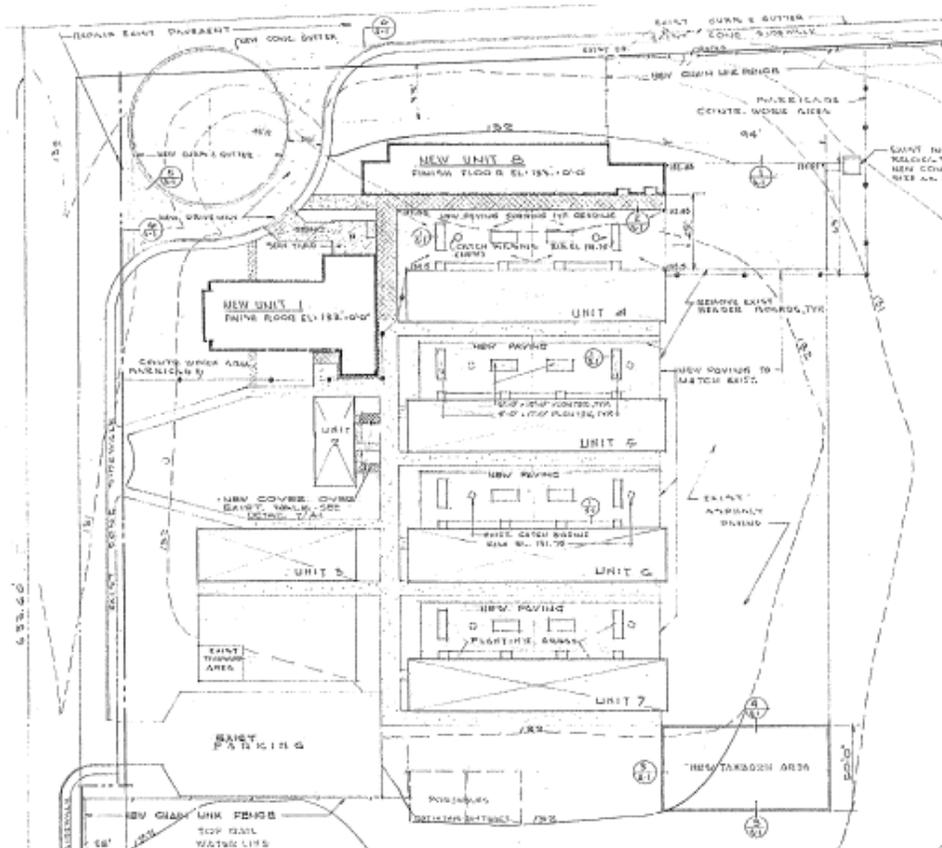
The project site buildings have a few of the design elements listed in the context statement, such as projecting eaves and a large expanse of windows, especially on the classroom buildings. The multipurpose room has integrated planters, and the brick used on the multipurpose room and administration building is stacked Roman brick. Thus, the property has few of the character-defining features listed for midcentury commercial and institutional buildings.

Many schools were constructed during the 1950s as Sunnyvale's population grew. Designs featured schools made up of separate, low-slung, one-story buildings. One newspaper article called this type of school a "patio schoolroom." With the mild climate and the availability of land, such buildings were economical to build and operate. The walls facing east were given large expanses of windows to provide natural light and save on lighting costs. The walls facing west and the afternoon sun had few windows to prevent heat gain at a time when the buildings were not air conditioned.

**Project Site Architect**

The existing structure's architect was Clyde D. Goudie at Kress, Goudie & Kress. The first phase of construction, completed on April 18, 1956, included the administration building; two kindergarten classroom buildings; and two classroom buildings, each containing four classrooms and toilet rooms. The school was designed and constructed in several stages over five to seven years. Two wings were added in 1957; the multipurpose room and another wing were built from 1959 to 1960 (Healy, 2015).

Mr. Goudie worked independently, as a partner in Goudie & Griffin, and as a partner in Kress, Goudie & Kress. In 1958, he designed a cafeteria addition at Willow Glen Elementary School. For about ten years prior to 1962, Goudie & Griffin had designed all of the schools in the former Jefferson School District in Santa Clara, including the Pomeroy Elementary School, Sutter Elementary School, and Curtis Middle School. Clyde Goudie is listed in the San Jose Modernism Historic Context Statement but is not noted as being a master designer (San Jose, 2009).



\* From plans on file with the State Architect's Office showing the addition of the multipurpose room.

### **3.4 CULTURAL RESOURCES**

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#### KNOWN CULTURAL RESOURCES IN THE PROJECT 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 given by the City. Heritage resources have a somewhat lower level of protection. The reader is referred to Section 3.3, Biological Resources, for further discussion of potential impacts to protected trees.

The inventory identifies approximately 50 individual structures as heritage resources and eleven individual local landmarks. In addition, Sunnyvale contains two historical districts: the Taaffee-Frances Heritage Neighborhood (a residential district) and the Murphy Station Heritage Landmark District (a commercial district).

None of the identified heritage resources, local landmarks, or historical districts is located in the project area.

#### KNOWN PALEONTOLOGICAL RESOURCES IN THE PROJECT AREA

Paleontology is defined as a science dealing with the life of past geological periods as known from fossil remains. Paleontological resources include fossil remains, as well as fossil localities and formations that have produced fossil material. Such locations and specimens are important nonrenewable resources. CEQA offers protection for these sensitive resources and requires that they be addressed during the environmental review process.

A search at the Northwest Information Center (NWIC) located in Rohnert Park, California, showed no evidence of recorded historic and/or prehistoric archaeological resources inside the project area borders. While there are no known paleontological resources in the project area, there are paleontological resources in Santa Clara County consisting mostly of plant, microfossil, and vertebrate fossil specimens.

### **3.4.2 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. Section 106 of the NHPA 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.

Archaeological site evaluation assesses the potential of each site 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 the 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.

#### STATE

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 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. The CRHR is administered through the State Office of Historic Preservation 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 to historical resources (Public Resources Code Section 21084.1 and CEQA Guidelines Section 15064.5[a][3]). Following CEQA Guidelines Section 21084.5(a) and (b), a historical resource is defined as any object, building, structure, site, area, place, record, or manuscript that:

- a) Is historically or archeologically 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.

### 3.4 CULTURAL RESOURCES

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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, CEQA Guidelines Section 15064.5(b)(3) indicates that a project which 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) is to mitigate impacts to a level of less than significant. Potential eligibility also rests on 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 as outlined in Public Resources Code Section 21083.2(g). 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 given 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. California Health and Safety Code Section 7050.5(b) specifies protocol when human remains are discovered.

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 CEQA Guidelines also 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.

Paleontological resources are classified as nonrenewable scientific resources and are protected by state statute (Public Resources Code Chapter 1.7, Section 5097.5, Archeological,

Paleontological, and Historical Sites, and Appendix G). No state or local agencies have specific jurisdiction over paleontological resources. No state or local agency requires a paleontological collecting permit to allow for 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 Heritage Preservation Guidelines**

The Community Character chapter of the City of Sunnyvale General Plan establishes the criteria for identifying cultural resources in Sunnyvale. The City delineates cultural resources by relating them to their heritage value. The City's criteria for evaluation of historic resources are similar to the California Register but somewhat broader:

*Any improvement, building, portion of buildings, structures, signs, features, sites, scenic areas, views, vistas, places, areas, landscapes, trees, or other natural objects or objects of scientific, aesthetic, educational, political, social, cultural, architectural, or historical significance can be designated a heritage resource by the city council and any area within the city may be designated a heritage resource district by the city council pursuant to provisions of this chapter if it meets the Criteria of the National Register of Historic Places, or one or more of the following:*

- (a) It exemplifies or reflects special elements of the city's cultural, social, economic, political, aesthetic engineering, architectural, or natural history;*
- (b) It is identified with persons or events significant in local, state, or national history;*
- (c) It embodies distinctive characteristics of a style, type, period, or method of construction, or is a valuable example of the use of indigenous materials or craftsmanship;*
- (d) It is representative of the work of a notable builder, designer, or architect;*
- (e) It contributes to the significance of an historic area, being a geographically definable area possessing a concentration of historic or scenic properties or thematically related grouping of properties which contribute to each other and are unified aesthetically or by plan or physical development;*
- (f) It has a unique location or singular physical characteristic or is a view or vista representing an established and familiar visual feature of a neighborhood, community, or the city of Sunnyvale;*
- (g) It embodies elements of architectural design, detail, materials, or craftsmanship that represents a significant structural or architectural achievement or innovation;*
- (h) It is similar to other distinctive properties, sites, areas, or objects based on a historic, cultural, or architectural motif;*
- (i) It reflects significant geographical patterns, including those associated with different eras of settlement and growth, particular transportation modes, or distinctive examples of park or community planning;*

### 3.4 CULTURAL RESOURCES

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- (j) *It is one of the few remaining examples in the city, region, state, or nation possessing distinguishing characteristics of an architectural or historic type or specimen;*
- (k) *With respect to a local landmark, it is significant in that the resource materially benefits the historical character of a neighborhood or area, or the resource in its location represents an established and familiar visual feature of the community or city;*
- (l) *With respect to a local landmark district, a collective high integrity of the district is essential to the sustained value of the separate individual resources;*
- (m) *With respect to a designated landmark and designated landmark district, the heritage resource shall meet Criteria of the National Register of Historical Places, which are incorporated by reference into this chapter.*

Heritage resources are important because they document the cultural history of a particular place and serve to 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. Changes to local landmarks must be reviewed and approved by the City's Heritage Preservation Commission. Specific, stringent reviews must be conducted if a local landmark is to be changed in a way that would significantly alter its historic character.

The Heritage Preservation Commission is a seven-member commission that acts in an advisory capacity to the City Council and has certain decision-making authority on the restoration, maintenance, and operation of heritage resources throughout the city.

#### 3.4.3 IMPACTS AND MITIGATION MEASURES

Following Public Resources Code Sections 21083.2 and 21084.1, and Section 15064.5 and CEQA Guidelines Appendix G, cultural resource impacts are considered to be significant if project implementation 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 CEQA Guidelines Section 15064.5.
- 3) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature.
- 4) Disturb any human remains, including those interred outside of formal cemeteries.

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 an 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; and
- Evaluate the effects of the project on eligible historical resources.

#### METHODOLOGY

The following impact analysis is based on a review of the City of Sunnyvale's Heritage Resources Inventory as well as a CHRIS records search conducted at the Northwest Information Center at Sonoma State University, which identified no archaeological sites or historic properties in the project area (NWIC file no. 14-1432).

A report on the structure's historical significance was compiled by Richard Brandi, who holds an MA in historic preservation from Goucher College, Maryland, and a BA from the University of California, Berkeley (**Appendix F**). He is listed as a qualified historian by the San Francisco Planning Department and the California Historical Resources Information System. The property was evaluated for its eligibility on the CRHR.

The CRHR evaluates a resource's historic significance based on the following four criteria:

- Criterion 1 (Event): Resources associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.

### 3.4 CULTURAL RESOURCES

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- Criterion 2 (Person): Resources associated with the lives of persons important to local, California, or national history.
- Criterion 3 (Design/Construction): Resources that embody the distinctive characteristics of a type, period, region, or method of construction or that represents the work of a master or possess high artistic values.
- Criterion 4 (Information Potential): Resources that have yielded or have the potential to yield information important to the prehistory or history of the local area, California, or the nation.

In addition to meeting one of the four criteria, a resource must be more than 50 years old, unless it can be demonstrated that sufficient time has passed to understand the building's historical importance. The estimated age of the existing structures is 60 years, making it potentially eligible for listing.

#### PROJECT IMPACTS AND MITIGATION MEASURES

##### Historic Resources (Standard of Significance 1)

**Impact 3.4.1** There are no locally designated historic structures within the project area. The project would have **no impact**.

Sunnyvale has numerous buildings that may have historical value. However, the structures or sites identified in the City's Heritage Resources Inventory are not located within or adjacent to the project area.

##### Project Site Historical Evaluation

The evaluation of historic significance is a two-step process. First, the historic significance of the property must be established by using the CRHR evaluation criteria, as outlined above under the Methodology subsection. Second, if the property appears to possess historic significance per the CRHR criteria, a determination is made of its physical integrity. Physical integrity is defined as its authenticity evidenced by the survival of characteristics that existed during the resource's period of significance. If the structure meets the integrity criteria additional to the CRHR criteria, the structure is deemed to be eligible for listing on the California Register of Historical Resources. As explained above, a determination of eligibility does not entail actual listing. The listing process is separate from the CEQA process.

##### California Register Significance Evaluation

Under Criterion 1 (Event), the existing structures are not associated with events that made a significant contribution to the broad patterns of local history. The property is one of the many schools constructed in the postwar years in Sunnyvale, but does not appear to have an important association. Therefore, the property is not eligible for listing under Criterion 1.

Under Criterion 2 (Person), the existing structures are not associated with the lives of people important to local, California, or national history. Therefore, the property is not eligible for listing under Criterion 2.

Under Criterion 3 (Design/Construction), the existing structures were designed by Clyde Goudie. As discussed above, he does not appear to be a master designer. The structures do not possess

high artistic values. According to the National Park Service, “a property is eligible for its high artistic values if it so fully articulates a particular concept of design that it expresses an aesthetic ideal. A property is not eligible, however, if it does not express aesthetic ideals or design concepts more fully than other properties of its type.” (NPS, 2015) The existing structures cannot be said to fully articulate a particular design concept.

The existing structures do embody the distinctive characteristics of a type, period, or method of construction, namely the Midcentury Modern design type. It has a few of the character-defining features of the Midcentury Modern style listed in the San Francisco Modern Architecture and Landscape Historic Context Statement but too few to be considered distinctive. The untitled mural by Malou Flat, added to the building façade in 1989, is not part of the school design and it was not done integrally with the building. Due to the age of the mural, less than 50 years old, and its later addition to the structures, it is not considered a historical mural. Therefore, neither the property nor the mural is eligible for listing under Criterion 3.

This evaluation does not address archeology under Criterion 4 (Information Potential). Criterion 4 is most commonly applied to archeological sites, and in some circumstances to buildings, structures, and objects that contain important information. For structures to be eligible under Criterion 4, they themselves must be, or must have been, the principal source of important information that informs research questions in regard to prehistory and human history. Building techniques and significance are evaluated under Criterion 3.

Based on the evaluation above, the property does not appear to be eligible for listing on the California Register of Historical Resources.

#### Sunnyvale Heritage Resources Inventory

For the reasons given in the discussion of CRHR above, the property is not eligible for listing on the Sunnyvale Heritage Resources Inventory.

#### Integrity

There are seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association. The property does not appear to be historically significant; therefore, an assessment of its historic integrity was unnecessary.

Since the existing structures at 1500 Partridge Avenue is not eligible for listing on the CRHR or for listing on the Sunnyvale Heritage Resources Inventory, a discussion of the school's integrity is not provided.

Therefore, the project would have **no impact** on historic structures or sites.

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

None required.

### 3.4 CULTURAL RESOURCES

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#### Archaeological and Paleontological Resources and Human Remains (Standards of Significance 2 and 3)

**Impacts 3.4.2** The project could indirectly result in the potential disturbance of undiscovered cultural resources (i.e., prehistoric sites, historic sites, and isolated artifacts and features), paleontological resources (i.e., fossils and fossil formations), and unrecorded human remains. This impact would be **less than significant with mitigation incorporated.**

The project area has not been the subject of a formal archaeological study and has no recorded historic and/or prehistoric resources located inside its borders. Further, there have been no formal archaeological studies of the rectangle surrounding the park bounded by State Route 82 on the north, Wolf Road on the west, Homestead Road on the south, and the city boundary with Santa Clara on the east. This lack of recorded prehistoric and/or historic cultural resources may be an artifact of the early development of this part of Sunnyvale, at a time when the former agricultural lands were converted to housing. The property north of Dunford Way still contains remnants of this agricultural use. Early development of the general vicinity may also account for the lack of recorded prehistoric resources along the Calabazas Creek riparian zone for more than a half mile south and north of the project area.

Based on the lack of recorded historic and/or prehistoric resources for the project vicinity, the parcel holds a low potential for containing historic archaeological materials, and a low to moderate potential for containing prehistoric materials, despite the proximity of the former riparian zone surrounding Calabazas Creek.

Project construction has the potential to impact undiscovered archeological and paleontological resources and unrecorded human remains due to grading activities. As noted in the Regulatory Framework subsection above, 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. Project construction would have a significant impact on undiscovered archeological and paleontological resources, and mitigation measure **MM 3.4.2** would be required.

#### Mitigation Measures

**MM 3.4.2** If during the course of grading or construction unknown archeological and paleontological resources are discovered, the contractor shall halt work immediately within 20 feet of the discovery, the City of Sunnyvale shall be notified, and a professional archaeologist, who meets the Secretary of the Interior's Professional Qualifications Standards in prehistoric or historical archaeology, or paleontologist shall be retained to determine the significance of the discovery. A qualified professional shall determine impacts, significance, and mitigation in consultation with recognized local Native American groups, if appropriate. In addition, prior to the commencement of project site preparation, all construction personnel shall be informed of the potential to inadvertently uncover cultural resources and the procedures to follow subsequent to an inadvertent discovery of cultural resources.

Implementation of mitigation measure **MM 3.4.2** would mitigate potentially significant impacts on archaeological and paleontological resources and human remains to **less than significant.**

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

#### CUMULATIVE SETTING

The cumulative setting associated with the project includes the project area and the cities of Sunnyvale and Santa Clara as well as the 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 site history. However, continued growth in the region would contribute to potential conflicts with cultural and paleontological 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 Cultural Resources, Human Remains, and Paleontological Resources

**Impact 3.4.3** The project, in addition to existing, approved, proposed, and reasonably foreseeable development in the region, could result in cumulative impacts to cultural resources. This impact would be **less than cumulatively considerable**.

The project, in combination with other development projects in the surrounding region, would not result in a cumulative loss of historic resources in the region. As previously discussed, the project would have no impact on historic resources, as none are present in the project area. The buildings located on the project site do not qualify for listing on the CRHR, and neither does the mural. As such, the project would have a **less than cumulatively considerable** impact on historic resources.

The project, in combination with other development projects in the surrounding region, could result in a cumulative loss of known and previously undiscovered cultural and paleontological resources in the region. It should also be noted that each development proposal near the project site received by the City of Sunnyvale would undergo further environmental review of project-specific impacts prior to approval. Continued compliance with Health and Safety Code Section 7050.5(b) and implementation of mitigation measure **MM 3.4.2** would ensure that if cultural or paleontological resources or human remains are discovered during construction, impacts would be properly mitigated. Therefore, the project's contribution to this potential impact would be **less than cumulatively considerable**.

#### Mitigation Measures

None required.



## **3.5 GEOLOGY AND SOILS**



This section describes the geology, seismicity, and soils conditions in the project area as they relate to the Stratford School at Partridge Avenue. The section also includes a regional discussion of seismic hazards, which includes geological provinces on a larger scale. Potential geologic and seismic hazards, such as ground shaking and liquefaction, and soil-related hazards, such as expansive soils, are analyzed and feasible mitigation measures are provided, where necessary.

A summary of the impact conclusions related to geology and soils is provided below.

Impact Number	Impact Topic	Impact Significance
3.5.1	Seismic Hazards	Less than significant
3.5.2	Erosion and Loss of Topsoil	Less than significant
3.5.3	Development on Unstable or Expansive Soils	Less than significant
3.5.4	Cumulative Geologic, Seismic, and Soil Hazards	Less than cumulatively considerable

### 3.5.1 EXISTING SETTING

#### GEOLOGY AND TOPOGRAPHY

The project site is located on the alluvial plain of the Santa Clara Valley, in the Coast Ranges geomorphic province. The shallow subsurface consists of layered, finer-grained silt and clay units interbedded with coarser sands and gravels, described as Holocene fine-facies alluvial fan deposits. Buried alluvial channels containing coarser materials typically cut through the finer-grained units in irregular patterns.

The project site lies at a surface elevation of approximately 130 feet above mean sea level and is essentially flat. The regional ground surface in the project vicinity slopes generally northeast toward the San Francisco Bay (EKI 2011, pp. 7–8).

#### FAULTING AND SEISMICITY

Earthquakes can cause strong ground shaking that may damage property and infrastructure. 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.

The most commonly used scale to measure earthquake intensities (ground shaking and damage) is the Modified Mercalli Intensity (MMI) Scale, which measures the intensity of an earthquake's effects in a given locality and is based on observations of earthquake effects at specific places. On the Modified Mercalli Intensity Scale, values range from I to XII (see **Table 3.5-1**). While an earthquake has only one magnitude, it can have various intensities, which decrease with distance from the epicenter and vary depending on the underlying soil conditions (CGS 2002).

**Table 3.5-1** provides descriptions of the effects of ground shaking intensities along with a general range of moment magnitudes that are often associated with those intensities.

### 3.5 GEOLOGY AND SOILS

**TABLE 3.5-1  
EFFECTS OF RICHTER MAGNITUDE AND MODIFIED MERCALLI INTENSITY**

Mw	Modified Mercalli Scale	Effects of Intensity
1.0–3.0	I	I. Not felt except by a very few under especially favorable conditions.
3.0–3.9	II–III	II. Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing. 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.
4.0–4.9	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. 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.
5.0–5.9	VI–VII	VI. Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight. VII. Everybody runs outdoors. Damage negligible in building 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.
6.0–6.9	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. 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.
7.0 and higher	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. 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. 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 2002

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 Special Studies Zones as mandated by the Alquist-Priolo Earthquake Fault Zoning Act. The intent of this act is to ensure that development does not occur across the traces of active faults.

While the project site is not located within a designated Special Study Zone and contains no active fault traces, it is situated within the San Francisco Bay region, which is the most seismically active zone in the United States (CalEMA 2015). Three active faults and three potentially active faults are located in seismically significant proximity to the project area—the Hayward fault (11.7 miles east), the San Andreas fault (7.5 miles west), the Monte Vista–Shannon fault (4.3 miles west), the San Jose fault (2.5 miles northeast), the Stanford fault (<1 mile southwest), and the Cascade fault (1.5 miles southwest) (Jennings 2010). The US Geological Survey (USGS) predicts there is a 63 percent chance that one of these faults will produce an earthquake of magnitude 6.7 or higher by the year 2037 (Sunnyvale 2011).

### **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 not only shake structures to the breaking point but can trigger secondary effects such as landslides or other types of ground failure. Strong ground shaking can be expected in the project area during moderate to severe earthquakes. This is common to all development in the San Francisco Bay Area (Sunnyvale 2006).

### **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 (USGS 2006).

These effects usually occur in soft, fine-grained, water-saturated alluvium, as generally found in the Santa Clara Valley. Although portions of the city are designated by the State of California as Liquefaction Hazard Zones, the project site is not designated as such (Sunnyvale 2006; CalEMA 2015).

### **Earthquake-Induced Landslides and Settlement**

The most common types of earthquake-induced landslides are rockfalls and slides of rock fragments that form on steep slopes. Shallow debris slides forming on steep slopes and soil, and rock slumps and block slides forming on moderate to steep slopes, also take place, but they are less abundant. Reactivation of dormant slumps or block slides by earthquakes is rare (FEMA 1989). In past earthquakes, landslides have been abundant in some areas having intensities of ground shaking as low as VI on the Modified Mercalli Intensity Scale.

Landslides are least likely to occur in areas of low relief, such as topographically low alluvial fans and at the margin of the San Francisco Bay. Since the project area is of low relief, the potential for significant landslides or large-scale slope instability is considered low. In addition, the project area is not mapped by the State as an Earthquake-Induced Landslide Hazard Zone (CalEMA 2015).

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

## 3.5 GEOLOGY AND SOILS

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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.

### Regional 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. Subsidence is a greater hazard in areas where the subsurface geology includes compressible layers of silt and clay. The amount of subsidence caused by groundwater withdrawal depends on several factors, including the extent of water level decline, the thickness of the water-bearing strata tapped, the thickness and compressibility of silt-clay layers within the vertical sections where groundwater withdrawal occurs, the duration of maintained groundwater level decline, the number and magnitude of water withdrawals in a given area, and the general geology and geologic structure of the groundwater basin.

The general lowering of the ground surface in this part of Santa Clara County is approximately 6 to 8 feet, which occurred from 1916 to 1966 in the northern areas of Sunnyvale and Santa Clara (Poland and Ireland 1988). During the same time frame, the ground subsided 3 to 4 feet in the areas along El Camino Real, until groundwater recharge methods were initiated in the late 1960s. Although human-caused subsidence has been minimal since 1967, a certain amount of subsidence is continuing to occur naturally due to regional tectonic movements, peat decay, and a 3-inch rise in sea level during the last 50 years (Sunnyvale 2011).

### SOILS

The soil type underlying the project area is the Urban Land-Flaskan complex, 0 to 2 percent slopes. This soil type is well drained with a clay content of approximately 20 percent (UCD 2015).

### Erosion

Soil erosion is a process whereby soil materials are worn away and transported to another area, by either wind or water. Rates of erosion can vary depending on the soil material and structure, placement, and human activity.

Soil erosion potential or susceptibility is partially defined by a soil's "K Factor," which provides an indication of a soil's inherent susceptibility to erosion, without accounting for slope and ground cover factors. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet erosion by water (Michigan State University 2015).

Project site soils have a low erosion potential with a K factor of 0.20 (UCD 2015).

### Expansive Soils

Expansive soils possess a "shrink-swell" characteristic. Shrinking and swelling of soils can cause damage to building foundations, roads, underground utilities and other structures. The expansive potential of a soil is expressed as its Linear Extensibility Percent (LEP). LEP is the linear expression of the volume different of natural soil fabric at 1/3-bar or 1/10-bar water content and over dryness. The volume change is reported as a percentage change for the whole soil. A soil with an LEP of less than 3 is considered to have low shrink-swell potential, while an LEP of 3 to 6 is considered to have moderate shrink-swell potential.

Project site soils have a low to moderate shrink-swell potential with an LEP of 3 (USDA-NRCS 2015; UCD 2015).

### 3.5.2 REGULATORY FRAMEWORK

#### FEDERAL

##### **International Building Code**

The International Building Code (IBC) has been adopted through out the United States and is been in use since 2007. The purpose of the IBC is to provide minimum regulations for building systems, including fire safety, building safety, foundation, wall and roof constructions, materials used in construction, elevators and escalators and existing structures.

##### **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 (NOI) and stormwater pollution prevention plan (SWPPP) must be prepared prior to commencement of construction. Construction activities subject to this permit include clearing, grading, and disturbances to the ground such as stockpiling or excavation. Subsequent to implementation of 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 Santa Clara Valley, the County of Santa Clara, and the Santa Clara Valley Water District as co-permittees. The Santa Clara Valley Urban Runoff Pollution Prevention Program assists the co-permittees in implementing the provisions of this permit.

#### 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 only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. The Seismic Hazards Mapping Act (discussed below) addresses non-surface fault rupture earthquake hazards, including liquefaction and seismically induced landslides.

##### **Seismic Hazards Mapping Act**

The Seismic Hazards Mapping Act of 1990 directs the California Geological Survey 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.

Staff geologists in the Seismic Hazard Zonation Program gather existing geological, geophysical, and geotechnical data from numerous sources to produce the Seismic Hazard Zone Maps. They integrate and interpret these data regionally in order to evaluate the severity of the seismic hazards and designate as Zones of Required Investigation those areas prone to liquefaction and earthquake-induced landslides (DOC 2015).

## 3.5 GEOLOGY AND SOILS

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### 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 but modifies IBC 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.

### California Geological Survey

The California Geological Survey (CGS; formerly the Division of Mines and Geology) operates within the Department of Conservation. The CGS is responsible for assisting in the identification and proper utilization of mineral deposits, as well as the identification of fault locations and other geological hazards.

#### LOCAL

### City of Sunnyvale Municipal Code

The City of Sunnyvale adopted the California Building Code in Section 16.16.020 of the City's Municipal Code. In addition, the City's grading standards (Section 18.12.110 of the City of Sunnyvale Municipal Code) 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 shall 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. The City of Sunnyvale has established a Local Hazard Mitigation Plan (LHMP) as an annex to the ABAG regional Hazard Mitigation Plan.

### 3.5.3 IMPACTS AND MITIGATION MEASURES

#### STANDARDS OF SIGNIFICANCE

This analysis evaluates the proposed project's impacts on geology and soils based on the standards identified in the California Environmental Quality Act (CEQA) Guidelines Appendix G. A geology and soils 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.
- 4) Be located on expansive soils, as defined in Table 18-1-B of the Uniform Building Code (1994) and in ASTM D4829-11, creating substantial risk to life or property.
- 5) 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.

As discussed under the Existing Setting subsection above, the project site is not within an Alquist-Priolo Earthquake Fault Zone and therefore would not be subject to hazards associated with significant fault surface rupture. Therefore, Standard of Significance 1(i) is not discussed further, as it would have **no impact**.

Also as discussed under the Existing Setting subsection above, the project site is not within a landslide hazard zone. Therefore, Standard of Significance 1(iv) is not discussed further, as it would have **no impact**.

Section 12.08.010 of the City of Sunnyvale Municipal Code requires sewer connections for all new development. The project site is currently connected to the City's sewer system and would not require the installation of septic tanks or an alternative wastewater disposal system. Therefore, Standard of Significance 5 is not discussed further, as it would have **no impact**.

#### METHODOLOGY

The following impact 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 USDA Natural Resources Conservation Service, the University of California, Davis, Soil Resource Laboratory, the California Geological Survey, and the US Geological Survey.

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### PROJECT IMPACTS AND MITIGATION MEASURES

#### Seismic Hazards (Standard of Significance 1)

**Impact 3.5.1** Because of the seismically active nature of the San Francisco Bay region, the project would inherently result in the exposure of people, structures, and infrastructure to adverse effects associated with seismic activity. However, California Building Code standards address seismic hazards and the project proposes seismic retrofits to the existing buildings as necessary. Therefore, this would be a **less than significant** impact.

As previously discussed, the project area is located in a seismically active area and could experience strong seismic ground shaking and seismic-related ground failure (i.e., liquefaction and settlement) from earthquakes on active faults located in proximity to the project area. Renewed operation of the existing school facility could result in the exposure of more people, structures, and infrastructure to seismic-related hazards.

The existing structures were constructed between 1952 and 1962. While the buildings have undergone modifications throughout the years to both their interiors and exteriors, seismic upgrades may be necessary to bring them up to current building standards. The project would include a seismic evaluation of the existing structures and implementation of recommended upgrades.

The City adopted the California Building Code (CBC) in Section 16.16.020 of the Sunnyvale Municipal Code. The current adopted CBC 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 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 the project would result in the exposure of people to dangers associated with earthquakes, the proposed seismic upgrades in accordance with applicable building standards would minimize these dangers. The project would not increase the potential for seismic activity or the inherent risks that come with living in a seismically active region. Therefore, this impact would be **less than significant**.

#### Mitigation Measures

None required.

#### Erosion and Loss of Topsoil (Standard of Significance 2)

**Impact 3.5.2** The project would involve the renovation and reuse of an existing school site, requiring minimal ground-disturbing construction activities. Construction of the proposed circulation driveway and basketball court would be subject to the City's Municipal Code, which requires measures to reduce soil erosion. Therefore, this impact would be **less than significant**.

Project construction would disturb approximately 6,050 square feet of the total project area of 154,500 square feet. Further, the project would not require extensive clearing, grading,

excavations, cut/fill, or trenching that could expose site soils to the erosive effects of wind and water. Construction of the proposed circulation driveway, fencing, and sports courts could result in limited soil erosion on the site. Landscaping activities could also result in soil exposure and limited soil erosion.

However, all construction activities would be required to comply with CBC Chapter 70 standards, which would ensure implementation of appropriate measures during soil-disturbing activities to reduce erosion. Project construction would also need to comply with City grading and erosion standards, which would include a soil erosion management plan. Compliance with these existing standards would minimize the potential for soil erosion. This impact would be **less than significant**.

### Mitigation Measures

None required.

### **Development on Unstable or Expansive Soils (Standards of Significance 3 and 4)**

**Impact 3.5.3** The project site is currently developed, with no indication of damage from underlying unstable or expansive soils. Further, the project does not propose the construction of any new habitable structures. Therefore, this impact would be **less than significant**.

As described previously, the project site is underlain by soils of the Urban Land-Flaskan complex, which have a low to moderate expansion potential. The site has been developed since the 1950s, with no indication of damage to structures, underground infrastructure, or pavement as a result of expansive or otherwise unstable soils.

The project does not propose the construction of any new habitable structures but would involve the construction of a new circulation driveway along the eastern boundary of the project area as well as fencing, pathways and a courtyard, a volleyball court, and a basketball court. The proposed improvements would be designed and constructed in accordance with applicable engineering standards that address soil stability. Therefore, this impact would be **less than significant**.

### Mitigation Measures

None required.

## **3.5.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES**

### CUMULATIVE SETTING

Site-specific topography, soil conditions, and surrounding development determine geological and soil-related impacts, which generally are not considered cumulative in nature. However, erosion and sediment deposition can be cumulative in nature, depending on the type and amount of development proposed in a given geographical area. The cumulative setting for soil erosion consists of existing, planned, proposed, and reasonably foreseeable land use conditions in Santa Clara County.

## 3.5 GEOLOGY AND SOILS

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### CUMULATIVE IMPACTS AND MITIGATION MEASURES

#### Cumulative Geologic, Seismic, and Soil Hazards

**Impact 3.5.4** The project, in addition to other existing, planned, proposed, approved, and reasonably foreseeable development projects in Santa Clara County, may result in cumulative soil erosion impacts. However, compliance with existing regulations intended to reduce soil erosion during construction would reduce this impact to a **less than cumulatively considerable** impact.

Any development involving clearing, grading, or excavation that causes soil disturbance of 1 or more acres, or any project involving less than 1 acre that is part of a larger development plan and includes clearing, grading, or excavation, would be subject to the State's General Construction Permit and would be required to prepare and implement an approved SWPPP. SWPPPs provide a schedule for the implementation and maintenance of erosion control measures and a description of erosion control practices, including appropriate design details and a time schedule. Compliance with SWPPP requirements would reduce cumulative impacts associated with soil erosion associated with planned, proposed, and reasonably foreseeable land use conditions. Further, all future development would comply with City of Sunnyvale, county, and state requirements regarding soil erosion and geological hazards. Therefore, this impact would be **less than cumulatively considerable**.

#### Mitigation Measures

None required.

## **3.6 GREENHOUSE GAS EMISSIONS**



## 3.6 GREENHOUSE GAS EMISSIONS

This section provides a discussion of the project's effect on greenhouse gas (GHG) emissions and the associated effects of climate change. The reader is referred to Section 3.2, 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
3.6.1	Generation of Greenhouse Gas Emissions	Less than cumulatively considerable
3.6.2	Compliance with Sunnyvale Climate Action Plan	No impact

### 3.6.1 EXISTING 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<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O), 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<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O.

**Table 3.6-1** 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.

### 3.6 GREENHOUSE GAS EMISSIONS

**TABLE 3.6-1  
GREENHOUSE GASES**

Greenhouse Gas	Description
Carbon Dioxide (CO <sub>2</sub> )	Carbon dioxide is a colorless, odorless gas. CO <sub>2</sub> is emitted in a number of ways, both naturally and through human activities. The largest source of CO <sub>2</sub> 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 <sub>2</sub> emissions. The atmospheric lifetime of CO <sub>2</sub> is variable because it is so readily exchanged in the atmosphere. <sup>1</sup>
Methane (CH <sub>4</sub> )	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 <sub>4</sub> to the atmosphere. Natural sources of CH <sub>4</sub> include wetlands, gas hydrates, permafrost, termites, oceans, freshwater bodies, non-wetland soils, and other sources such as wildfires. The atmospheric lifetime of CH <sub>4</sub> is about 12 years. <sup>2</sup>
Nitrous Oxide (N <sub>2</sub> O)	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 <sub>2</sub> O 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 <sub>2</sub> O is approximately 120 years. <sup>3</sup>

Sources: <sup>1</sup> EPA 2011a, <sup>2</sup> EPA 2011b, <sup>3</sup> 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. Methane traps over 21 times more heat per molecule than CO<sub>2</sub>, and N<sub>2</sub>O absorbs 310 times more heat per molecule than CO<sub>2</sub>. Often, estimates of GHG emissions are presented in carbon dioxide equivalents (CO<sub>2</sub>e), which weigh each gas by its global warming potential (GWP). Expressing GHG emissions in CO<sub>2</sub>e 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<sub>2</sub> were being emitted. **Table 3.6-2** shows the global warming potentials for different GHGs for a 100-year time horizon.

**TABLE 3.6-2  
GLOBAL WARMING POTENTIAL FOR GREENHOUSE GASES**

Greenhouse Gas	Global Warming Potential
Carbon Dioxide (CO <sub>2</sub> )	1
Methane (CH <sub>4</sub> )	21
Nitrous Oxide (N <sub>2</sub> O)	310

Source: California Climate Action Registry 2009

As the name implies, global climate change is a global problem. Greenhouse gases are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern, respectively. California is a significant emitter of CO<sub>2</sub>e in the world and produced 459 million gross metric tons of CO<sub>2</sub>e in 2012 (CARB 2014). Consumption of fossil

fuels in the transportation sector was the single largest source of California's GHG emissions in 2010, accounting for 36 percent of total GHG emissions in the state (CARB 2014). This category was followed by the electric power sector (including both in-state and out-of-state sources) (21 percent) and the industrial sector (19 percent) (CARB 2014).

### EFFECTS OF GLOBAL CLIMATE CHANGE

California can draw on substantial scientific research conducted by experts at various universities and research institutions. With more than a decade of concerted research, scientists have established that the early signs of climate change are already evident in the state—as shown, for example, in increased average temperatures, changes in temperature extremes, reduced snowpack in the Sierra Nevada, sea level rise, and ecological shifts.

Many of these changes are accelerating locally, across the country, and around the globe. As a result of emissions already released into the atmosphere, California will face intensifying climate change in coming decades (CNRA 2009a). Generally, research indicates that California should expect overall hotter and drier conditions, with a continued reduction in winter snow (with concurrent increases in winter rains), as well as increased average temperatures and accelerating sea-level rise. In addition to changes in average temperatures, sea level, and precipitation patterns, the intensity of extreme weather events is also changing (CNRA 2009a).

Climate change temperature projections identified in the 2009 California Climate Adaptation Strategy suggest the following:

- Average temperature increase is expected to be more pronounced in the summer than in the winter season.
- Inland areas are likely to experience more pronounced warming than coastal regions.
- Heat waves are expected to increase in frequency, with individual heat waves also showing a tendency toward becoming longer and extending over a larger area, thus more likely to encompass multiple population centers in California at the same time.
- Because GHGs remain in the atmosphere for decades, temperature changes over the next 30 to 40 years are already largely determined by past emissions. By 2050, temperatures are projected to increase by an additional 1.8 to 5.4°F (an increase one to three times as large as that which occurred over the entire twentieth century).
- By 2100, the models project temperature increases between 3.6 and 9°F. (CNRA 2009a)

According to the 2009 California Climate Adaptation Strategy, the impacts of climate change in California have the potential to include but are not limited to the areas discussed in **Table 3.6-3**.

### 3.6 GREENHOUSE GAS EMISSIONS

**TABLE 3.6-3  
POTENTIAL STATEWIDE IMPACTS FROM CLIMATE CHANGE**

Potential Statewide Impact	Description
Public Health	<p>Climate change is expected to lead to an increase in ambient (i.e., outdoor) average air temperature, with greater increases expected in summer. Larger temperature increases are anticipated in inland communities as compared to the California coast. 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 the most at risk during heat waves.</p>
Floods and Droughts	<p>The impacts of flooding may include population displacement, severe psychosocial stress with resulting mental health impacts, exacerbation of pre-existing chronic conditions, and infectious disease. Additionally, impacts can range from a loss of personal belongings, and the emotional ramifications from such loss, to direct injury and/or mortality.</p> <p>Drinking water contamination outbreaks in the United States are associated with extreme precipitation events. Runoff from rainfall is also associated with coastal contamination that can lead to contamination of shellfish and contribute to food-borne illness. Floodwaters may contain household, industrial, and agricultural chemicals, as well as sewage and animal waste. Flooding and heavy rainfall events can wash pathogens and chemicals from contaminated soils, farms, and streets into drinking water supplies. Flooding may also overload storm and wastewater systems, or flood septic systems, also leading to possible contamination of drinking water systems.</p> <p>Drought impacts develop more slowly over time. Risks to public health that Californians may face from drought include impacts on water supply and quality, food production (both agricultural and commercial fisheries), and risks of waterborne illness. As surface water supplies are reduced as a result of drought conditions, the amount of groundwater pumping is expected to increase to make up for the water shortfall. The increase in groundwater pumping has the potential to lower the water tables and cause land subsidence. Communities that utilize well water will be adversely affected by drops in water tables or through changes in water quality. Groundwater supplies have higher levels of total dissolved solids compared to surface waters. This introduces a set of effects for consumers, such as repair and maintenance costs associated with mineral deposits in water heaters and other plumbing fixtures, and on public water system infrastructure designed for lower salinity surface water supplies. Drought may also lead to increased concentration of contaminants in drinking water supplies.</p>
Water Resources	<p>The state's water supply system already faces challenges to provide water for California's growing population. Climate change is expected to exacerbate these challenges through increased temperatures and possible changes in precipitation patterns. The trends of the last century, especially increases in hydrologic variability, will likely intensify in this century. The state can expect to experience more frequent and larger floods and deeper droughts. Rising sea level will threaten the Delta water conveyance system and increase salinity in near-coastal groundwater supplies.</p>
Forests and Landscapes	<p>Global climate change has the potential to intensify the current threat to forests and landscapes by increasing the risk of wildfire and altering the distribution and character of natural vegetation. If temperatures rise into the medium warming range, wildfire occurrence statewide could increase from 57% to 169% by 2085. However, since wildfire risk is determined by a combination of factors, including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the state.</p>

Source: CNRA 2009a

### **3.6.2 REGULATORY FRAMEWORK**

The adoption of recent legislation has provided a clear mandate that climate change must be included in an environmental review for a project subject to the California Environmental Quality Act (CEQA). A discussion of several GHG emissions-related laws and regulations follows.

#### **STATE REGULATIONS**

California has adopted various administrative initiatives and also enacted a variety of legislation relating to climate change, much of which sets aggressive goals for GHG emissions reductions within the state. However, none of this legislation provides definitive direction regarding the treatment of climate change in environmental review documents prepared under CEQA. In particular, 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.

The discussion below provides a brief overview of the primary legislation relating to climate change that may affect the emissions associated with the proposed project. It begins with an overview of the primary regulatory acts that have driven GHG regulation and analysis in California.

#### **Executive Order S-3-05 (Statewide GHG Targets)**

California Executive Order S-03-05 (2005) mandates a reduction of GHG emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050. Although the 2020 target has been incorporated into legislation (AB 32), the 2050 target remains only a goal of the Executive Order.

#### **Assembly Bill 32, the California Global Warming Solutions Act of 2006**

The California Global Warming Solutions Act of 2006 (AB 32) (Health and Safety Code Sections 38500, 38501, 28510, 38530, 38550, 38560, 38561–38565, 38570, 38571, 38574, 38580, 38590, 38592–38599) 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 (1990 levels have been estimated to equate to 15 percent below 2005 emission levels). Based on CARB's calculations of emissions levels, California must reduce GHG emissions by approximately 15 percent below 2005 levels to achieve this goal.

#### **AB 32 Scoping Plan**

CARB adopted the Scoping Plan to 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

### 3.6 GREENHOUSE GAS EMISSIONS

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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. The key elements of the Scoping Plan include:

- 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 caps 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 the 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<sub>2</sub>e to 545 MMTCO<sub>2</sub>e. 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 took credit for certain 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.

### **Assembly Bill 1493 and Advanced Clean Cars Program**

Assembly Bill 1493 (the Pavley Standard, or AB 1493, 2005) (Health and Safety Code Sections 42823 and 43018.5) aimed to reduce GHG emissions from noncommercial passenger vehicles and light-duty trucks of model years 2009–2016. The bill also required the California Climate Action Registry to develop and adopt protocols for the reporting and certification of GHG emissions reductions from mobile sources for use by CARB in granting emissions reduction credits. The bill authorized CARB to grant emissions reduction credits for reductions in GHG emissions prior to the date of enforcement of regulations, using model year 2000 as the baseline for reduction.

In 2012, CARB approved the Advanced Clean Cars Program, a new emissions-control program for model years 2017–2025. The program combines the control of smog, soot, and GHG emissions with requirements for greater numbers of zero-emission vehicles. By 2025, when the rules will be fully implemented, new automobiles will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions.

### **Low Carbon Fuel Standard**

Executive Order S-01-07 (2007) requires a 10 percent or greater reduction in the average fuel carbon intensity for transportation fuels in California regulated by CARB. CARB identified the Low Carbon Fuel Standard (LCFS) as a discrete early action item under AB 32. 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. Carbon intensity is a measure of the GHG emissions associated with the various production, distribution, and use steps in the “life cycle” of a transportation fuel.

### **Renewables Portfolio Standard (Senate Bill 1078, Senate Bill 107, and Senate Bill X1-2)**

Established in 2002 under Senate Bill (SB) 1078, and accelerated in 2006 under SB 107 and again in 2011 under SBX1-2, 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. As an interim measure, the RPS requires 25 percent of retail sales to be sourced from renewable energy by 2016.

### **Senate Bill 375**

SB 375 (codified in the Government Code and Public Resources Code<sup>1</sup>) took effect in 2008 and provides 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 includes provisions for streamlined CEQA review for some infill projects such as transit-oriented development. SB 375 also requires metropolitan planning organizations (MPOs) to incorporate a Sustainable Communities Strategy (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. If the SCS cannot meet greenhouse gas reduction targets, the MPO must prepare an Alternative

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<sup>1</sup> 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 Public Resources Code Sections 21061.3 and 21159.28 and Chapter 4.2.

### **3.6 GREENHOUSE GAS EMISSIONS**

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Planning Strategy that identifies the additional regional land uses and transportation investments needed to attain the targets.

The MPO with jurisdiction in the project area is the Bay Area Metropolitan Transportation Commission (MTC) in association with the Association of Bay Area Governments (ABAG). On September 23, 2010, CARB adopted regional targets for the reduction of GHG emissions applying to the years 2020 and 2035 (CARB 2011a). For the area under MTC/ABAG jurisdiction, including Sunnyvale, CARB adopted regional targets for reduction of GHG emissions by 7 percent per capita for 2020 and by 15 percent per capita for 2035 (CARB 2010). CARB's executive officer approved the final targets on February 15, 2011 (CARB 2011b).

#### **California Building Energy Efficiency Standards**

Energy conservation standards for new residential and nonresidential buildings were originally adopted by the California Energy Resources Conservation and Development Commission in June 1977 and most recently revised in 2008 (Title 24, Part 6, of the California Code of Regulations). In general, Title 24 requires 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.

In 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Title 24, Part 11) was adopted as part of the California Building Standards Code (Title 24, California Code of Regulations).

Part 11 establishes voluntary standards on planning and design for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. Current mandatory standards include:

- Twenty (20) percent mandatory reduction in indoor water use, with voluntary goal standards for 30, 35, and 40 percent reductions.
- Separate water meters for nonresidential buildings' indoor and outdoor water use, with a requirement for moisture-sensing irrigation systems for larger landscape projects.
- Diversion of 50 percent of construction waste from landfills, increasing voluntarily to 65 and 75 percent for new homes and 80 percent for commercial projects.
- Wastewater reduction measures including the requirement that each building reduce the generation of wastewater through the installation of water conservation fixtures or using non-potable water systems.
- Mandatory inspections of energy systems (i.e., heat furnace, air conditioner, mechanical equipment) for nonresidential buildings over 10,000 square feet to ensure that all are working at their maximum capacity according to their design efficiencies.
- Low-pollutant-emitting interior finish materials such as paints, carpet, vinyl flooring, and particleboard.

The California Energy Commission recently 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 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; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions.

### **California Green Building Standards**

In January 2010, the California Building Standards Commission adopted the statewide mandatory Green Building Standards Code (CALGreen [California Code of Regulations, Title 24, Part 11]). CALGreen applies to the planning, design, operation, construction, use, and occupancy of every newly constructed building or structure. CALGreen requires energy conservation measures for new buildings and structures. The City adopted the CALGreen standards by ordinance (Ordinance 11-01).

#### 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-level and project-level impacts.

#### LOCAL

### **City of Sunnyvale Climate Action Plan**

The City's (2014) Climate Action Plan was prepared consistent with the Bay Area Air Quality Management District's (BAAQMD) expectations for a Qualified GHG Reduction Strategy. The Climate Action Plan (CAP) also identifies how the City will achieve the State-recommended GHG emissions reduction target of 15 percent below 2008 levels by the year 2020 (equivalent to 1990 emissions). The CAP provides goals 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.

### **3.6.3 IMPACTS AND MITIGATION MEASURES**

#### STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the application of the following CEQA Guidelines Appendix G thresholds of significance. Climate change impacts are considered significant if implementation of the proposed project would:

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

### 3.6 GREENHOUSE GAS EMISSIONS

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- 2) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

The project's GHG emissions would occur over the short term from construction activities, consisting primarily of emissions from equipment exhaust. There would also be long-term emissions associated with new vehicular trips, stationary source emissions such as natural gas used for heating, and indirect source emissions such as electricity usage for lighting.

Addressing GHG generation impacts requires an agency to make a determination as to what constitutes a significant impact. The amendments to the CEQA Guidelines specifically allow 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)).

In its Final Statement of Reasons for Regulatory Action accompanying the CEQA Amendments (FSOR), the California Natural Resources Agency (2009b) explains that quantification of GHG emissions "is reasonably necessary to ensure an adequate analysis of GHG emissions using available data and tools" and that "quantification will, in many cases, assist in the determination of significance." However, as explained in the FSOR, the revised Section 15064.4(b) assigns lead agencies the discretion to determine the methodology to quantify GHG emissions. The FSOR also notes that CEQA case law has long stated that "there is no iron-clad definition of 'significance.'" Accordingly, lead agencies must use their best efforts to investigate and disclose all that they reasonably can concerning a project's potential adverse impacts."

The CNRA 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.

Determining a threshold of significance for a project's climate change impacts poses a special difficulty for lead agencies. Much of the science in this area is new and is evolving constantly. At the same time, neither the State nor local agencies are specialized in this area, and there are currently no local, regional, or state thresholds for determining whether a proposed project has a significant impact on climate change. The CEQA Amendments do not prescribe specific significance thresholds but instead leave considerable discretion to lead agencies to develop appropriate thresholds to apply to projects within their jurisdiction.

As noted earlier, AB 32 is a legal mandate requiring that statewide GHG emissions be reduced to 1990 levels by 2020. In adopting AB 32, the legislature determined the necessary GHG reductions for the state to make in order to sufficiently offset its contribution to the cumulative climate change problem to reach 1990 levels. AB 32 is the only legally mandated requirement for the reduction of greenhouse gases. As such, compliance with AB 32 is the current adopted basis upon which the agency can base its significance threshold for evaluating the project's GHG impacts.

As previously stated, the BAAQMD CEQA Guidelines include guidance on assessing GHG and climate change impacts as required under CEQA Section 15183.5(b) and establish thresholds of significance for impacts related to GHG emissions. Even though the BAAQMD is not currently recommending the use of these guidelines, the City of Sunnyvale has determined, in its discretion, that the 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, in its discretion, the City is using the BAAQMD CEQA Guidelines to determine the level of impact from the project's contribution of GHG emissions (Standard of Significance 1).

The BAAQMD plan-level threshold of significance for GHG emissions is the project generation of 1,100 metric tons of CO<sub>2</sub>e per year during operations. The BAAQMD plan-level threshold is used to determine the level of impact from the project's contribution to GHG emissions. BAAQMD thresholds were developed based on the substantial evidence that such thresholds represent quantitative levels of GHG emissions, compliance with which means that the environmental impact of the GHG emissions will normally not be cumulatively considerable under CEQA (BAAQMD 2011). Compliance with such thresholds will be part of the solution to the cumulative GHG emissions problem, rather than hinder the State's ability to meet its goals of reduced statewide GHG emissions under AB 32. The BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions. However, quantification and disclosure of construction-generated GHG emissions that would occur during construction is recommended.

In terms of project conformance with an applicable plan to reduce GHG emissions (Standard of Significance 2), the project was analyzed for compliance with all of the applicable reduction measures contained in the City's Climate Action Plan.

### METHODOLOGY

The proposed project's GHG emissions were calculated using the California Emissions Estimator Model (CalEEMod), version 2013.2.2, computer program (see **Appendix D**). CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for the use of government agencies, land use planners, and environmental professionals. This model was developed in coordination with the South Coast Air Quality Management District and is the most current emissions model approved for use in California by various other air districts, including the BAAQMD.

### IMPACTS AND MITIGATION MEASURES

#### **Generate Greenhouse Gas Emissions That May Have a Significant Impact on the Environment (Standard of Significance 1)**

**Impact 3.6.1** The project would generate greenhouse gas emissions. This would be a **less than cumulatively considerable** impact.

The project's 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 vehicular trips and indirect source emissions, such as electricity usage for lighting.

#### Construction GHG Emissions

The approximate quantity of annual GHG emissions generated by construction equipment is shown in **Table 3.6-4**.

### 3.6 GREENHOUSE GAS EMISSIONS

**TABLE 3.6-4  
CONSTRUCTION-RELATED GREENHOUSE GAS EMISSIONS (METRIC TONS PER YEAR)**

Construction Activities	CO <sub>2</sub> e
Minor Site Grading	12
Upgrades to Project Site Buildings <sup>1</sup>	194
Architectural Coatings	20
Fencing Installation	15
Hardscape <sup>2</sup>	97
<b>Combined Annual Emissions</b>	<b>338</b>
BAAQMD Potentially Significant Impact Threshold	None
<b>Exceed BAAQMD Threshold?</b>	<b>No</b>

Source: CalEEMod version 2013.2.2. See **Appendix D** for emission model outputs.

Notes: Project construction activities are assumed to occur over a 5-month time frame.

<sup>1</sup> Upgrades to project site buildings account for ADA compliance upgrades, fire code upgrades, seismic safety upgrades, new windows, new doors and other hardware components, and new utilities.

<sup>2</sup> Hardscape emissions account for the paving of 126,056 (2.9 acres) of hardscape (includes new driveway, basketball court, volleyball court, sidewalks, curbs, and gutters) despite the project proposal to include 66,028 square feet of pervious surfaces (e.g., the proposed volleyball court would be constructed of decomposed granite as opposed to asphalt). This is conservative.

As shown, construction would generate approximately 338 metric tons of CO<sub>2</sub>e. Once construction is complete, generation of GHG emissions would cease. As previously stated, the BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions.

#### Operational GHG Emissions

The project's long-term operational emissions are summarized in **Table 3.6-5**.

**TABLE 3.6-5  
UNMITIGATED PROJECT GREENHOUSE GAS EMISSIONS – PROJECT OPERATION (METRIC TONS PER YEAR)**

Emissions Source	CO <sub>2</sub> e
Area Source (landscaping, hearth)	0
Energy <sup>1</sup>	99
Mobile <sup>2</sup>	730
Waste <sup>3</sup>	20
Water <sup>4</sup>	4
<b>Total</b>	<b>853</b>
BAAQMD Potentially Significant Impact Threshold	1,100
<b>Exceed BAAQMD Threshold?</b>	<b>No</b>

Source: CalEEMod version 2013.2.2 See **Appendix D** for emission model outputs.

Notes:

1. Emissions projections account for PG&E's most current (2012) CO<sub>2</sub> emission intensity factor of 445 pounds of CO<sub>2</sub> per megawatt of energy generated (PG&E 2014).

2. Emissions projections account for 1,139 average daily vehicle trips (Fehr & Peers 2015).

As shown, the proposed project would not result in the annual generation of GHG emissions in excess of the BAAQMD significance threshold. This would be a **less than cumulatively considerable** impact.

### Mitigation Measures

None required.

### **Compliance with Sunnyvale Climate Action Plan (Standard of Significance 2)**

**Impact 3.6.2** The project would not conflict with an applicable plan adopted for the purpose of reducing GHG emissions. There would be **no impact**.

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. A specific project proposal is considered consistent with the Sunnyvale Climate Action Plan if it complies with the GHG reduction measures contained in the adopted CAP.

The project would be required to comply with the provisions of the Sunnyvale CAP. Ways in which the project could comply include but are not limited to the following:

- Use of energy-efficient lighting technologies for parking lot lighting.
- Installation of interior real-time energy monitors.
- 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.
- Pre-wiring for solar water heating and solar electricity.
- Reduction of potable indoor water consumption by 30 percent (Tier 1 CALGreen) and outdoor landscaping water use by 40 percent.
- Installation of electrical outlets on the exterior of building at an accessible location to charge electric-powered lawn and garden equipment.
- Provision for cross-parcel access and linkages from the school entrance to the public sidewalk system.
- Provision for bicycle parking consistent with the Valley Transportation Authority Bicycle Technical Guidelines, as amended.
- 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.

### 3.6 GREENHOUSE GAS EMISSIONS

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Compliance with the CAP would reduce the project's GHG emissions. As a result, the project would comply with the AB 32 strategies to help California reach the emissions reduction targets. Therefore, there would be **no impact**.

#### Mitigation Measures

None required.