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Memo

To:	Elena Lee
From:	Kristen Hall and Rachael Cleveland
Date:	December 18, 2018
Subject:	DRAFT - Existing Conditions and Analysis Memo

This memo describes the existing site setting and context for the North Ventura Coordinated Area Plan (NVCAP) project, as well as preliminary analysis by the consultant team. The findings are guided in part by the NVCAP Project Goals and Objectives set forth in the Palo Alto Comprehensive Plan. This document includes a table highlighting the opportunities and constraints for the area being studied by the NVCAP (henceforth, referred to as the Plan Area).The memo is organized in the following sections with detailed discussion:

- Land Use and Surroundings
- Mobility
- Market Snapshot
- Infrastructure

An appendix is provided with a letter memo from the environmental sub-consultant (David J. Powers) documenting the plume of groundwater contamination that has been identified below the site. At the time of this report, the historic significance of the Fry's building was still under further study at the direction of the City. The historic analysis will be submitted as part of the final environmental analysis.

Summary of Findings

Below is a high-level summary of the findings of this study. For more detailed analysis, figures, and background information, see the body of the memo that follows this summary.

Land Use and Surroundings

- Existing uses of the site include single-family residential, multi-family residential, office, service and retail. A channelized portion of the Matadero Creek runs through the eastern portion of the site.
- The City of Palo Alto Comprehensive Plan 2030 (Comprehensive Plan) designates a mix of land uses for the Plan Area including multi-family residential, single-family residential, service commercial, neighborhood commercial, light industrial, and research/office. Policy L-4.10 of the Comprehensive Plan describes the vision for the Plan Area as a "walkable neighborhood with multi-family housing, ground floor retail, a public park, creek improvements and an interconnected street grid."
- Much of the Plan Area falls within the California Avenue Priority Development Area (PDA), and is in close proximity to a number of key destinations including the California Avenue Caltrain Station, California Avenue retail corridor, and the Stanford Research Park.
- The largest parcel in the Plan Area is the Fry's site, which is currently zoned as RM-30.

Mobility

Traffic volumes

- Heavy traffic volumes are concentrated along El Camino Real and Page Mill Road, which presents crossing difficulties for people walking and biking.
- Streets within the Plan Area generally have very low traffic volumes. Traffic surveys reveal that there are no capacity issues on internal streets during the AM or PM peak hour study periods.
- Despite cut-through traffic in the Plan Area on routes such as Olive Avenue and Ash Street, most of the traffic volumes are from vehicles accessing businesses or residences within the project boundary.

Walking and Biking

- Olive Avenue and Park Boulevard are currently the only streets that provide direct connectivity through the plan area. This disconnected street network limits pedestrian/bike connectivity through the site and lengthens walking and biking distances.
- There are a high number of driveways along Park Boulevard which affect the safe progression of pedestrians and bikes along this bicycle boulevard.
- Despite no dedicated crossing on Page Mill Road at Ash Street, surveys highlighted a noticeable amount of pedestrian demand at this location, most likely with an ultimate destination of California Avenue.

Transit

- Existing bus stops in the vicinity of the site serve a limited number of routes, which limits the reach of bus transit as a mode of transport to and from the site.
- The 2016 Census data shows that just over half of trips to work are made in Single Occupancy Vehicles, while the rest are made by other modes.

Parking

- Parking survey data shows a capacity for 500 cars in on-street parking spaces within the site and along perimeter roads, and approximately 2,400 spaces in off-street facilities belonging to businesses within the Plan Area.
- User survey results show that the average occupancy of off-street parking lots is approximately 16.5% outside of normal working hours, rising to a maximum occupancy of just under 41.3% during peak working hours. This indicates that there are significant levels of spare off-street parking capacity available throughout the day. On-street parking reaches 63% at its peak utilization, indicating high levels of spare on-street parking as well.
- Currently, bikers and pedestrians use off-street parking lots as convenient cut-through paths across the site. This is a safety concern as it exposes bikers and pedestrians to distracted drivers looking for a parking space.

Market Snapshot

Multifamily Residential

- About 70% of, most
- In 2014, the City of Palo Alto adopted its Housing Element, covering the 2015-2023 horizon. From 2014 to 2022, the RHNA for Palo Alto is 1,988 units, or 3.4 percent of the total housing need in Santa Clara

County. As of 2017, Palo Alto was on track to meet its target for Above Moderate-income households, however, Palo Alto has lagged in permitting units for Very Low-income, Low-income households, and Moderate-income households.

- The high rents and condominium sales prices seen in Palo Alto indicate a strong market for multifamily housing, and Palo Alto has attracted new multifamily housing in and near the Plan Area, including rental and for-sale products.
- Despite strong demand, new multi-family development is challenged by high construction costs and parking requirements. According to developers, increases in density and height in the plan area would lower costs and create economic incentives to develop more housing.

Affordable Housing

- North Ventura's proximity to transit makes it a strong candidate for a new affordable housing development.
- According to local affordable housing developers, a combination of high costs of land and construction, long approval timelines and declining federal sources of funds, together challenge the feasibility of new affordable projects in Palo Alto.

Office and R&D

- The office and R&D market in Silicon Valley remains strong, largely driven by expansions of major tech firms. Caltrain Station areas and downtowns are highly attractive to technology companies
- Palo Alto is also at the top of the market for R&D tenants, and North Ventura is already a strong location for office and R&D uses.
- City policy limits the amount of office and R&D development that can be built in Palo Alto.
- Despite high demand, the current high costs of construction mean that some combination of additional height, density, and lower parking requirements likely will be required if additional office development is desired in North Ventura.

Retail

- The retail industry in the US is growing, but much of this growth is happening online rather than in brick-and-mortar stores. Offering a unique consumer experience has become essential for retailers to compete with online shopping. In addition to their typical location requirements, experiential retailers are also sensitive to the quality of the pedestrian environment for shoppers.
- The North Ventura plan area is not a competitive location for large malls and shopping centers due to existing competitive supply, as the area is already well-served by regional malls and other large centers.
- The plan area is located in close proximity to the California Avenue district and the Mollie Stone's/Palo Alto Central, which offer a variety of retail and services for existing and new residents.
- Given the existing supply of retail in the trade area, as well as limited household growth in the plan area, North Ventura could support up to 25,000 square feet of additional neighborhood-serving retail space that could be provided on the ground floor of new mixed-use developments.
- A "big box" replacement to the Fry's store or suburban mall formats are unlikely to succeed in North Ventura.
- Area brokers and developers view the primary market opportunity for the Fry's site to be a redevelopment to residential or a conversion of the existing space to R&D or creative office. However, current zoning only allows continued retail use or new residential uses at the Fry's site.

Infrastructure

- As an area that is already fully developed, the Plan Area is completely serviced with existing utilities. However, new development may require some upgrades of aging infrastructure and/or new utilities to meet the needs of the increased population and development intensities. This specifically applies to storm drainage, sanitary sewer, and potable water.
- There will be future recycled water along Oregon Expressway, El Camino Real and Alma Street, however there is no current timeline for when these mains would be installed and when they would become available
- The existing electrical utilities consist of both overhead and underground lines. As part of the NVCAP's conditions, the City and PG&E may require the NVCAP underground all overhead electric lines.
- The majority of the existing electrical utilities, including a 60KV electric line and a fiber optic backbone line, run along Lambert Avenue and Park Boulevard to an existing substation, "Park Boulevard Substation" at the corner of Park Boulevard and Lambert Avenue. The Park Boulevard Substation is not within the Plan Area.
- The Plan Area is located within the California Olive Emerson regional plume of volatile organic compounds (VOC) affected groundwater, based on off-site contamination. Additional Environmental reports and design recommendations from the project's Environmental consultant will need to be performed prior to the commencement of design and construction.

Land Use and Surroundings

Land Use as per 2030 Comprehensive Plan

In 2008, the City designated the larger California Avenue area as a Priority Development Area (PDA) as part of a program established by the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC) to prioritize areas for transportation funding throughout the region. The Palo Alto PDA contains approximately 95 acres and is located roughly between El Camino Real and Alma Street, and College Avenue and Lambert Avenue (Figure 1).

The California Avenue area was selected as a PDA based on excellent access to transit, the proximity of the existing California Avenue Business District, and the availability of underutilized parcels of land. Palo Alto's 2030 Comprehensive Plan (Comprehensive Plan) adopted in November 2017 calls for the preparation of a Coordinated Area Plan (CAP) for the North Ventura area (Plan Area) within this PDA. Approximately seventy percent of the Plan Area falls within the California Avenue PDA. Program L4.10.1 states:

> *Prepare a coordinated area plan for the North Ventura area and surrounding California Avenue area. The plan should describe a vision for the future of the North Ventura area as a walkable neighborhood with multifamily housing, ground floor retail, a public park, creek improvements and an interconnected street grid. It should guide the development of the California Avenue area as a well-designed mixed use district with diverse land uses and a network of pedestrian-oriented streets.*

The Plan Area includes the large site currently occupied by Fry's Electronics and a portion of the Matadero Creek. Under the Land Use Element of the Comprehensive Plan, the California Avenue/North Ventura Plan Area is identified as a Mixed Use Area, similar to South of Forest Area and Alma Village. The approximately 60-acre Plan Area is designated for a mix of land uses – including multi-family residential, service commercial, and research/office land use designations (See Figure 1). The Comprehensive Plan allows for net densities of 8 to 40 dwelling units per acre (du/ac) for Multi-Family Residential, with an allowance for higher densities, where measurable community benefits is provided, and services and facilities are available.

Figure 1: Land Use as per Comprehensive Plan

Zoning

Existing zoning in the Plan Area includes ROLM, RM-30, R-1, GM, CN, GM/AC, PC 2952, and CS zones. Table 1, identifies the related zoning districts currently applicable to the Plan Area.

Table 1: Existing Zoning Designations

Zoning Map Designation	District Name
R-1	Single -family residence district
RM - 30	Medium density multiple -family residence district
CS	Service Commercial District
ROLM	Research, office and limited manufacturing district
GM CN	General manufacturing district Neighborhood Commercial
GM/ AC	General Manufacturing/ Agricultural Conservation District
PC	Planned Community District

Existing uses on the site include the retail and office uses in the Fry's building service commercial uses along El Camino Real and Portage Avenue, single-family homes along Pepper Avenue and Olive Avenue, an apartment complex north of Park Boulevard, and the Cloudera Headquarters office along Page Mill Road (Figure 3).

The largest single-zoned parcel in the Plan Area is the Fry's site. Under the current zoning, the Fry's site is designated RM-30 and allows for permitted densities between 16 du/ac and 30 du/ac, maximum allowable height is 35 feet, and minimum 30 percent site open space requirement. The site's current zoning of RM-30 would permit approximately 360 dwelling units.

As of the time of writing, the City Council is currently reviewing proposed zoning changes to help implement the City Council's Housing Work Plan. It is anticipated that this on-going discussion will result in changes to the RM-30 district to include updated guidance on density/intensity standards (including a Housing Incentive Program), open space standards, parking standards, and use regulations.

Key Destinations and Connections

The Plan Area lies within the Ventura neighborhood. Surrounding the Plan Area are several residential neighborhoods, including the continuation of Ventura to the east, the Evergreen neighborhood to the west, the Midtown neighborhood to the north, and Barron Park to the south (Figure 2).

Two major city arterials, Page Mill Road and El Camino Real, border the northwest and southwest edge of the site, respectively, The Caltrain corridor, borders the northeast edge of the Plan Area, with the Caltrain Station underpass being the closest crossing point. Although the Plan Area is within walking distance to a number of existing services and amenities, these three boundary conditions are not easy to cross. This prohibits pedestrian and bicycle access to community destinations such as California Avenue, the Caltrain Station, and the open spaces and schools in the Midtown neighborhood to the north and the Barron Park neighborhood to the South. Figure 4 captures the existing walking times to some of these destinations.

The Caltrain Station is within a half mile of the site, and walking accessibility from the Plan Area to the Caltrain Station is primarily along Park Boulevard, a designated Bike Boulevard, and El Camino Real, with limited opportunities for pedestrians and bicyclists to safely cross Page Mill Road.

The Plan Area is also in close proximity to the California Avenue Business District, which the Comprehensive Plan identifies as a neighborhood business district with a mix of retail, office, and service tenants. The site also lies across El Camino Real from Stanford Research Park. From an employment perspective, California Avenue (3%) and Stanford Research Park (36%) account for almost 40% of the City's Employment Distribution.

The site is within a half mile walk of 3.5 acres of parkland, including Sarah Wallis Park, Boulware Park and J.Bowden Park.

December 18, 2018
Re: **DRAFT - Existing Conditions and Analysis Memo**

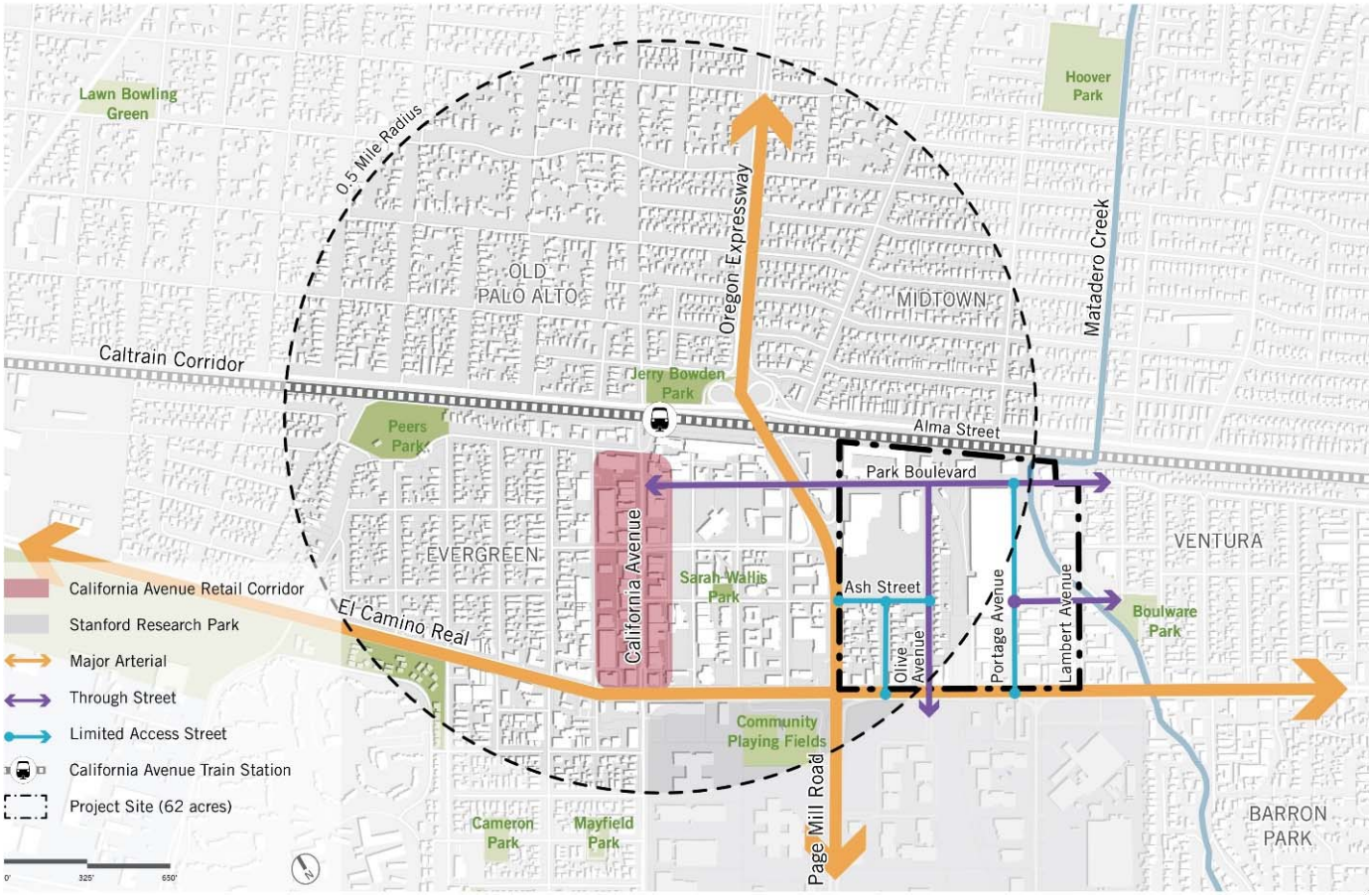

Figure 2: Project context

Figure 3: Existing use

Figure 4: Existing pedestrian connectivity to nearby destinations

Open Space and Creek Corridor

The Plan Area is within a 10-minute walking distance of 7.7 acres of parkland distributed over the following facilities:

- Boulware Park – 1.5 acres with open turf area, children's playground, picnic tables, benches and basketball court;
- Sarah Wallis Park – 0.3 acres with benches and public art; and
- Stanford- Palo Alto Playing Fields – 5.9 acres with two regulation-size soccer/rugby fields, restrooms and snack facility.

Policy 1B of the Palo Alto Parks Masterplan states:

> *Expand parkland inventory using the National Recreation and Park Association standard as a guide for park development in Palo Alto's Urban Service Area. New parkland should be added to meet and maintain the standard of 4 acres per 1,000 residents. Parkland should expand with population, be well distributed across the community and be of sufficient size to meet the varied needs of neighborhoods and the broader community. Maximum service area should be 1/2 mile.*

Policy 1C of the Palo Alto Parks Masterplan further qualifies the preferred service area:

> *Ensure the maximum distance between residents' homes and the nearest public park or preserve is ½ mile, 1/4 mile preferred, that is evaluated using a walkshed methodology based on how people travel.*

The Plan Area is falls within ½ mile of two neighborhood parks, which should be at least 2 acres in size: Boulware Park and Sarah Wallis Park. District parks should be at least 5 acres in size. Although the Stanford Community Playing Fields are sufficient in size to be considered a district park, the recreational program does not sufficiently serve community needs as it is primarily used for Stanford sports practice.

With respect to the larger City context, the Plan Area has fewer street trees. As a result the City's Natural Open Space and Recreation Master Plan has identified the Plan Area as an urban canopy target area.

Located within the Matadero Watershed, a culverted portion of the Matadero Creek runs through the eastern portion of the site, continuing on through residential neighborhoods to the north and Boulware Park to the east. Within a regional context, the Matadero Creek connects the Plan Area to the local foothills and to the San Francisco Bay. The Santa Clara Water District maintains Matadero Creek to mitigate potential flooding.

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Figure 5: Open space and creek corridor

Recent Development Activity

Figure 6 shows the recently developed and actively planned projects in the Plan Area. At the time of writing, there are at least seven development projects that have been recently constructed or are being actively planned in the Plan Area. Active planned and completed projects, as of October 2018, are included below. For more information on unit count and/ or commercial square footage see Figure 43.

- 1: 195 Page Mill Road (Completed)
- 2: 3045 Park Boulevard
- 3: 3241 Park Boulevard
- 4: 3265 El Camino Real
- 5: 3225 El Camino Real
- 6: 3001 El Camino Real
- 7: 441 Page Mill Road

Figure 6: Recently developed or active planning projects

About 70% of units in North Ventura are single-family detached homes, most built before 1950. Single-family homes occupy about 10 percent of the plan area, and are generally found along Olive and Pepper Avenues. As seen in Figure 7, a majority of the homes along Olive Avenue are owned by commercial entities, while individuals own a majority of the homes along Pepper Avenue. The site design will need to consider the influence of these recently built/active planning projects and existing single-family homes when applying policy guidance and design in the Plan Area.

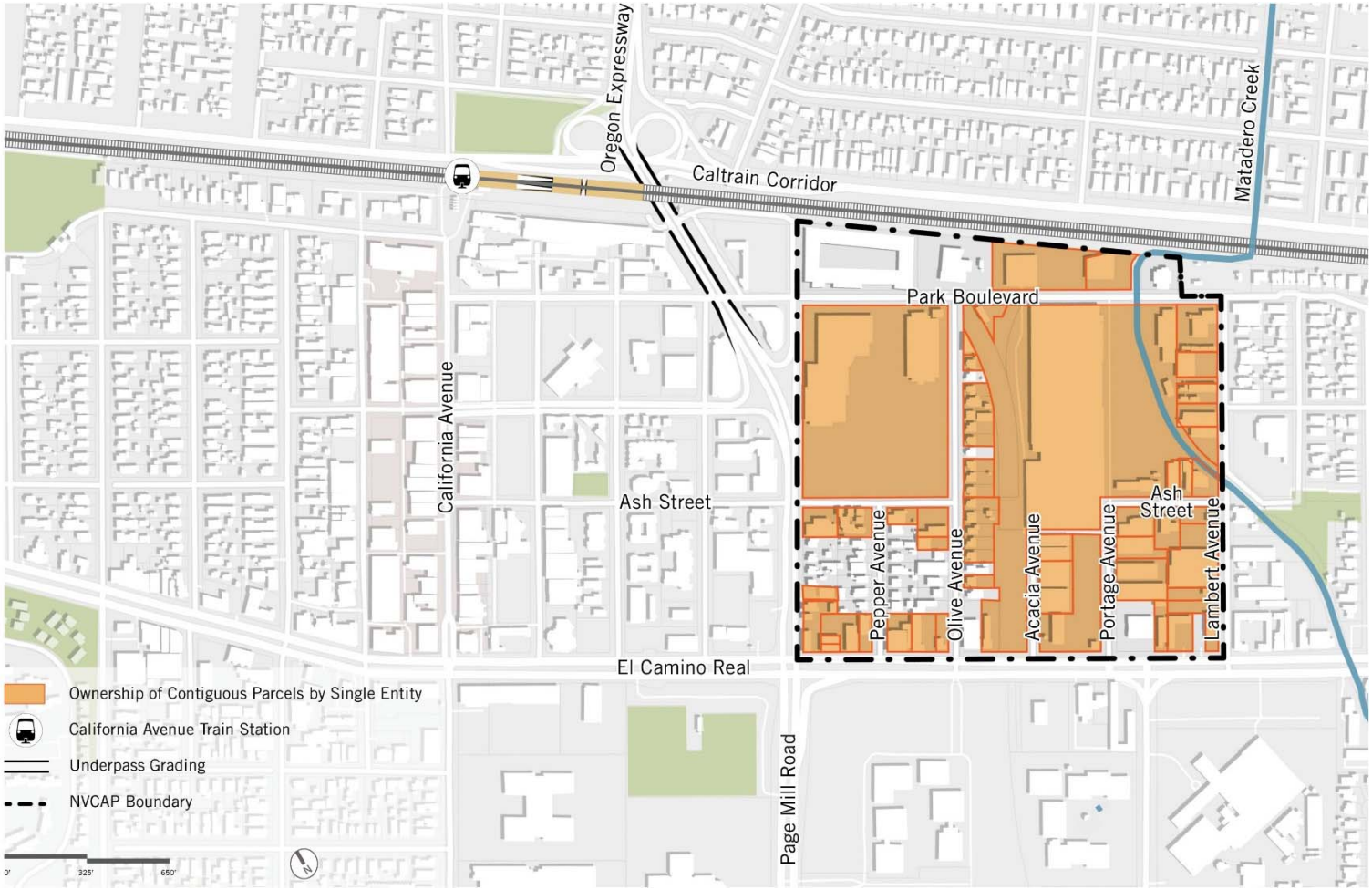

Figure 7: Ownership of contiguous parcels

Mobility

Existing Road Network

The Plan Area is bounded to the northwest by Page Mill Road, to the northeast by Park Boulevard, to the southeast by Lambert Avenue and to the southwest by El Camino Real. Key streets accessing internal destinations and providing through routes include - Ash Street, Pepper Avenue, Olive Avenue, Acacia Avenue, and Portage Avenue.

Perimeter Roads

Page Mill Road is a four-lane Expressway along the northwest boundary of the site, as shown in Figure 78 below. This Expressway diverges away from the site boundary as the County controlled 4 lane Oregon Expressway to the north, and Page Mill Road continues as a lower capacity 3 lane collector road along the remainder of the site boundary, as shown in Figure 89.

Figure 8: Page Mill Road looking towards El Camino Real

Figure 9: Page Mill Road (right) and Oregon Expressway (left)

Park Boulevard is a two-lane collector road running along the northeast boundary of the Plan Area, as shown in Figure 10. The road is characterized by parallel parking along most of its length, in addition to heavily utilized bike lanes (discussed further in sections related to walking and biking). Although the only designated bike boulevard in

the Plan Area, several business driveways are located along Park Boulevard (with more in construction as of the time of writing), which significantly impede pedestrian and bicycle travel.

Figure 10: Park Boulevard

Lambert Avenue is a two-lane collector road running along the southeast boundary of the Plan Area, as shown in Figure 11. The road carries low traffic volumes and provides access to a mix of both residential and industrial land uses. Lambert Avenue accommodates parallel parking along both sides of the road, which were noted as being well-used during site visits.

Figure 11: Lambert Avenue

El Camino Real is a major arterial route on the southwest boundary of the Plan Area. This portion of El Camino Real is primarily a 4-lane route with localized widening to accommodate turning movements at intersections. El Camino Real carries significant volumes of traffic and significant queuing was observed in both peak and off-peak periods at

the intersection of El Camino Real and Page Mill Road, as shown in Figure 12. This heavy traffic flow, coupled with a lack of crossing facilities away from the main intersections along El Camino Real, leads to the road being a major barrier to walking and cycling access to the Plan Area from the southern side of the road and beyond.

The Palo Alto Office of Transportation is actively planning for improvements to El Camino Real to foster better connectivity for this major arterial, in alignment with the Grand Boulevard Initiative. Figure 13, shows the planned transportation improvements in the Plan Area.

Figure 12: El Camino Real

Figure 13: Ventura Neighborhood Transportation Projects *(Source: City of Palo Alto)*

Internal Streets

Within the boundary of the Plan Area, internal streets provide access to single family homes (particularly on Olive Avenue and Pepper Avenue) and service-commercial sites (particularly on Ash Street, Acacia Avenue, and Portage Avenue). During site visits in September 2019, the team observed AM peak hours to compare between intersections and links. The consultant team observed that relatively low traffic volumes and significant availability of on-street parking characterize internal streets. Olive Avenue and Ash Street, which are adjacent to Page Mill Road, see significant levels of cut-through traffic caused by cars attempting to avoid delays around the intersection of El Camino Real and Page Mill Road. Examples of the internal streets within the NVCAP boundary are found in Figure 1314 and Figure 1415.

Figure 14: Internal Streets - Olive Avenue

Figure 15: Internal Streets - Acacia Avenue

The consultant team completed surveys of traffic volumes at key intersections. The AM peak hour volumes are illustrated in Figure 15.

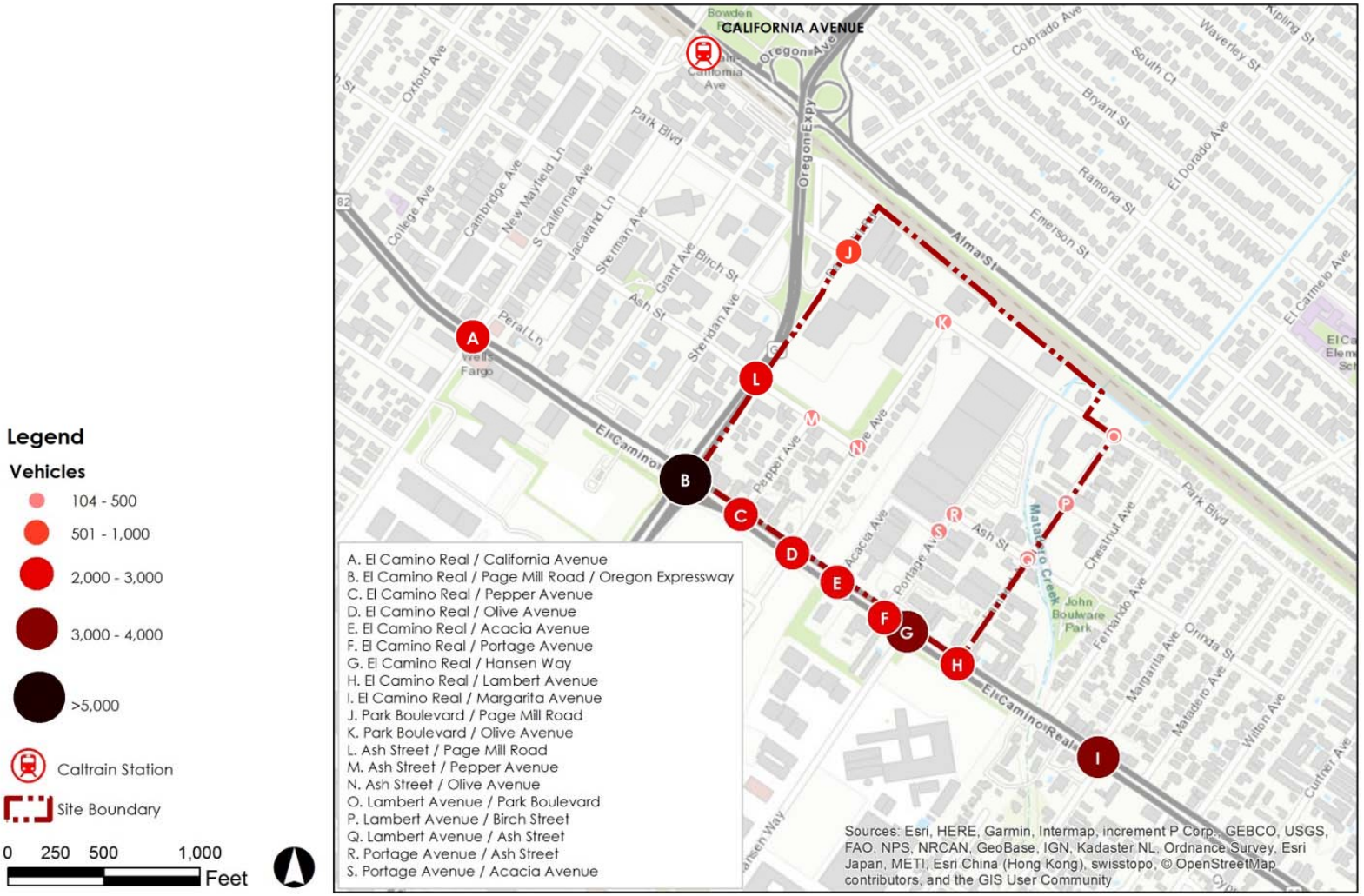

Figure 16: Intersection Traffic Volumes

Walking and Cycling

Walking and biking conditions vary in quality both within and around the NVCAP site. Internal roads generally have good pedestrian conditions with ample sidewalks and low levels of vehicle traffic. However, the disjointed street grid and a high number of driveways can make it difficult to walk and bike through the site. The site is also bordered by major roads such as El Camino Real and Page Mill Road, which have high levels of vehicle traffic and generally stressful conditions for pedestrians and bicyclists. The Caltrain tracks also act as a barrier to seamless pedestrian and bicycle travel. Current facilities for people walking and biking are summarized in sections below.

Walking

Internal streets within the Plan area generally have good pedestrian facilities. Most of these streets have sidewalks and low levels of vehicle traffic, which contribute to a safe and low-stress environment for people walking. The perimeter roads of Page Mill Road, Park Boulevard, Lambert Avenue and El Camino Real also have good pedestrian conditions, although they have heavy vehicular use.

Figure 1617 shows a typical sidewalk in the Plan Area. There are two key challenges that impede pedestrian travel in and around the site. First, the prevalence of driveways is a key impediment to safe pedestrian travel, as it can be difficult for cars accessing these driveways to see pedestrians. Park Boulevard and El Camino Real have an especially high number of driveways.

Second, the disconnected street grid can make it difficult for people to navigate through the Plan Area. Olive Avenue is currently the only street that provides direct connectivity through the Plan Area. Apart from Olive Avenue, people walking must either cut through private off-street parking lots, such as the Fry's parking lot or use a perimeter road such as Park Boulevard or El Camino Real.

Figure 17: Typical sidewalk within the Plan Area

To assess existing walkability within and around the site, Arup identified 5-, 10- and 15-minute walking distances from a point at the intersection of Olive Avenue and Ash Street, illustrated in Figure 18. This diagram demonstrates that the lack of continuation of Ash Street or the provision of any other connection to the south of Olive Avenue is a major barrier to permeability through the site for walking. The limited number of crossing points on roads such as Page Mill Road and El Camino Real, as well as across the railway track, limit the extent to which walking can be considered an attractive and efficient method of travel to access amenities such as the California Avenue Caltrain Station and California Avenue itself.

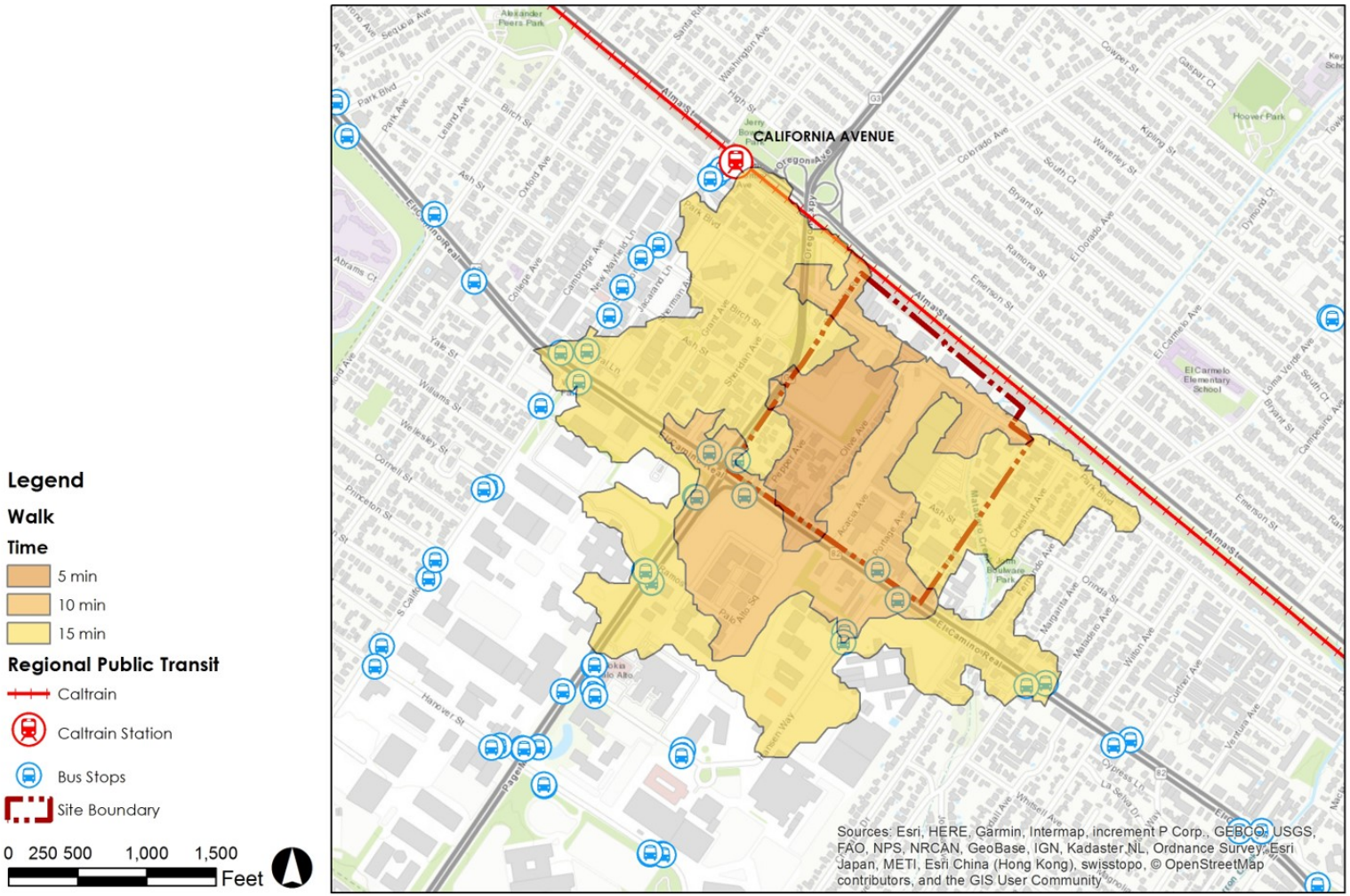

Figure 18: Pedestrian Walk times – 5, 10 and 15 minutes

Pedestrian volumes at key intersections were also recorded as part of the data collection exercise, illustrated in Figure 18. As shown in the figure, El Camino Real and Page Mill Road have the highest pedestrian volumes. Pedestrian volumes within the site are comparatively lower, which may reflect the disjointed street network that limits connectivity through the site.

The surveys highlighted a noticeable amount of pedestrian demand across Page Mill Road at Ash Street, even though there is no dedicated crossing point at this location. This desire line, most likely with an ultimate destination of California Avenue, is not supported by existing pedestrian facilities and is an opportunity to be considered for future improvements.

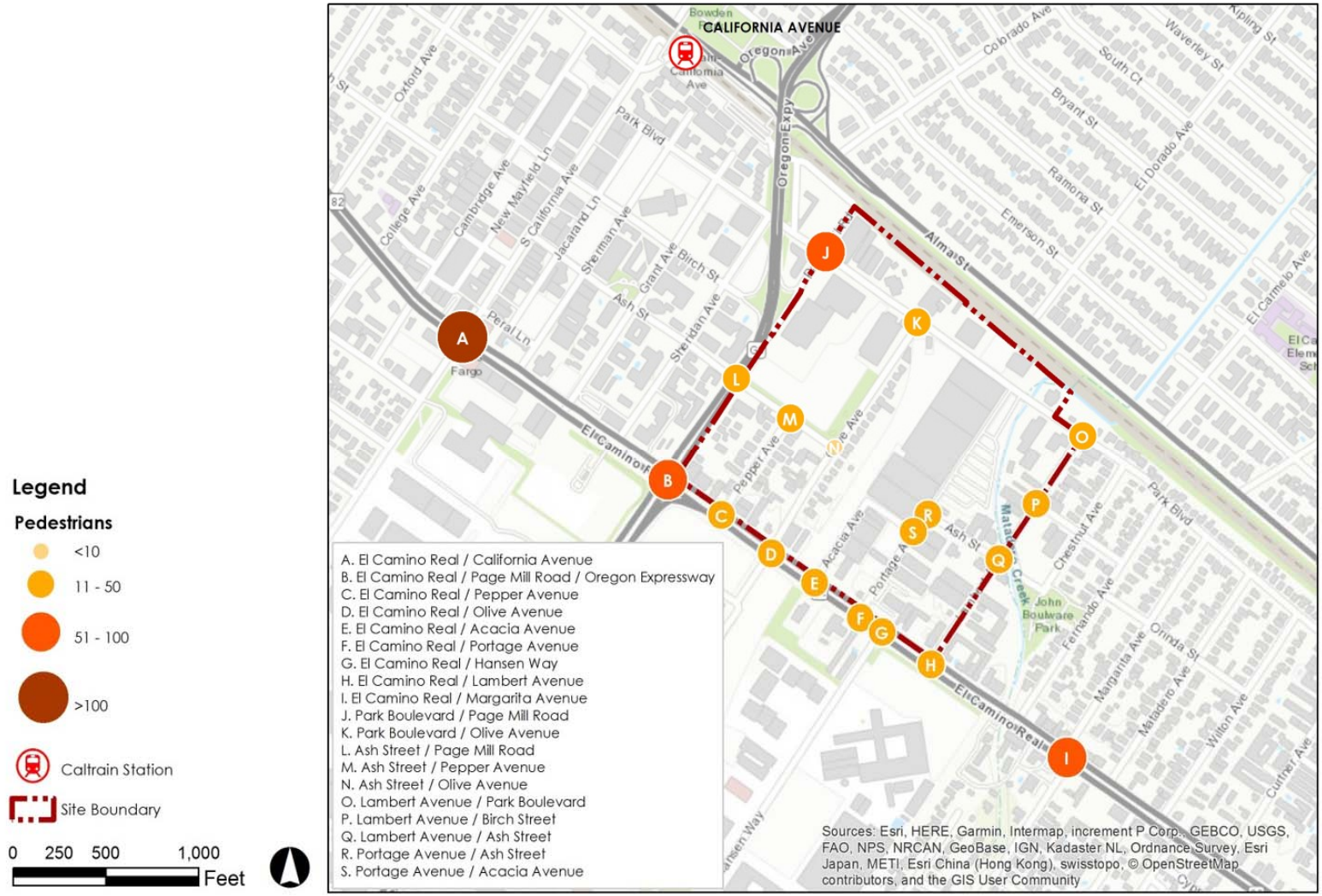

Figure 19: Pedestrian Volumes at Key Intersections – AM Peak

Existing Pedestrian Access to and within the Plan Area

Building on the pedestrian connectivity to key destinations map, Figure 20 outlines existing pedestrian access to the Plan Area from surrounding areas. A majority of the site is bound by roads with limited pedestrian crossing areas or uncontrolled crossings along Page Mill Road, El Camino Real Road, and Lambert Avenue. Currently, there are only four controlled intersections to enter the site on Page Mill/Park Boulevard, El Camino Real/ Portage Avenue, and Lambert Avenue/Park Boulevard. There is a plan for crossing enhancements at Olive Avenue and El Camino Real Road intersection scheduled to be constructed in 2019, and a study is underway of El Camino Real/Page Mill intersection improvements.

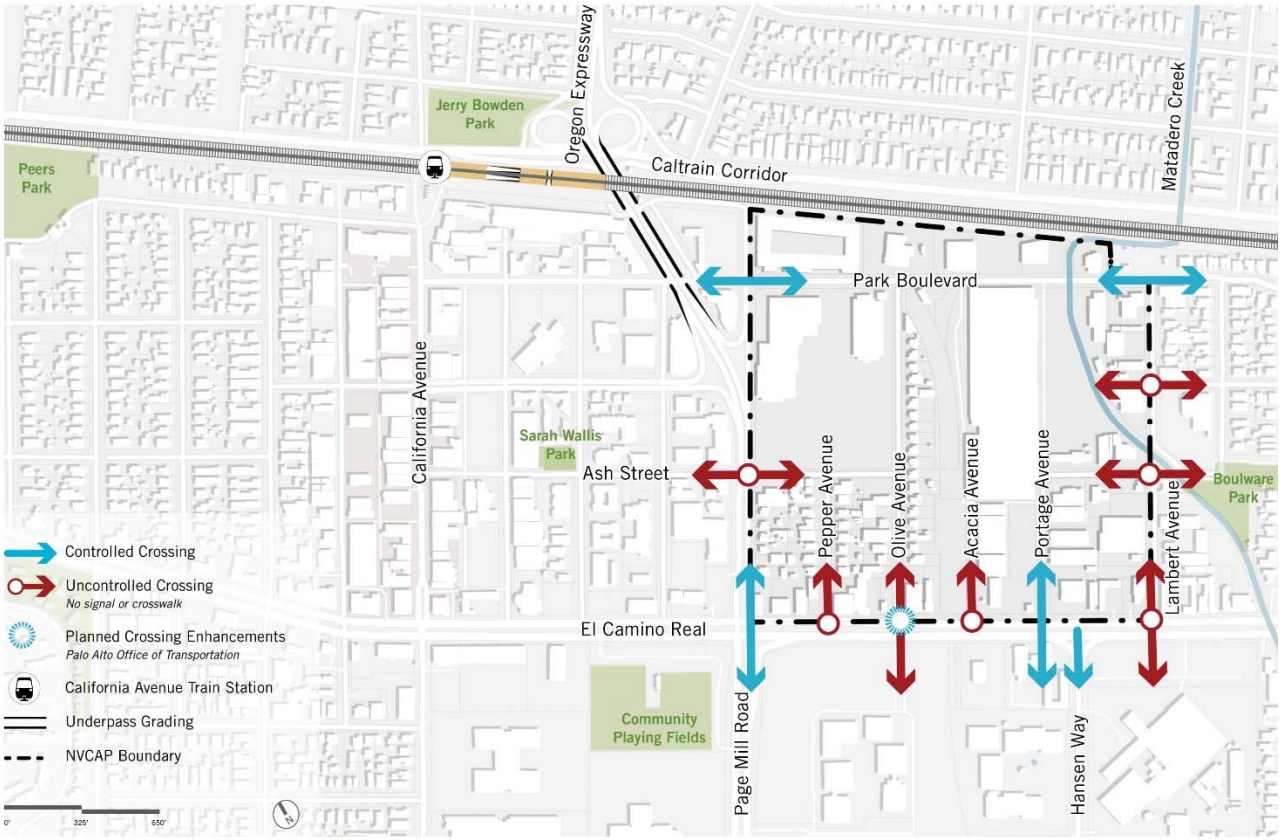

Figure 20: Existing pedestrian access to Plan Area

Figure 21 shows the existing pedestrian access points to the site, combined with locations and extents of existing sidewalks. Olive Avenue is the only street that runs across the entire site in the north-south direction, and connects El Camino Real to Park Boulevard. Park Boulevard is the only street linking the entire site in the east-west direction, connecting Lambert Avenue to Page Mill Road. Most of the primary streets internal to the site including Pepper Avenue, Olive Avenue and Ash Street have complete sidewalks on both sides of the street. There are some incomplete sidewalks along Acacia Avenue and Portage Avenue.

Figure 21: Existing pedestrian connectivity within Plan Area

Biking

The existing bike lane on Park Boulevard is the primary bike facility for the site. To the northern end of Park Boulevard, the bike lanes are highly visible and crossing facilities at the intersection of Park Boulevard and Page Mill Road are well-marked (see Figure 22 and Figure 23). At the southern end of Park Boulevard, the bike lanes are less well defined and impacted by on-street vehicle parking and driveway access (see Figure 24).

Figure 22: Existing cycle lane along Park Boulevard at northern end of Plan Area

Figure 23: Cycling provision at Page Mill Road/ Park Boulevard intersection

Figure 24: Existing cycle lane along Park Boulevard at southern end of Plan Area

Park Boulevard is heavily used by cyclists. The project team conducted cycling surveys at the same locations as the pedestrian counts. On-site observations suggest that the vast majority of cyclists are through-users who are likely going to the Caltrain Station or other nearby destinations (the underpass at the Caltrain Station provides access to downtown Palo Alto and other areas). The bike volumes for the AM peak period are illustrated in Figure 25.

While bike volumes are comparatively high along Park Boulevard in comparison to the rest of the site, the volumes within the site are extremely low in comparison, potentially again reflecting the lack of effective permeability through the site for cycling.

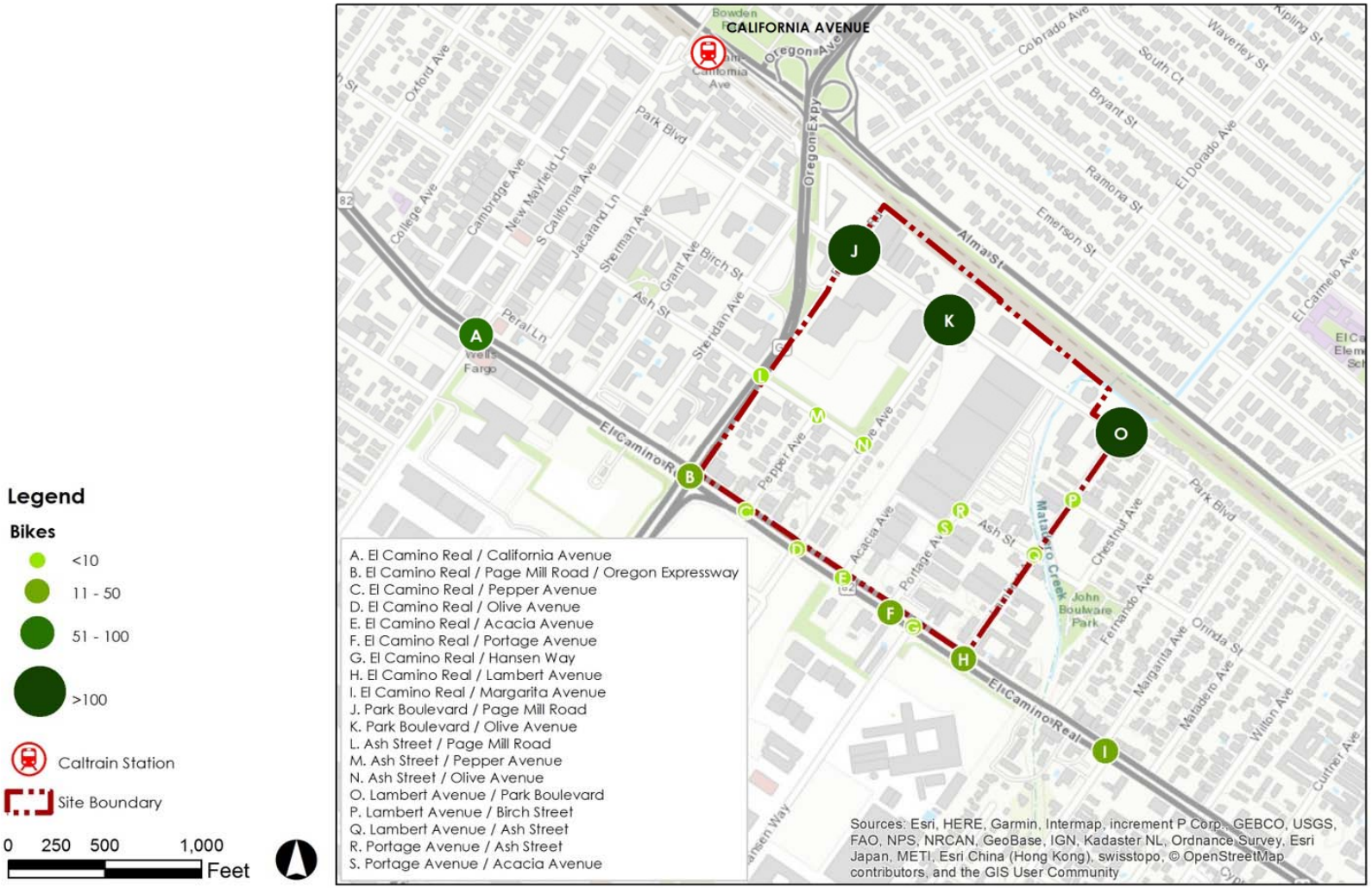

Figure 25: Cycling Volumes at Key Intersections – AM Peak

Arup established bike travel times from the intersection of Olive Avenue and Ash Street to ascertain the bike travel distances achievable in 5, 10 and 15 minutes, illustrated in Figure 25. This figure demonstrates that26. 26there is a much larger catchment area for people biking compared to people walking. Key destinations such as Downtown Palo Alto can be reached by bicycle in 15 minutes or less. As with pedestrian travel, however, key barriers such as the Caltrain tracks and disjointed street grid limit the number of destinations within a short bike ride of the site.

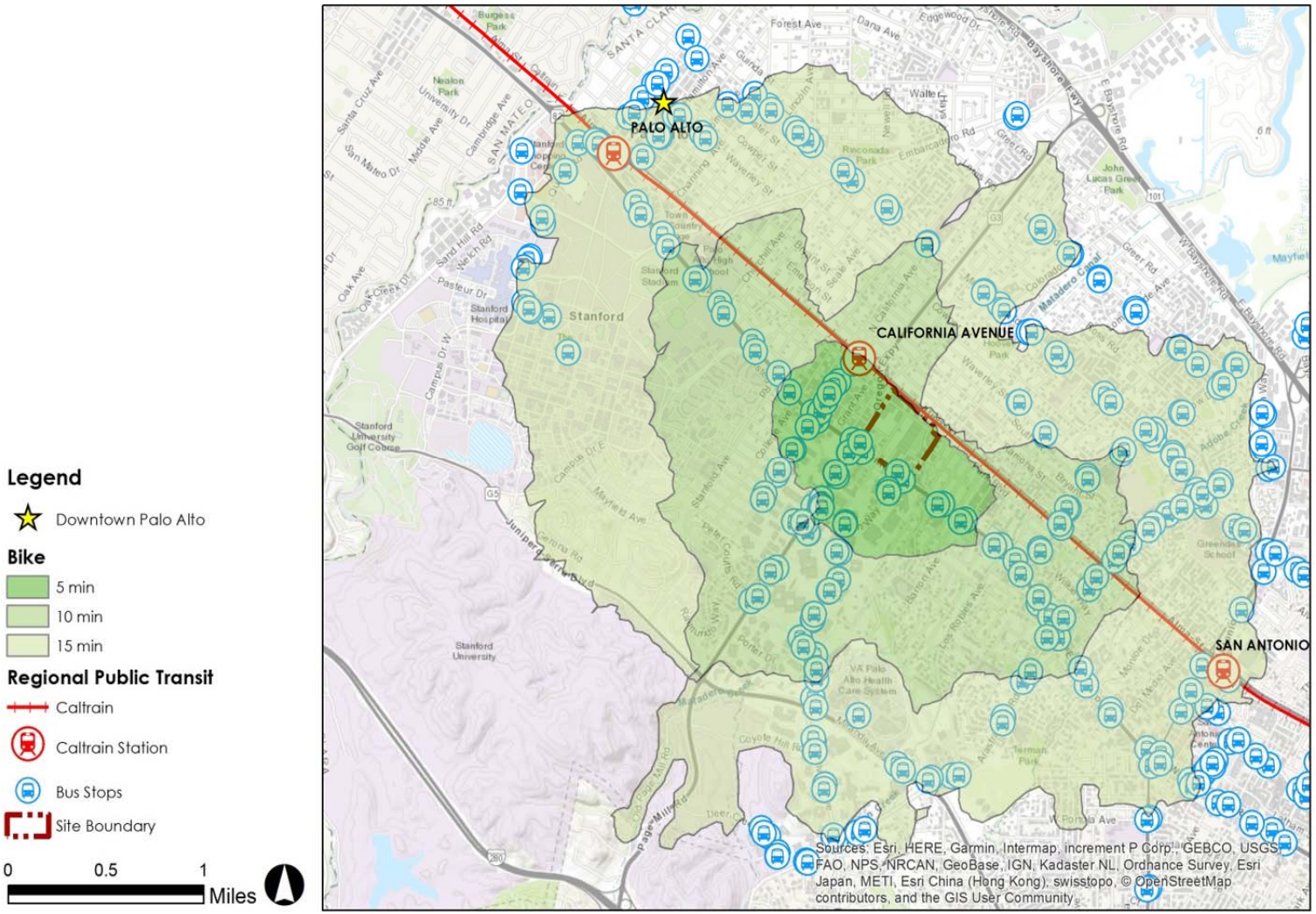

Figure 26: Cycling Travel Times – 5, 10 and 15 minutes

Public Transit

The site is served by a number of bus routes, and Caltrain can be accessed via the nearby California Avenue Station. Public transit routes and stops near the site are illustrated in Figure 27. Despite the high number of transit stops close to the site, especially to the north and south of the site on El Camino Real, there is no public transit service within the site itself. Moreover, the stops located on El Camino Real adjacent to the Plan Area at Portage Avenue and Hansen Way offer very limited service with only VTA Route 22 and the Stanford University Marguerite Shuttle Shopping Express Route stopping there. The site is served by VTA, AC Transit and Stanford University Marguerite Shuttle service. Bus stops located adjacent to the Plan Area are outlined in Table 22.

Table 2: Bus Stops in Vicinity of Plan Area

Stop Location	Direction	Routes Served	Services Per Day
El Camino Real @ Portage Ave	Northbound	• VTA Route 22 (Palo Alto Transit Center to Eastridge Transit Center); • Stanford Marguerite Shuttle Route SE.	75 8
El Camino Real @ Hansen Way	Southbound	• VTA Route 22 (Palo Alto Transit Center to Eastridge Transit Center); • Stanford Marguerite Shuttle Route SE.	75 8
El Camino Real @ Page Mill Road	Northbound	• VTA Route 22 (Palo Alto Transit Center to Eastridge Transit Center); • VTA Route 182 (Palo Alto to IBM/Baily Ave); • Stanford Marguerite Shuttle Route SE; • Stanford Marguerite Shuttle Route RP.	75 1 8 12
El Camino Real @ Page Mill Road	Southbound	• VTA Route 22 (Palo Alto Transit Center to Eastridge Transit Center); • VTA Route 101 (Camden & Highway 85 to Palo Alto); • VTA Route 102 (South San Jose to Palo Alto); • VTA Route 103 (Eastridge Transit Center to Palo Alto); • Stanford Marguerite Shuttle Route SE.	75 2 7 4 8
Page Mill Road @ El Camino Real	Westbound	• VTA Route 101 (Camden & Highway 85 to Palo Alto); • VTA Route 102 (South San Jose to Palo Alto); • VTA Route 103 (Eastridge Transit Center to Palo Alto); • VTA Route 104 (Penitencia Creek Transit Center to Palo Alto); • Stanford Marguerite Shuttle Route RP; • AC Transit Route DB1 Dumbarton Express.	2 7 4 2 12 26
Page Mill Road @ El Camino Real	Eastbound	• VTA Route 104 (Penitencia Creek Transit Center to Palo Alto); • AC Transit Route DB1 Dumbarton Express.	2 23

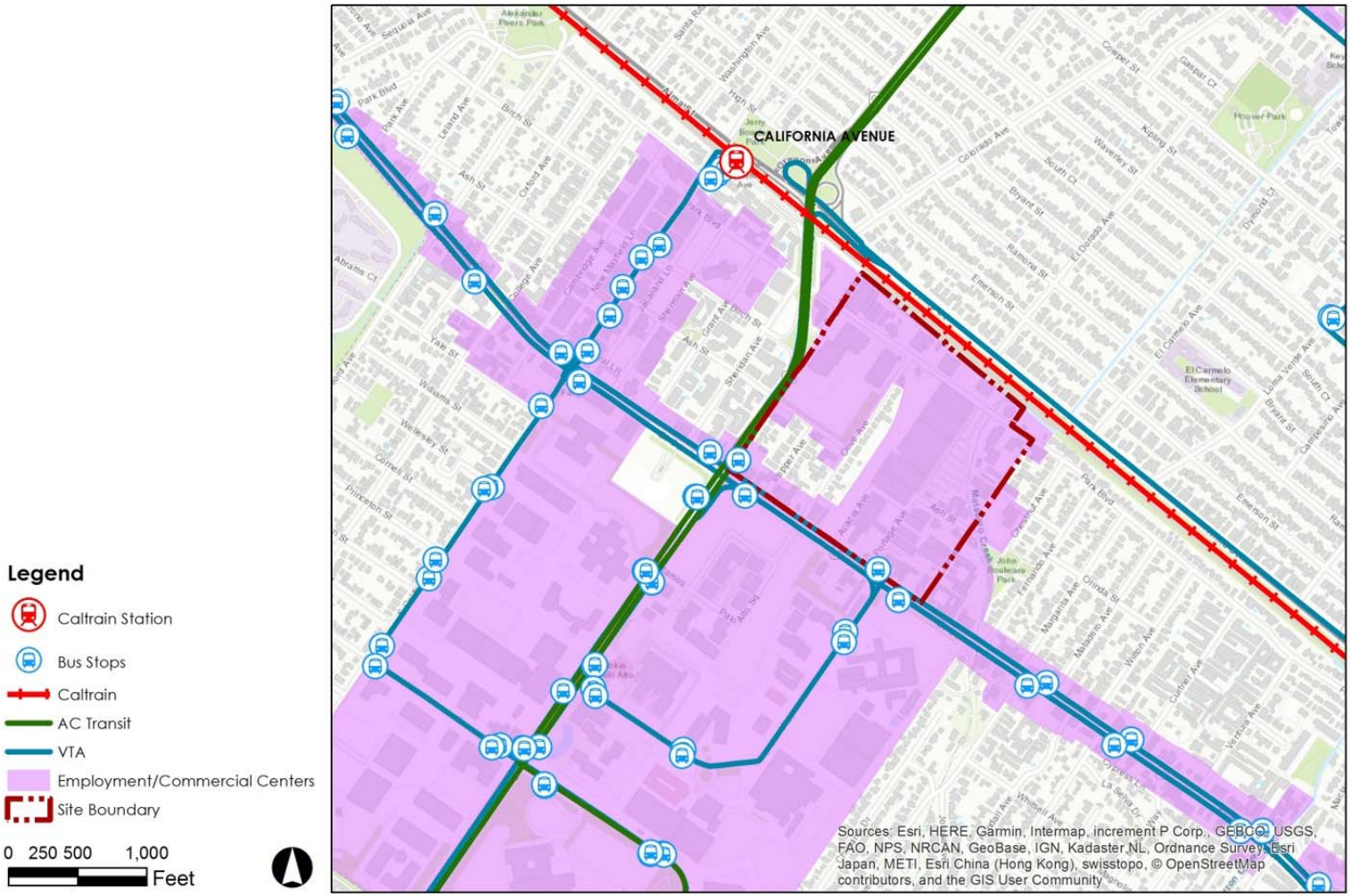

Figure 27: Public transit provision in the vicinity of the site

Caltrain

The California Avenue Caltrain Station is located approximately 0.5 miles from the intersection of Olive Avenue and Ash Street. Walking and biking links to the station are generally good. However, as was mentioned previously, the lack of a coherent internal street grid within the site can make it difficult to travel through the site to access the station. Wayfinding directions, such as the signage observed in Figure 28 on Page Mill Road, make the station location clear to potential riders.

Figure 28: Caltrain Station wayfinding example

Parking

There is substantial on-street and off-street parking in the Plan Area. Arup identified capacity for approximately 500 cars in on-street parking spaces within the site and on the perimeter roads of El Camino Real, Page Mill Road, Park Boulevard and Lambert Avenue. Approximately 2,400 off-street parking spaces were recorded, with most of these belonging to private businesses within the site, supported by enforcement against non-authorized vehicles (see example in Figure 29). The distribution of both on-street and off-street parking spaces within the site is illustrated in Figure 30.

Figure 29: Off-Street Parking Restrictions

Figure 30: Car Parking Provision

On-Street Parking

In order to ascertain the levels of parking demand in and around the site, 12 hour (07:00-19:00) parking occupancy surveys were undertaken for all on-street spaces within the site and on the perimeter roads. A count of all parked vehicles was undertaken every hour to ascertain how parking demand changes throughout the day. The results are illustrated in Figure 31.

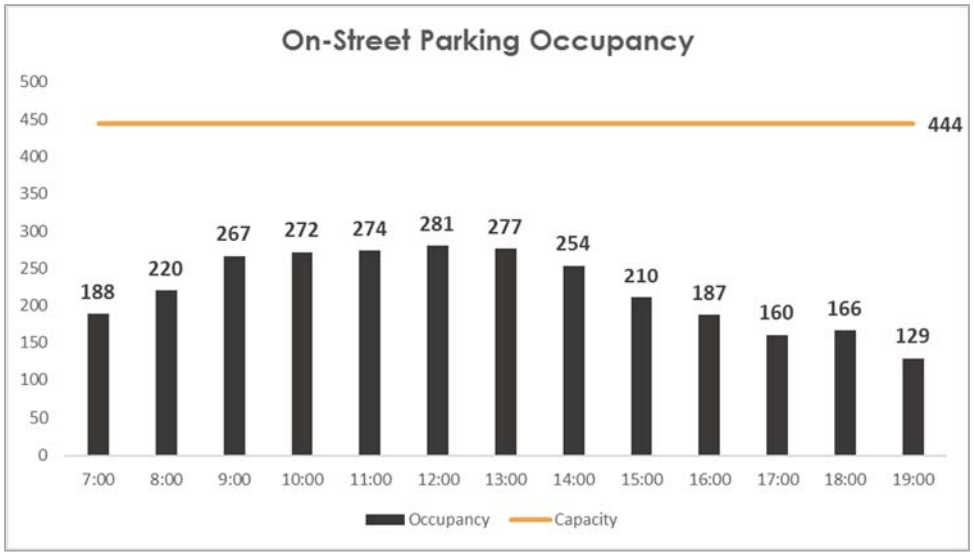

Figure 31: On-Street Parking Demand

Parking levels peak around the middle of the day. However, occupancy remains well below capacity (maximum 63.3% occupancy) throughout the day. Significant levels of on-street parking availability were recorded at 7am (42.3% occupied) and 7pm (29.1% occupied), which suggest that a significant number of on-street spaces are being used for residential purposes outside of working hours.

In addition to the parking occupancy surveys, vehicle license plate surveys (which recorded only the last four characters on each license plate) were also undertaken during the same 12-hour time period in order to ascertain the duration of stay characteristics of on-street parking demand in the area. The results of the duration of stay survey is illustrated in Figure 3132.

Figure 32: On-Street Duration of Stay

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The results of the duration of stay surveys indicate that there is a high proportion of short stay parking actions in the area (less than 3 hours) which suggests high levels of retail or business visits. Long stay parking generally associated with commuter parking (6-9 hours) is relatively modest, which suggests that the vast majority of commuter parking is accommodated within the off-street car park provision within the site boundaries. Figure 3233 illustrates the same information broken down by individual streets.

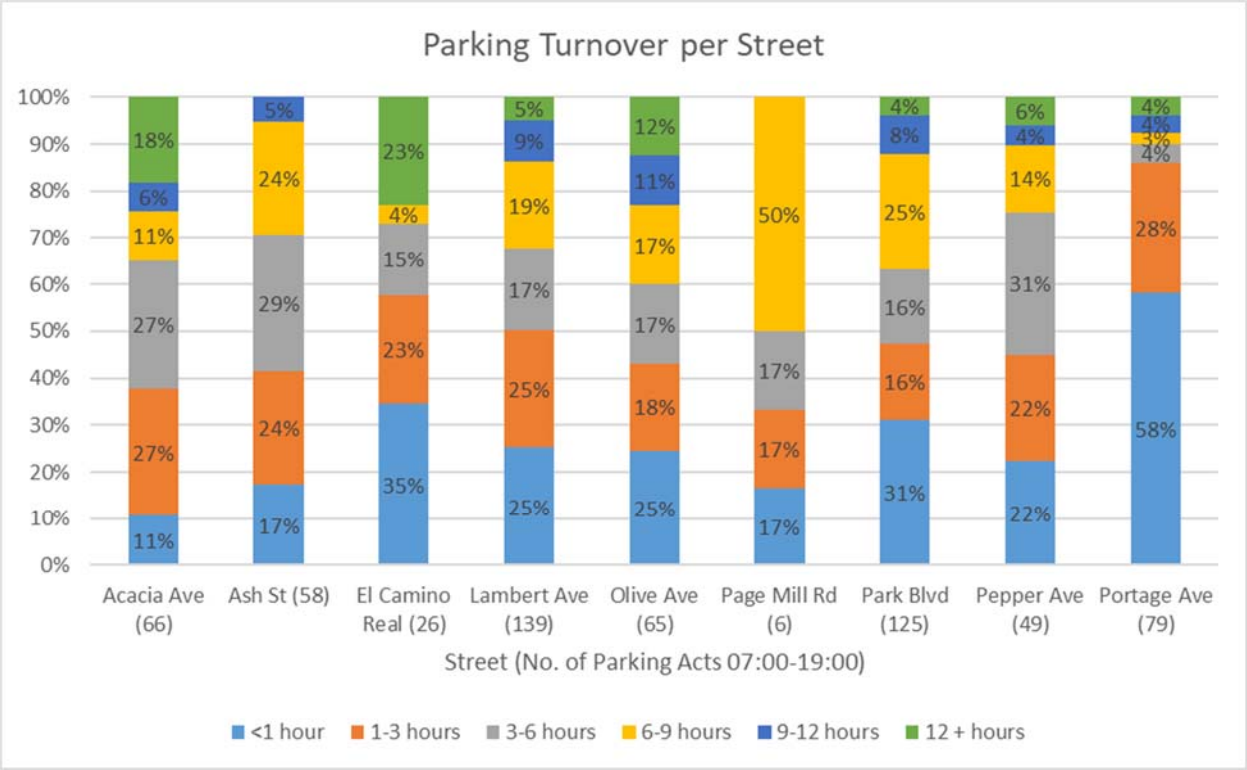

Figure 33: On-Street Duration of Stay per Street

It can be seen that the results are fairly typical across all streets, with the exception of Portage Avenue with almost 60% of parking acts staying for under 1 hour, which may be explained by the close proximity to Fry's Electronics. It can also be seen that 50% of parking acts on Page Mill Road are long stay (6-9 hours), although the total number of parking acts is extremely low (6).)

Off-Street Parking

To ascertain the levels of parking demand at off-street locations within the site, occupancy counts were undertaken during several key time periods throughout a typical weekday. Occupancy counts were undertaken before the working day was assumed to have started, after the working day was assumed to have finished, and during two periods when

parking demand was expected to be high (e.g. around lunchtime). The results of the occupancy counts in the context of the overall off-street parking capacity is illustrated in Figure 334.

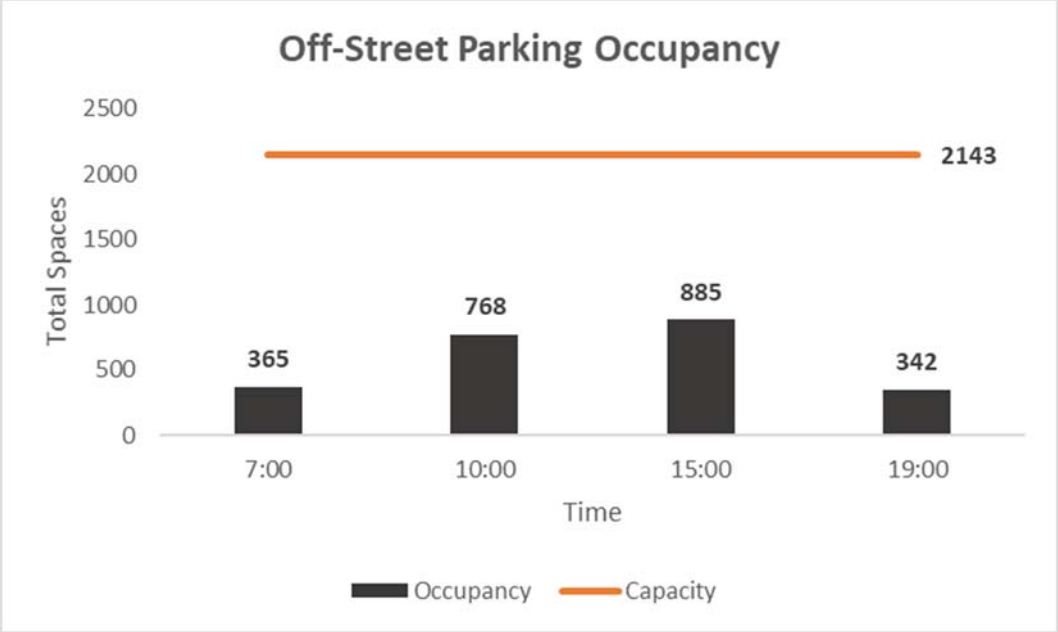

Figure 34: Off-Street Parking Demand

The survey results show that average occupancy is approximately 16.5% outside of normal working hours. This rises to a maximum occupancy of just under 41.3% during peak working hours. The results indicate that, although there are significant amounts of off-street parking provided within the site, there appears to be significant levels of spare capacity available throughout the day. For context, it is noted that a well-run parking program generally strives for around 85% occupancy. Therefore, it may be concluded that that there is an oversupply of parking facilities in the Plan Area.

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Travel Behavior

To better understand travel characteristics within the vicinity of the site, the study team analyzed data from the US Census Bureau on travel time to work (i.e. commute travel time) and mode of transportation to work. This data is from 2016 and was analyzed for the Census Block Group that encompasses the Plan Area (Figure 435 shows the Census Block Group boundary). Key findings for travel time and commute mode share are shown in Figure 536 and Figure 637, respectively.

Figure 35: Census Block Group Boundary

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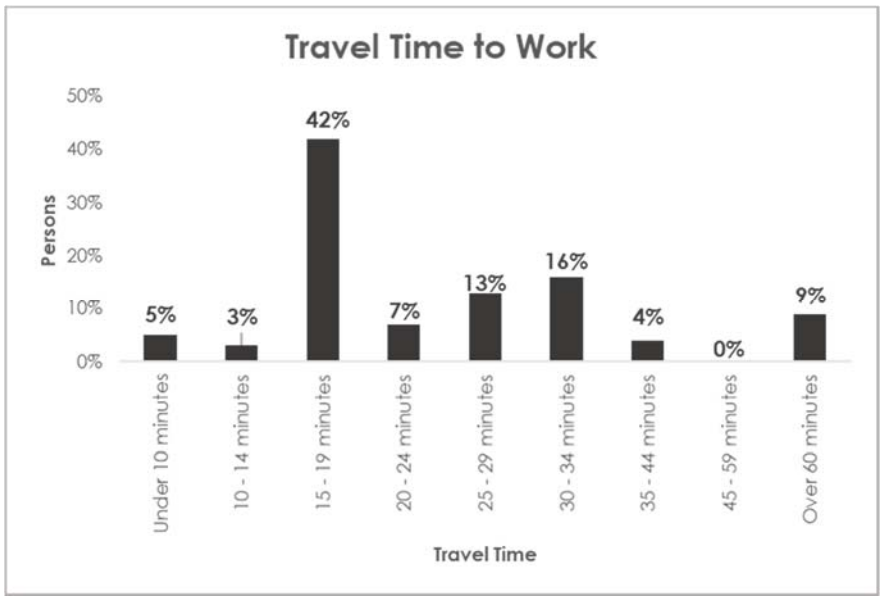

Figure 36: Travel Time to Work

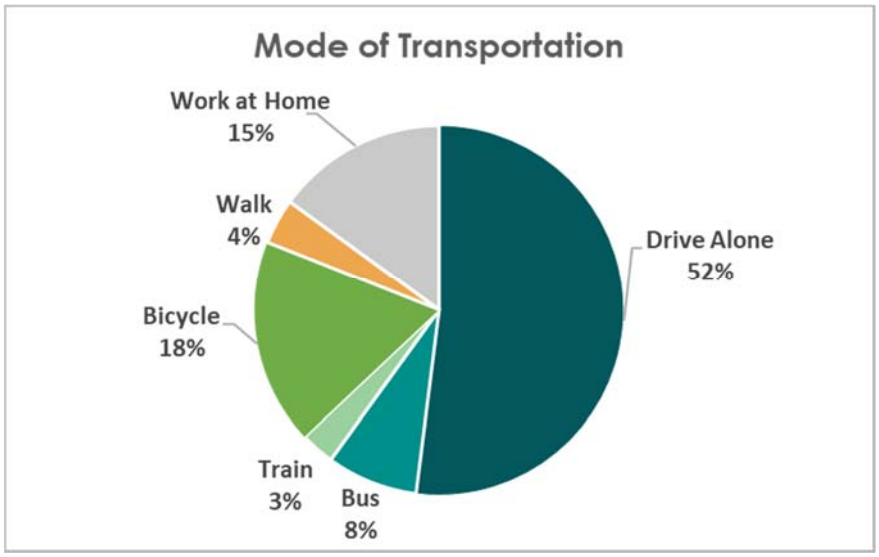

Figure 37: Mode of Transportation to Work

It can be seen from Figure 3536 that the vast majority of trips to and from work are in the 15-19 minute range (42%), and 50% of all trips to work are 19 minutes or under. In comparison, for the entire Bay Area region, travel to work in the 15-19 minute range represents only 14% of all commutes, with 36% of Bay Area trips to and from work being 19 minutes or under.

Figure 3637 shows that the dominant travel mode remains single occupancy vehicles at 52% mode share. This proportion is lower, however, than the overall figure for Palo Alto which stands at 71% drive alone mode share, as well as the corresponding figure for the entire Bay Area, which stands at 75%. Biking (18%) has a relatively high mode share when compared with the overall biking mode share for Palo Alto, which stands at 10%.

Private car use is an extremely popular and well-established mode of travel and significant mode shift away from single occupancy vehicle use requires fundamental changes to established patterns of behavior. Integrated land use and transportation planning practices, whether by locating residential and employment land uses close to each other so that walking and cycling is an attractive mode of travel between the two, or considering links to transit and walking and cycling links when siting employment land uses – could help to limit single-occupancy vehicle use on the site.

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Market Snapshot

Introduction and Purpose

This section provides an overview of market conditions for various types of development that could occur in the Plan Area. To develop the findings contained in this report, the consultant team reviewed available market data for Palo Alto and surrounding communities, analyzed employment and retail sales characteristics, and conducted ten interviews with real estate brokers and developers in Palo Alto.

Multifamily Residential

The cost of housing in Palo Alto is significantly higher than in most surrounding communities and the State of California generally. According to data from Zillow, which include single family homes, median home values in Palo Alto are more than double the countywide median and more than five times the statewide median. The average sales price for a condominium is currently $1.4 million, or eighty percent higher than the countywide average (Figure 41)40. The average monthly rent for an apartment in Palo Alto is $2,800, or about 17 percent higher than the countywide average (Figure 4142). These high costs are directly related to a lack of supply as the City met only 37 percent of its housing need in the last RHNA planning cycle. Similar shortfalls in housing production in neighboring communities and throughout the region have compounded the problem, leading to displacement and a high cost burden to moderate and lower income families that manage to remain in the area. In the current RHNA cycle, Palo Alto has accelerated the pace of market rate housing production, but the city continues to lag in the production of housing for moderate and lower income households.

This section describes economic conditions for new market-rate and affordable housing development in the North Ventura Plan Area. The analysis is focused on multifamily housing, because the Plan Area has been identified in the Comprehensive Plan as an opportunity to create a more walkable, mixed-use district with multifamily housing.

This section includes the following:

- A description of the current supply of housing in the Plan Area by type
- An overview of the Palo Alto Housing Element and the estimated capacity for new housing in the Plan Area based on existing zoning
- An assessment of the market for new multi-family housing development based on a review of comparable housing projects and interviews with local developers
- A summary of the opportunities and constraints for affordable housing in the Plan Area

Existing Housing Supply

Data for the existing housing supply are from the U.S. Census American Community Survey 5-Year Estimates, 2012 to 2016. Summary statistics for the Plan Area were approximated with Census Tract 5107 Block Group 1, which includes nearly all of the Plan Area plus a small portion of land outside the Plan Area.

Most housing units in North Ventura are older, single-family detached homes. As shown in Figure 37, 70 percent of housing units in the Plan Area are single-family homes. This is a slightly higher percentage of single-family homes than Palo Alto as a whole (63 percent). These units, most built before 1950, are generally located in the interior of the Plan Area along Olive and Pepper Avenues.

Over half the households in the Plan Area are renter households. According to Census data, 55 percent of housing units are renter-occupied, compared to 45 percent of households in Palo Alto as a whole.

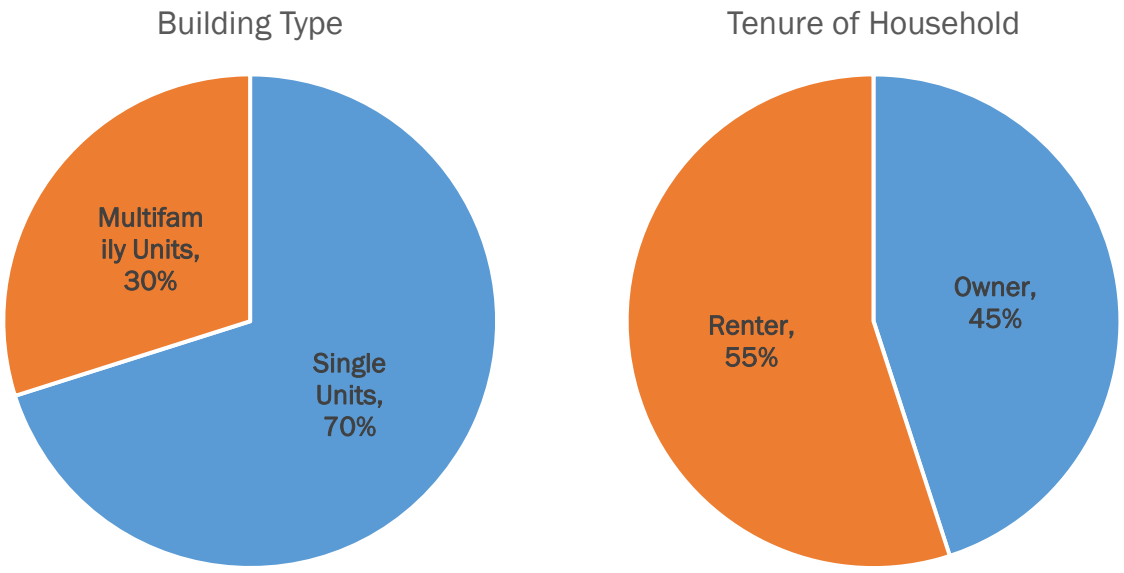


Figure 38: Building Type and Household Tenure, North Ventura Study Area

Note: Data are for Census Tract 5107, Block Group 1, approximating the North Ventura study area. Data do not include the recently completed Park Plaza development, which would represent 82 additional rental units to the current supply of housing.

Source: US Census, American Community Survey 5 Year Estimates, 2012-2016; Perkins + Will, 2018.

Palo Alto Housing Element

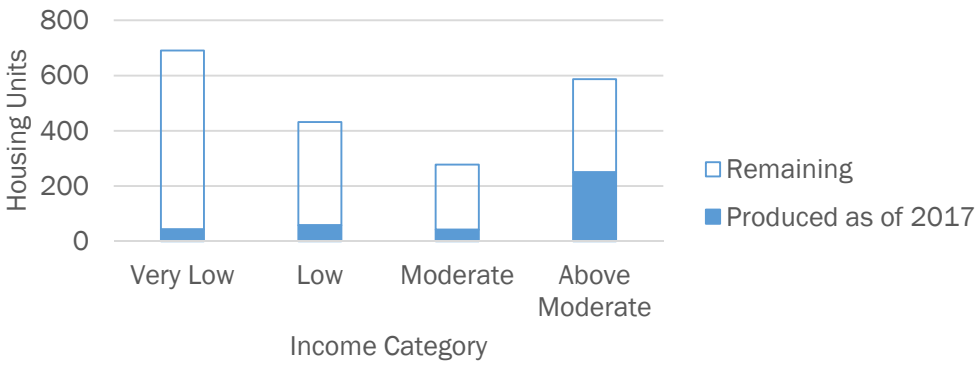
The State of California mandates that every city and county prepare a Housing Element as part of its Comprehensive Plan. The Housing Element is a document that is updated every eight years. The state requires that each local jurisdiction show how it will accommodate its "fair share" of the regional housing need, also known as the regional housing needs allocation (RHNA). Housing Elements must demonstrate that they have land use policies in place to accommodate the total projected housing need.

In 2014, the City of Palo Alto adopted its Housing Element, covering the 2015-2023 horizon. From 2014 to 2022, the RHNA for Palo Alto is 1,988 units, or 3.4 percent of the total housing need in Santa Clara County. This total projected housing need, broken down by category of household income, is shown in Figure 38. As shown in the figure, Palo Alto is on track to meet its RHNA for Above Moderate-income households. As of 2017, the City had permitted units constituting 43 percent of the allocation for that income category. However, Palo Alto has lagged in permitting

units for Very Low-income households (six percent of the allocation), Low-income households (13 percent), and Moderate-income households (15 percent).[1]

According to Palo Alto's Housing Element, North Ventura could accommodate at least 20 percent of the city's RHNA under current zoning (Figure 3940). Of the residential opportunity sites identified in the City's Housing Element (2015 to 2023), Strategic Economics summed the capacities of the sites in the Plan Area. The identified sites, of which the Fry's site is the largest, summed to an estimated capacity of 364 units, deemed the "reasonable" expected capacity by the City. The maximum capacity theoretically allowed by zoning is 574 units. It is important to note these estimates are determined by current zoning designations and the fine-grained parcelization of many of the sites. The capacity of the Plan Area could be significantly increased with zoning modifications and/or site consolidation.

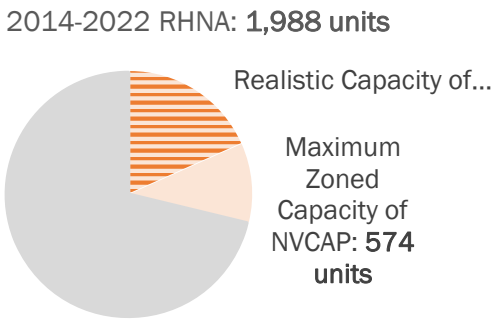
Figure 39: Progress Toward Meeting Palo Alto's Regional Housing Needs Allocation, 2014-2022, by Income Category



Source: City of Palo Alto Housing Element, 2015 to 2023; Annual Housing Element Progress Report, 2017; Strategic Economics, 2018.

[1] Income categories are defined by household income as a percent of Area Median Income (AMI). Very Low Income is below 50 percent of AMI; Low Income is 51 to 80 percent of AMI; Moderate Income is 81 to 120 percent of AMI; and Above Moderate Income is over 120 percent of AMI.

Figure 40: Capacity of North Ventura Plan Area as a Proportion of the Regional Housing Needs Allocation, 2014 to 2022.



Source: City of Palo Alto Housing Element, 2015 to 2023; Annual Housing Element Progress Report, 2017; Strategic Economics, 2018.

Opportunities and Constraints for New Multifamily Housing

The following describes the opportunities and constraints for new market-rate multifamily housing development in the North Ventura Plan Area. Strategic Economics developed these conclusions by collecting data on recent development, reviewing area rents and condominium prices for new multifamily development, and interviewing local developers of multifamily housing.

Opportunities

The high rents and condominium sales prices seen in Palo Alto indicate a strong market for multifamily housing. Rents and sales prices for multifamily development in Palo Alto have been trending upward in recent years and are positioned at a premium compared to rents and sales prices countywide (Figures 4041 and 4142). According to some developers, the rental rates in Palo Alto and surrounding communities have begun to flatten.

Apartment rents in new buildings appear to be high enough to support new development. Strategic Economics surveyed potential product types and price points for North Ventura, based on its market position. As shown in Figure 39, the overall average rent for new apartments built in Palo Alto and Mountain View from 2013 to the present was $4.92. This rent level was corroborated by developers interviewed for this study. They generally expected at least five dollars per square foot for new construction. Developers mentioned that it was easier to achieve a higher level of rent by reducing the unit sizes below what is commonly found in Palo Alto, or by building more studio and one-bedroom unit types.

New condominium and townhome projects could sell for between $1000 and $1300 per square foot. Based on comparable prices published by Redfin and Polaris Pacific, stacked condominiums and townhomes have been selling for over $1,000 per square foot (Figure 243). Recent sales of some two-bedrooms stacked units close to downtown Palo Alto pushed the recent average sales price of two-bedrooms to more than $1,300 per square foot.

Palo Alto has attracted new multifamily housing in and near the Plan Area, including rental and for-sale products. A sampling of recently completed, approved, and proposed projects in Palo Alto are shown in Figure 44. Figure 45 maps those projects in the Plan Area. These developments have been a mix of condo and rental projects, sometimes with both condo and rental units offered in the same development. They are generally designed as townhome or low-rise stacked flats, typically ranging from approximately ten to thirty dwelling units per acre. Where permitted, higher density housing projects can move forward, such as 2755 El Camino Real, which has a much higher density of 127 units per acre.

Enhanced transit options can increase the competitiveness of North Ventura for multifamily housing. North Ventura is currently served by several transit systems: the California Avenue Caltrain Station offers local and limited-stop service (but not "Baby Bullet" service), and VTA serves the area with five express bus routes and one local bus route. The area is also served by the Dumbarton Express operated by AC Transit. These transit options, and the adoption of "last mile" mobility solutions such as motorized scooters, lead developers to believe the market would support significantly lowered off-street parking ratios than what is currently required in the area. Some believed the market would support parking ratios as low as 1.0 per unit, and perhaps lower. Prospects for reducing parking in the area will be improved with more frequent and improved Caltrain and bus service.

Constraints/Barriers

Zoning controls only allow for lower density than is supported by the market. Developers interviewed for this study agree that City regulations have required many recent residential projects to scale down their building types than would otherwise be possible. Consequently, multifamily developments in Palo Alto tend to be 30 units per acre or lower, even as neighboring communities such as Mountain View move toward higher density building types. Developers perceive a market in North Ventura for higher density building types containing smaller units. One such example is the proposal for 2755 El Camino Real, which was able to attain a density of 127 dwelling units per acre only through a rezoning of the site.

Despite strong demand, new multi-family development is challenged by high construction costs and parking requirements. Developers report that steadily increasing construction costs, in combination with the City's parking requirements on new development, are making many projects difficult to pencil. To meet current parking standards, parking often must be provided underground, which significantly drives up development costs.

The City's retail preservation ordinance can also burden projects. Palo Alto recently made permanent an interim ordinance preserving the city's retail spaces. The ordinance prevents conversion or redevelopment of retail to other uses without including new retail space one-for-one in the new development. A large portion of housing opportunity sites in North Ventura, particularly along El Camino Real and Lambert Avenue, are commercially zoned sites with existing retail uses. The replacement retail spaces in these developments can be difficult to lease, especially in certain locations, and the rents supported are not sufficient to cover the cost of constructing the retail spaces and associated parking.

According to developers, increases in density and height in the Plan Area would lower costs and create economic incentives to develop more housing. Five to seven story multifamily building types are the most efficient types of housing development in the Northern Silicon Valley, because parking can be accommodated in a concrete podium on the first floor and still allow for at least four floors of housing on top. Podium parking is much less expensive to build than underground parking. Five to seven story podium buildings represent much of the new development in

neighboring communities like Redwood City, Mountain View, and Sunnyvale. Height restrictions in Palo Alto usually confine new proposals to no more than three stories, with additional floors requiring a bonus density allowance.

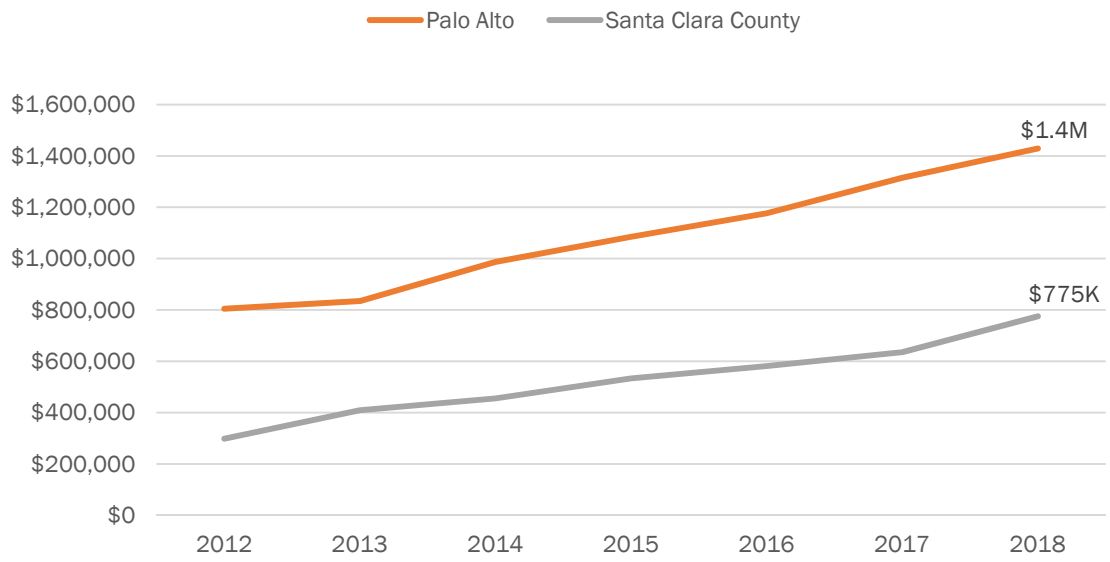


Figure 41: Average Condominium Sales Price, Palo Alto and Santa Clara County
Source: Redfin, 2012-2018; Strategic Economics, 2018.

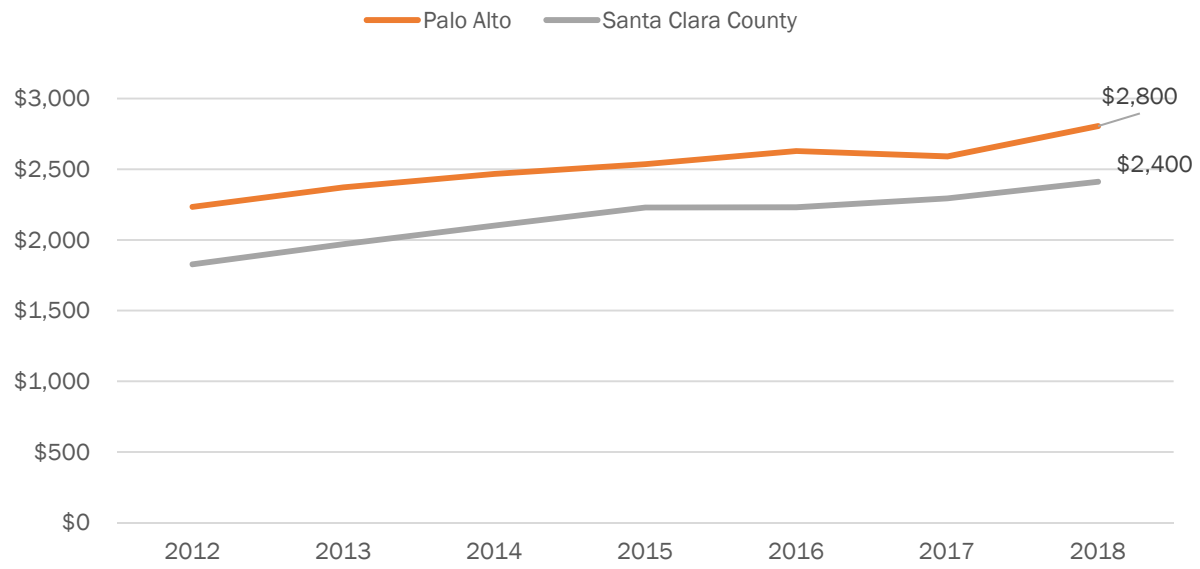


Figure 42: Average Monthly Rent, Palo Alto and Santa Clara County

Source: CoStar, 2012-2018; Strategic Economics, 2018.

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Figure 43: Average Rents and Unit Sizes for New Multifamily Apartments, Palo Alto and Mountain View

	Avg Monthly Rent (per unit)	Avg Unit Size (sf)	Avg Monthy Rent (per sf)
Studios	$3,385	550	$6.16
1-BD	$3,858	772	$5.00
2-BD	$5,273	1163	$4.54
3-BD	$5,888	1465	$4.02
All	**$4,265**	**881**	**$4.92**

Source: CoStar, 2018 Strategic Economics, 2018.

Average Sales Prices and Unit Sizes for New Stacked Condominiums and Townhomes, Palo Alto and Mountain View

	Condos			Townhomes		
	Avg Sales Price (per unit)	Avg Unit Size (sf)	Avg Sales Price (per sf)	Avg Sales Price (per unit)	Avg Unit Size (sf)	Avg Sales Price (per sf)
1-BR	$1,099,667	937	$1,173	n/a	n/a	n/a
2-BR	$1,995,547	1,509	$1,323	$1,369,458	1,330	$1,030
3-BR	$1,776,250	1,701	$1,044	$1,726,073	1,637	$1,054

Source: Redfin, 2018; Polaris Pacific, 2018; Strategic Economics, 2018.

Figure 44: Market-Rate Multifamily Housing Developments Recently Completed, Planned, and Proposed in Palo Alto

Name	Description	Number of Units (Unit Density)	Developer	Status
For-Sale				
2585 El Camino Real (Olive Garden)	3-story mixed use building with 13 condos, office, and retail	13 (14 d.u./ac)	ECRPA Inc.	Approved (2016)
3877 El Camino Real (Compadres)	3-story mixed use building with 6 condo flats and retail on 1st and 2nd floor; 11 townhomes	17 (23 d.u./ac)	Zijin LLC	Approved (2017)
Rental				
2650 Birch St (Birch Plaza)	Townhome style apartments with office	9 (20 d.u./ac)	Hohbach Realty	Completed (2015)
Park Plaza (195 Page Mill Road)	3-story mixed use building with housing, retail, and office	82 (33 d.u./ac)	Hohbach Realty	Completed (2016)
3001 El Camino Real (Mike's Bikes)	3- to 4-story rentals over ground floor retail; two-story townhomes	44 (22 d.u./ac)	Sobrato	Approved (2017)
2755 El Camino Real (Workforce units)	4-story apartment building with studios and 1-BR; 12 units reserved for workforce housing	57 (127 d.u./ac)	Windy Hill Property Ventures	Approved (2018)
441 Page Mill	Three-story mixed use with apartments, office, and retail	16 (26 d.u./ac)	Schwab	Proposed
Mixed For-Sale and Rental				
430 Forest Ave	Mix of townhomes and apartment flats	13 (25 d.u./ac)	Prabhas Kejriwal	Completed (2018)
3225 El Camino Real (Footlocker)	Four-story mixed-use building with rentals and condos; two-story building with retail and office	8 (11 d.u/ac)	De Anza Properties	Proposed
100% Affordable				
3705 El Camino Real (Wilton Court)	Three-story building with affordable studio and 1-bedroom units	59 (134 d.u./ac)	Palo Alto Housing	Approved (2019)

Source: City of Palo Alto, 2018; Strategic Economics, 2018.

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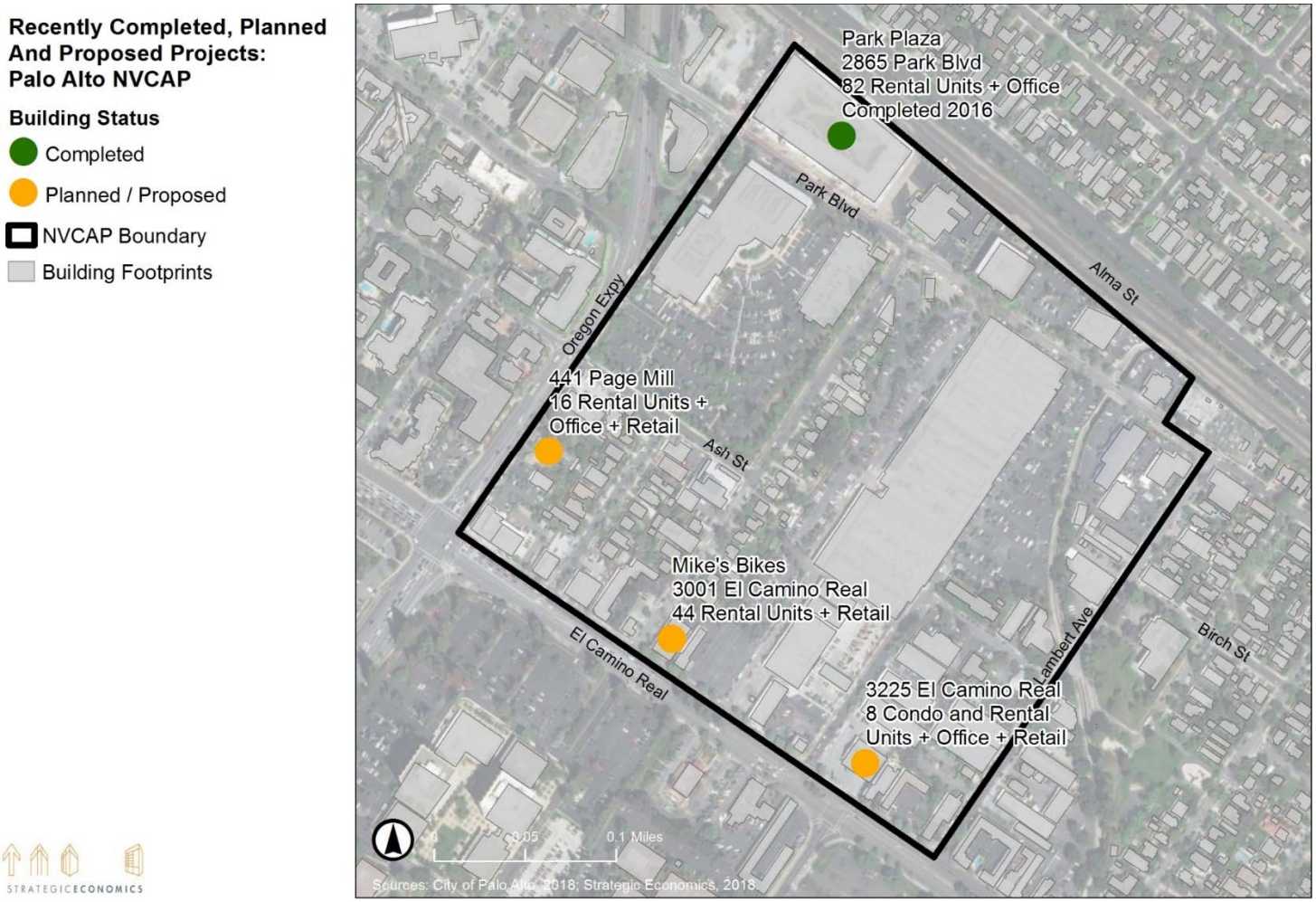


Figure 45: Recently Completed, Planned and Proposed Multifamily Projects, North Ventura Plan Area

Affordable Housing

Based on a review of the Housing Element and interviews with affordable housing developers, Strategic Economics identified the following issues for affordable housing development in the Plan Area.

There are currently 18 below market rate units in the Plan Area, all provided in the Park Plaza development project. Wilton Court is an additional 59-unit affordable development recently approved for a site several blocks south of the Plan Area. Wilton Court is a 100 percent affordable project targeted at households below 60 percent of area median income.

North Ventura's proximity to transit makes it a strong candidate for a new affordable housing development. Because the area is within a Caltrain Station walkshed and enjoys relatively frequent bus service along El Camino Real, a development site in North Ventura could be competitive for a variety of affordable housing funding sources, including the Affordable Housing and Sustainable Communities (AHSC) grants and the Low-Income Housing Tax Credits (LIHTC) program.

The financial feasibility of any new affordable projects in Palo Alto likely will hinge on a streamlined approval process and significant zoning incentives. According to local affordable housing developers, a combination of high costs of land and construction, long approval timelines and declining federal sources of funds, together challenge the feasibility of new affordable projects in Palo Alto. Developers estimate that new affordable housing projects require a density of between 1.85 and 2.0 floor-area-ratio (FAR) or 120 units per acre to be viable in the city. According to Enterprise Community Partners, smaller projects (less than 100 units) in suburban locations tend to be less competitive for AHSC grants. Going forward, new projects will require faster approvals and higher density than what has been attempted in the past.

New state and county funding sources, coupled with City government's recent efforts to support affordable housing, represent an opportunity to add new subsidized units to North Ventura. New funding sources include those associated with SB2, state legislation enacted this year, and Measure A, a sales tax measure passed by Santa Clara County in November, which includes funding for affordable housing. The City's inclusionary zoning ordinance, Affordable Housing Overlay Ordinance, and local impact and in lieu fees should help produce new units at a faster pace than in the past, either through mixed income or 100 percent affordable projects.

Office and R&D

The City has recently taken steps to limit office development in Palo Alto. An amendment to the Comprehensive Plan, adopted in 2018, reduced the total cap for office and R&D development from 1.7 million square feet to 850,000 by 2030. A separate City ordinance was adopted to provide for 50,000 square feet annually as a pacing mechanism.

Even as growth in the Palo Alto's office inventory is limited, demand for new space remains strong. Rental rates for office and research and development (R&D) space in Palo Alto are at the top of the market in Northern Silicon Valley. At the same time, construction costs region-wide have been rising rapidly over the last several years, particularly for skilled labor and specialized subcontractors. Land costs have likewise increased in response to market conditions. Therefore, lower density developments often do not pencil in Palo Alto, despite strong demand. These circumstances create a hurdle to any kind of redevelopment at the Fry's site, which has the potential for a high level rent from an office or R&D use. (The property owner collects about seven dollars per square foot monthly for a current tech incubator tenant, with the potential to rehab other parts of the building to collect a similar level of rent in those spaces, although this not currently allowed by zoning.) Because construction costs are currently very high, any new redevelopment is likely to need a significant level of density to economically justify forgoing the income potential of the existing buildings on the property.

This section assesses the market opportunities and constraints for office, R&D/ flex space in the Plan Area. Strategic Economics developed these findings from:

- Employment growth forecasts for the city and region
- Market data on office and R&D in Palo Alto and neighboring communities
- A review of recent development activity for office and R&D in Palo Alto, and
- Interviews with local brokers and developers

Opportunities

According to the Comprehensive Plan, Palo Alto is projected to experience continued employment growth over the coming decades, creating ongoing demand for office space. As shown in Figure 46, Palo Alto's rate of job growth between 2020 and 2030 is estimated at 6.3 percent, slightly higher than the growth rate for Santa Clara County (5.1 percent).

Figure 46: Actual and Projected Employment in Palo Alto and Santa Clara County, 2000-2040

	Actual		Projected		
	2000	**2010**	**2020**	**2030**	**2040**
Palo Alto					
Jobs	86,960	89,370	104,470	111,091	119,030
10-Year Percent Change	--	*+2.8%*	*+16.9%*	*+6.3%*	*+7.1%*
Santa Clara County					
Jobs	1,044,130	926,270	1,091,270	1,147,020	1,229,530
10-Year Percent Change	--	*-11.3%*	*+17.8%*	*+5.1%*	*+7.2%*

Source: ABAG 2013; City of Palo Alto Comprehensive Plan, 2017; Strategic Economics, 2018.

The office and R&D market in Silicon Valley remains strong, largely driven by expansions of major tech firms. Recent leasing activity has been largely driven by expansions of large, established firms, such as Google and Amazon's A9.com. These firms are often seeking spaces greater than 100,000 square feet and close to transit.

Caltrain Station areas and downtowns are highly attractive to technology companies. The developer community reports that office spaces in downtowns and Caltrain Station areas in the Silicon Valley are sought after by technology companies seeking convenient access and amenities for their employees. Mountain View, Sunnyvale, and Redwood City have increased the inventory of office space near their downtowns by 85 percent in the last ten years. Downtown Palo Alto's office inventory grew by 12 percent during the same period (Figure 47).

Palo Alto is a premier location for office tenants. Palo Alto offers many competitive advantages, including proximity to Stanford University and venture capital. These qualities, combined with a booming Silicon Valley economy and scarce supply, result in some of the highest rents in Silicon Valley. As shown in Figure 48, the average monthly asking rent in Palo Alto is currently the highest in the Northern Silicon Valley, at $9.35 per square foot. Average rent for high-quality Class A space is $10.34 per square foot. Vacancy in Palo Alto and most of its neighbors is under four percent, with Redwood City at eight percent.

Palo Alto is also at the top of the market for R&D tenants. As shown in Figure 49, the average rents for R&D space in Palo Alto is $6.42, significantly higher than in neighboring communities. Vacancy in the market area is also low, ranging from 2.4 to 6.4 percent. Developers and brokers report that tenants seeking space in Palo Alto are generally technology and life sciences firms. Commonly, R&D space in Palo Alto is sought for special research projects within larger Silicon Valley companies such as Google. These larger companies tend to be far less price sensitive for space than smaller start-ups.

The pipeline for new office and R&D projects in Palo Alto is concentrated along the Page Mill Road corridor extending to North Ventura. Figure 50 shows Palo Alto's pipeline of six projects either currently under construction or proposed, totaling approximately 750,000 square feet of new space. Four of these projects are on or just off Page Mill Road, within two miles of the Plan Area. 2747 Park Boulevard and 3045 Park Blvd are smaller office and R&D developments within or just outside the Plan Area.

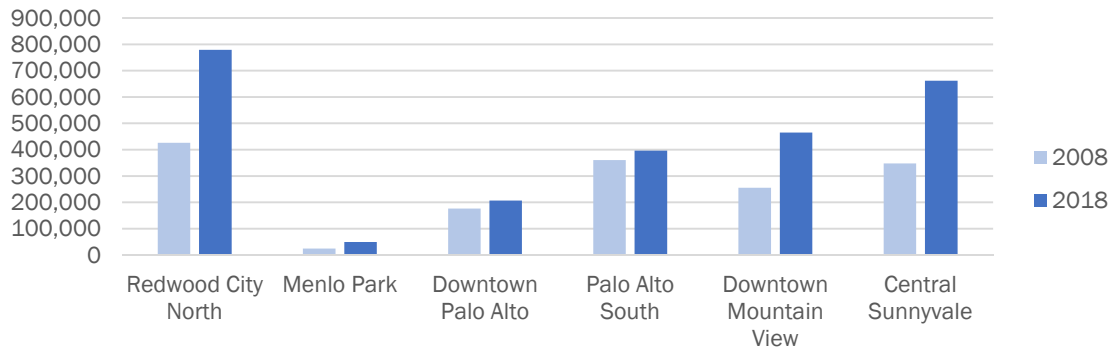
North Ventura is already a strong location for office and R&D uses. As shown in Figure 51, the Palo Alto South submarket (containing North Ventura) commands rental rates that are competitive with other Silicon Valley station areas and downtowns. The Plan Area currently contains over 400,000 square feet of rentable building area for office, creative office, and R&D tenants. Current office tenants in North Ventura include a mixture of established technology firms and smaller start-ups. The largest tenants in the area are Cloudera Galactic and Groupon. The Fry's building leases spaces that have been adapted to several startups engaged in product development, research and design, as well as creative office firms.

Developers view North Ventura as a very competitive location for new office and R&D development, due in part to the proximity to the California Avenue Caltrain Station. Potential tenants include firms researching and developing new products for life sciences and technology and could include a mix of startups and established companies pursuing specialized research and development initiatives. Many new development projects are built with flexible, open floorplans that can be easily converted to accommodate the needs of a conventional office, creative office, or R&D tenant. For example, 3045 Park Boulevard is a proposed project that has been designed to meet the needs of either a creative office or an R&D tenant.

According to brokers and developers, rents in North Ventura are likely to be at the top of the market. It is estimated that tenants would pay approximately $8 to $9 per square foot for Class A office and $5 to $7 per square foot for R&D space in the Plan Area. Parking needs for new office depend on the type of tenant, with many newer tech tenants settling for lower amounts of parking.

The transit accessibility of the Plan Area offers the opportunity to lower the parking requirements for new office and R&D development projects. Developers report that, while plentiful parking in office developments contributes to their marketability, office projects in Palo Alto's transit-rich areas allow for a lower parking standard than the current requirement of 4.0 spaces per 1,000 square feet.

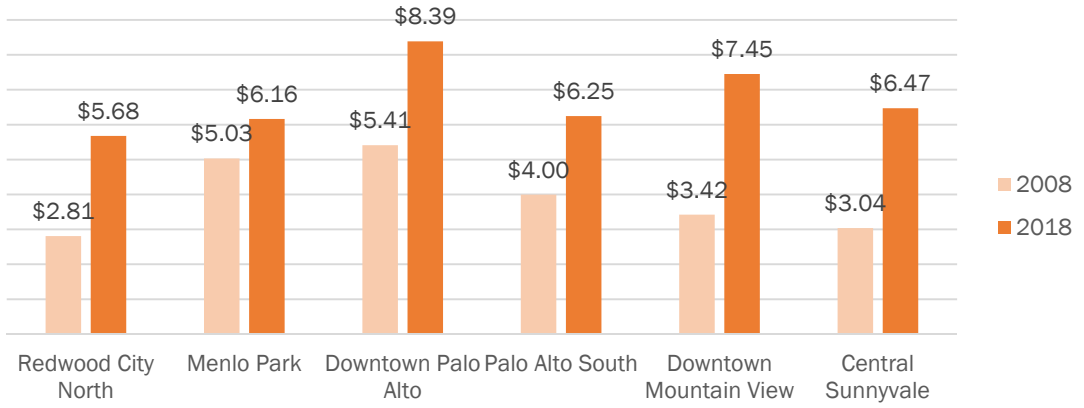
Figure 47: Total Class A Office Rentable Building Area by Submarket*, 2008 and 2018



* Submarkets are as defined by Costar and capture the downtown Caltrain Station areas of Redwood City, Menlo Park, Palo Alto, California Ave (including North Ventura and Page Mill Road), Mountain View (Castro Street area), and Sunnyvale.

Source: CoStar, 2018; Strategic Economics, 2018.

Figure 48: Average Monthly Office Rents* per Square Foot by Submarket



* All rents are on a Full-Service Gross basis. Because of limited rental rate data availability for Class A, all classes of office are included in the calculation of the average.

Source: CoStar, 2018; Strategic Economics, 2018.

Figure 49: Office Inventory, Average Monthly Rent, and Vacancy for Northern Silicon Valley Communities

	Rentable Building Area (sf)	Vacancy (%)	Monthly Rent* (per sf)	Class A Monthly Rent (per sf)
Redwood City	7,744,219	8.0%	$6.06	$6.85
Menlo Park	4,811,522	4.3%	$8.42	$11.00
Palo Alto	7,701,043	3.8%	$9.35	$10.34
Mountain View / Los Altos	8,583,401	4.1%	$7.94	$8.86
Sunnyvale	11,394,349	2.4%	$5.95	$6.21

* All rents are on a Full-Service Gross basis.
Source: CBRE, Q3 2018; Strategic Economics, 2018.

Figure 50: Research and Development Inventory, Average monthly Rent and Vacancy for Northern Silicon Valley Communities

	Rentable Building Area (sf)	Vacancy (%)	Monthly Rent* (per sf)
Redwood City	2,476,391	2.4%	$3.05
Menlo Park	4,290,300	3.5%	$4.40
Palo Alto	13,679,328	3.4%	$6.42
Mountain View	14,041,570	6.4%	$3.46
Sunnyvale	21,700,576	4.8%	$2.85

* All rents are on a Triple Net (NNN) basis.
Source: Colliers, Q3 2018; Strategic Economics, 2018.

Figure 51: Key Office and R&D Developments Under Construction or Proposed in Palo Alto

Building Address	Use	Building Status	Scheduled Completion	Typical Floor Plate (sf)	Rentable Building Area (sf)
3223 Hanover Dr	Office	Under Construction	2019	59,850	120,000
1050 Page Mill Rd	Office	Under Construction	2019	37,500	300,000
2747 Park Blvd	Office	Under Construction	2019	12,000	36,120
3181 Porter Dr	Office	Under Construction	2019	51,042	102,084
3045 Park Blvd	Flex	Proposed	2019	15,677	30,000
3380 Coyote Hill Rd	Office and R&D	Proposed	2020	42,710	85,420
Total Pipeline RBA (sf)					**758,642**

Source: CoStar, 2018; Strategic Economics, 2018.

Constraints

Office developers and brokers report that a slowdown in venture capital funding has dampened the demand for office space from small start-ups. While Palo Alto continues to have a high concentration of start-ups, many growing companies are unable to remain in Palo Alto once their space needs exceed 100,000 square feet due to the lack of inventory in the City.

City policy limits the amount of office development that can be built in the Plan Area. Recent action by the City Council has effectively limited new office development to 50,000 square feet per year in downtown and along El Camino Real and California Avenue.

There are other Caltrain Station areas within the Silicon Valley that offer stronger transit access and have a greater availability of R&D and office spaces. As shown in Figure 48, the downtowns and station areas of Redwood City, Mountain View, and Sunnyvale have seen large increases in inventory and rental rates over the ten-year period.

Due to the current high cost of development, a rezoning for office that includes additional height, density, and lower parking requirements likely would be required to induce significant office development in North Ventura. Tenants of a portion of the Fry's building are currently leasing newly upgraded creative office and R&D space for approximately $7 per square foot, generating very strong revenues for the landowner. If the Fry's retail space were to become vacant, these high office rents create a strong incentive for the property owner to pursue conversion of the space to additional office and R&D space, rather than pursuing higher-risk redevelopment and construction of a relatively low-

density new office product. Regardless of these market-based considerations, current zoning only allows continued retail use or development of housing at the existing Fry's location.

Retail

In the Palo Alto Comprehensive Plan, the commercial areas around North Ventura, including California Avenue and South El Camino Real, are designated as "Multi-Neighborhood Centers," defined as "retail districts that serve more than one neighborhood with a diverse mix of uses including retail, office and residential." This section explores the types and quantities of retail development that could be supported in the Plan Area, and concludes that any new retail in North Ventura likely will remain limited to neighborhood-serving uses.

Demand for retail in the North Ventura Plan Area is affected by broader shifts in the global retail industry. Americans continue to shop, but where and how they shop have impacts on the performance and location of existing and future brick-and-mortar businesses. Major trends that affect the demand for new retail space include the following:

- The retail industry is growing and reorganizing. In 2017, consumers' expenditures in the U.S. hit an all-time high. However, much of the growth is happening online rather than in brick-and-mortar stores. Nationwide, online sales account for an increasingly larger portion of total sales[2] and e-commerce continues to expand. Products sold online are no longer limited to books and music, but now also encompass a wide array of soft and hard goods, including: electronics, sporting goods, office supplies, toys, and apparel.
- Offering a unique consumer experience has become essential, given the growing influence of online shopping. New retail centers are being designed with an "experiential" component that often includes well-designed common gathering areas, more eating and drinking establishments, and more interactive retail concepts. Existing shopping centers and malls, which are seeing an erosion in sales in department stores and conventional soft goods are re-tenanting their spaces and redeveloping their parking lots to add entertainment uses (bowling alleys, spas, salons) as well as adding restaurants, grocery stores, and brew pubs. Many shopping centers are also integrating housing and office spaces into their redevelopment plans.
- In addition to their typical location requirements, experiential retailers are also sensitive to the quality of the pedestrian environment for shoppers. The fundamental factors that retailers consider continue to be the demographic profile of the surrounding area, traffic patterns, and site/ characteristics (ease of access, visibility, etc.). However, to remain competitive, retailers are also interested in creating a high-quality pedestrian experience, including streetscape/urban design and other "placemaking" components.

Regional Context

Strategic Economics analyzed the regional context for retail in the Plan Area, assessing the existing supply and performance of retail centers in Palo Alto and surrounding communities. Within the region, there is a wide range in the existing supply of retail centers. The retail center categories are described in more detail below and summarized in Figure 52.

[2] According to a study conducted by Strategic Economics in 2018 for the City of San Francisco's Office of Economic and Workforce Development, while non-store retailers accounted for 12 percent of total national retail sales in 2016, they accounted for 40 percent of the growth in total sales between 2014 and 2016.
https://oewd.org/sites/default/files/Invest%20In%20Neighborhoods/State%20of%20the%20Retail%20Sector%20-%20Final%20Report.pdf

Large shopping centers, such as regional malls, power centers, and community centers, are regionally serving, drawing customers that live in trade areas of five miles or beyond. Figure 50 shows the location of malls, power centers, and community centers that serve the Plan Area.

- Malls are typically anchored by major department stores, and range in size from 400,000 to 800,000 square feet. The Stanford Shopping Center is an example of a regional mall that serves the Plan Area and beyond. The trade area for a regional mall can extend up to 15 miles in distance.
- Power centers (often known as "big box" centers) are characterized by several large anchor stores, such as discount department stores, and are usually between 250,000 to 600,000 square feet. San Antonio Center in Mountain View and Ravenswood Shopping Center in East Palo Alto are two power centers located close to the Plan Area. The trade area for a power center is between 5 to 10 miles.
- Community centers have trade areas of between 3 and 6 miles and are often anchored by grocery stores or "big box" stores. These centers are usually between 125,000 to 400,000 square feet in size. The Village at San Antonio and Charleston Plaza are two community centers located near the Plan Area.

Figure 52: Typical U.S. Shopping Center Types and Characteristics

Type of Shopping Center	Typical Size (sf)	Acres	Typical Anchors	Trade Area Size/ Drive-time	Examples
Regional and Super Regional Malls	400,000 to 800,000	40 to 100	General merchandise or fashion-oriented anchors, may include department stores, mass merchants, and/or fashion apparel	5-15 miles/ 15-20 minutes	Westfield Valley Fair, Stanford Shopping Center
Power Centers	250,000 to 600,000	25 to 80	Category-dominant anchors, often in more than one freestanding structures, with only a few small tenants	5-10 miles/ 15-20 minutes	San Antonio Center, Ravenswood Shopping Center
Community Center	125,000 to 400,000	10 to 40	General merchandise or convenience-oriented anchors, may include discount stores, grocery stores, drug stores, and/or large specialty stores (home improvement/ furnishings, sporting goods, etc.)	3-6 miles/ 10-15 minutes	The Village at San Antonio, Charleston Plaza
Neighborhood Center	30,000 to 125,000	3 to 5	Convenience-oriented, typically anchored by a grocery and/or drug store	3 miles/ 5-10 minutes	Palo Alto Central Center / Mollie Stone's
Strip or Convenience Center	Less than 30,000	Less than 3	Un-anchored, or anchored by a small convenience store (e.g. 7-Eleven)	<1 mile/ < 5 minutes	Various centers along El Camino Real

Source: ICSC Research and CoStar Realty Information, Inc. (www.costar.com); Strategic Economics 2018.

Palo Alto is a major retail destination within the Silicon Valley region, and existing centers are performing well. Figure 54 shows the total retail inventory per square foot of Palo Alto and surrounding cities. Palo Alto has 59 square feet of retail per resident, higher than many of its neighbors. The vacancy rate is only two percent, and average retail asking rents in Palo Alto are higher than in surrounding communities at $5.51 per square foot.

Because of the strength of its retail offerings, Palo Alto stores achieved higher taxable sales per household than the county overall in 2017 for nearly every category (Figure 55).

The city's taxable sales breakdown is shown in Figure 56. Nearly a quarter of sales come from motor vehicles and parts, reflecting a concentration of auto dealers, mostly east of U.S. Highway 101. Another 23 percent of taxable sales are from food services and drinking places, and 17 percent are from clothing and accessories, again reflecting Palo Alto as a regional destination for shopping.

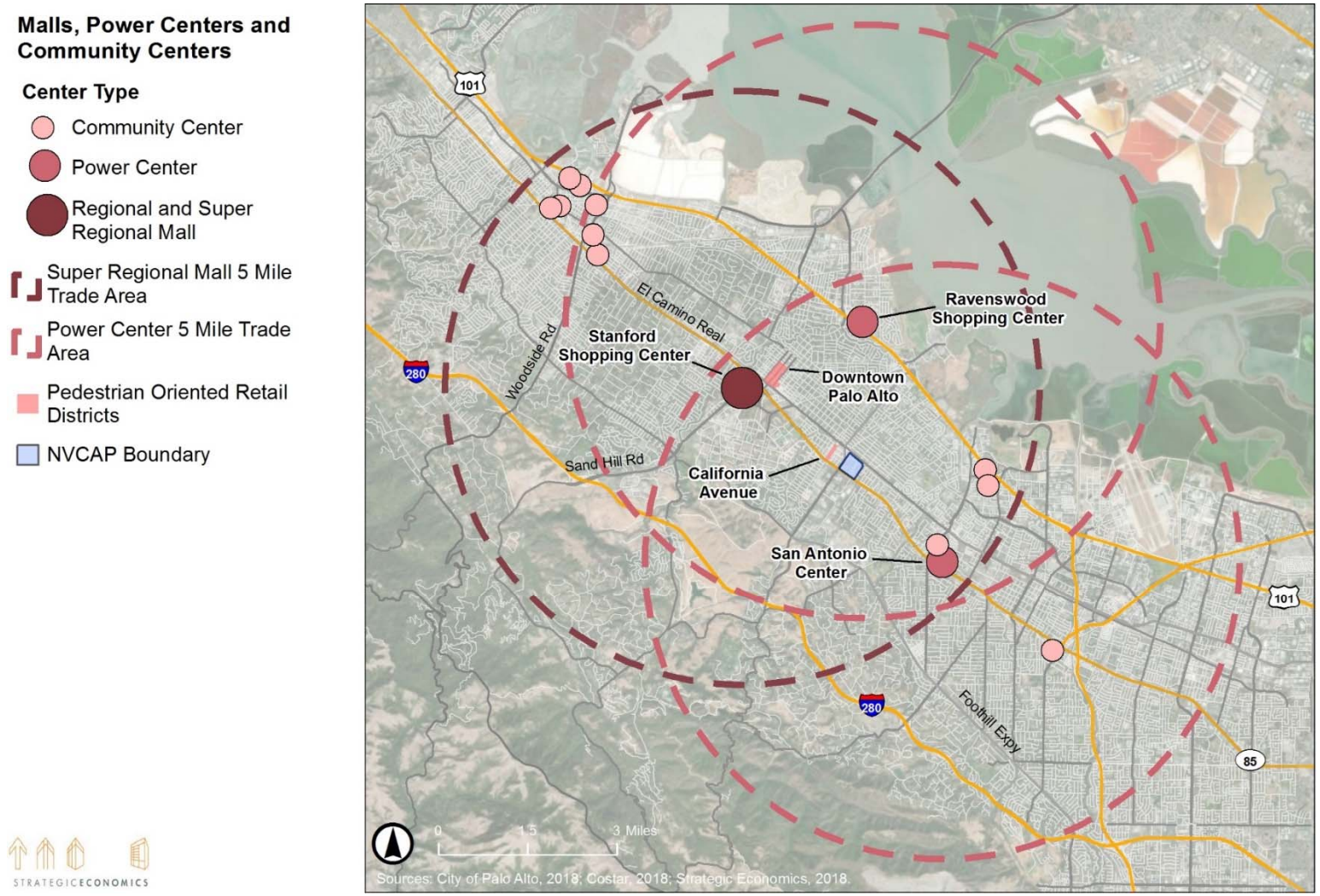


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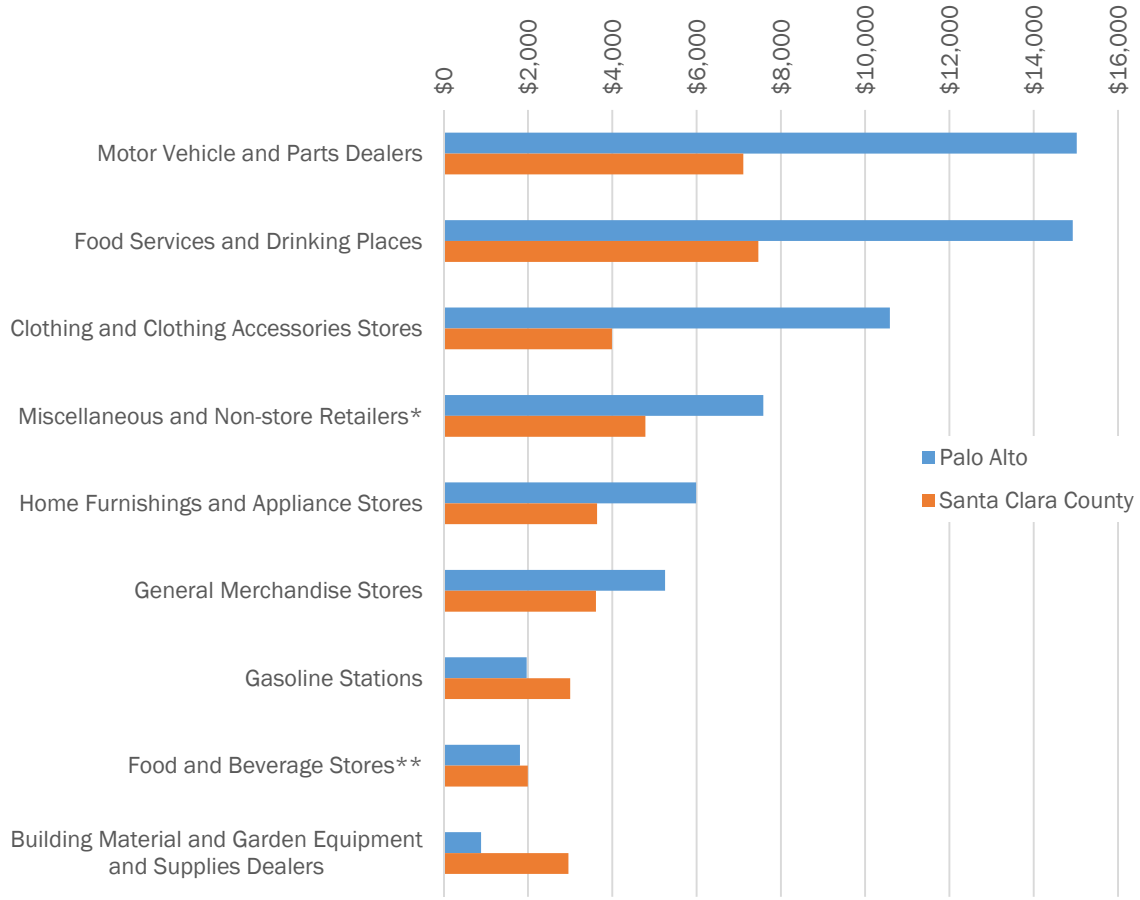
Figure 53: Regional Shopping Centers in the Trade Area

Figure 54: Retail Inventory, Vacancy, and Rent, Palo Alto and Surrounding Communities

	Inventory (Buildings)	Inventory (SF)	Inventory SF Per Resident	Total Vacancy Percent	Monthly Asking Rent* ($/sf)
Palo Alto	397	3,915,124	59	2%	$5.51
Menlo Park	191	1,194,457	36	2%	$4.91
Mountain View	362	3,985,015	51	1%	$3.60
Los Altos	191	1,208,496	40	2%	$3.56
Sunnyvale	413	5,132,985	34	4%	$2.87

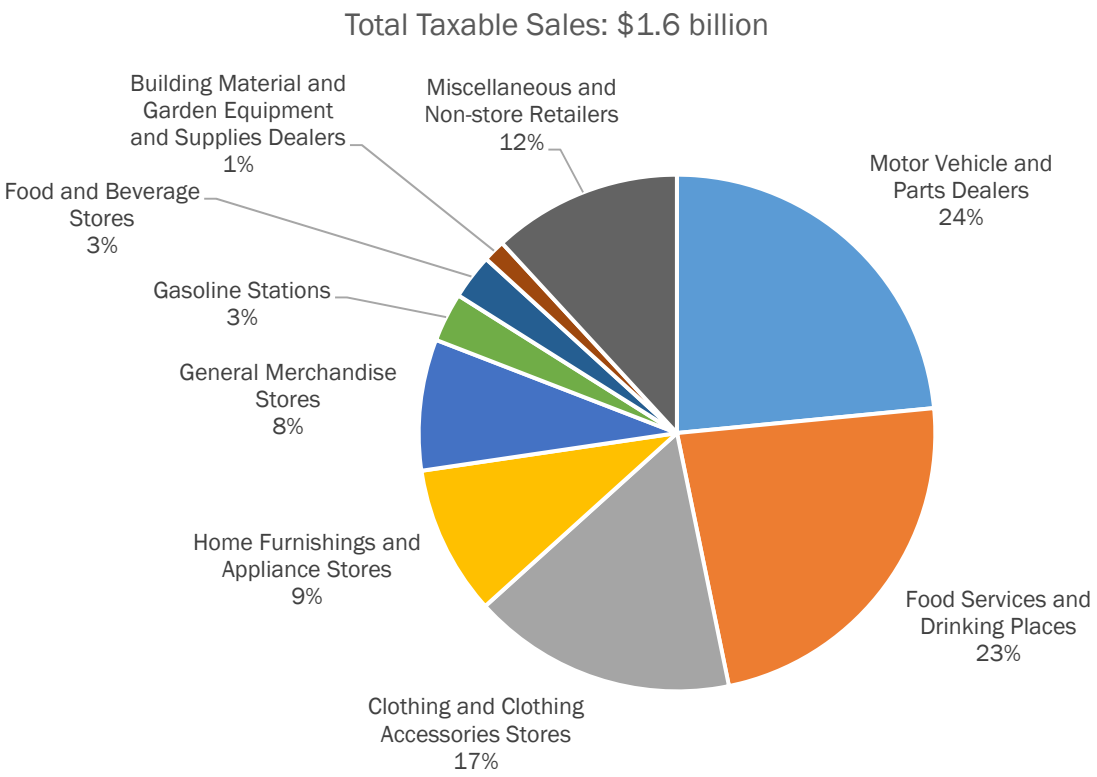
* Market data were not available for Stanford Shopping Center.
Source: U.S. Census American Community Survey 2012-2016; Costar, 2018; Strategic Economics, 2018.

Figure 55: Taxable Sales per Household, Palo Alto and Santa Clara County, 2016



* Miscellaneous retailers include gift and novelty stores, office supply stores, used merchandise stores, florists, and other miscellaneous categories of retail.
** Note that the largest portion of sales in food and beverage stores are non-taxable.
Sources: State Board of Equalization, 2016; U.S. Census American Community Survey, 2012-2016; Strategic Economics, 2018.

Figure 56: Taxable Retail Sales in Palo Alto by Category, 2016



Miscellaneous retailers include gift and novelty stores, office supply stores, used merchandise stores, florists, and other miscellaneous categories of retail.
Sources: State Board of Equalization, 2016; U.S. Census American Community Survey, 2012-2016; Strategic Economics, 2018.

Palo Alto Retail

In addition to the Stanford shopping center, Palo Alto contains three other important retail clusters (Figure 57) within three miles of the Plan Area. Each cluster is described in more detail below:

- **University Avenue**, a downtown, pedestrian shopping district that features a range retail options, including soft goods and eating and drinking places. As shown in Figure 657, University Avenue generated about $360 million in taxable sales in 2017.
- **Town and Country Village**, a neighborhood center of 172,000 square feet, is located at the northern end of Palo Alto's El Camino Real corridor. Town and Country contains a small grocery store (Trader Joe's), a drugstore, and a mix of restaurants and smaller retail and service shops. This center generated about $60 million in taxable sales in 2017 (Figure 57).

- **California Avenue**, a pedestrian shopping district and Palo Alto's "second downtown" is located within walking distance of the Plan Area. California Avenue caters to a more local customer base than either Stanford Shopping Center or University Avenue, featuring mostly restaurants and services such as banking and dry cleaning. A Mollie Stone's grocery store and the Palo Alto Central complex are also close to California Avenue and the Caltrain Station. In 2017, California Avenue generated approximately $140 million in taxable sales (Figure 57).

University Avenue and Town and Country Village command higher average rents than the city overall, while rents in the California Avenue area are about equal to the average. Vacancy rates in all of these centers is four percent or lower (Figure 57).

December 18, 2018

Re: **DRAFT - Existing Conditions and Analysis Memo**

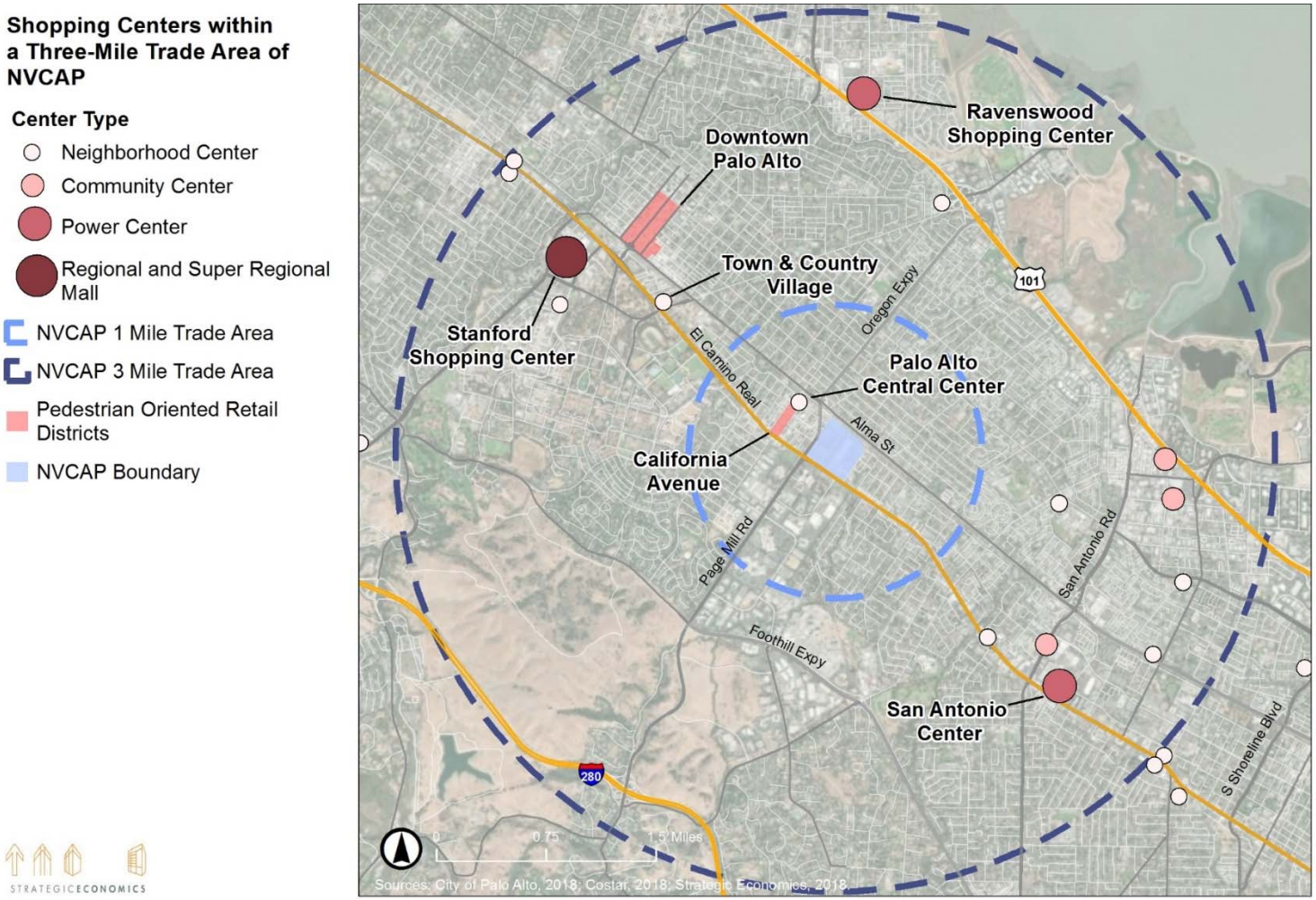
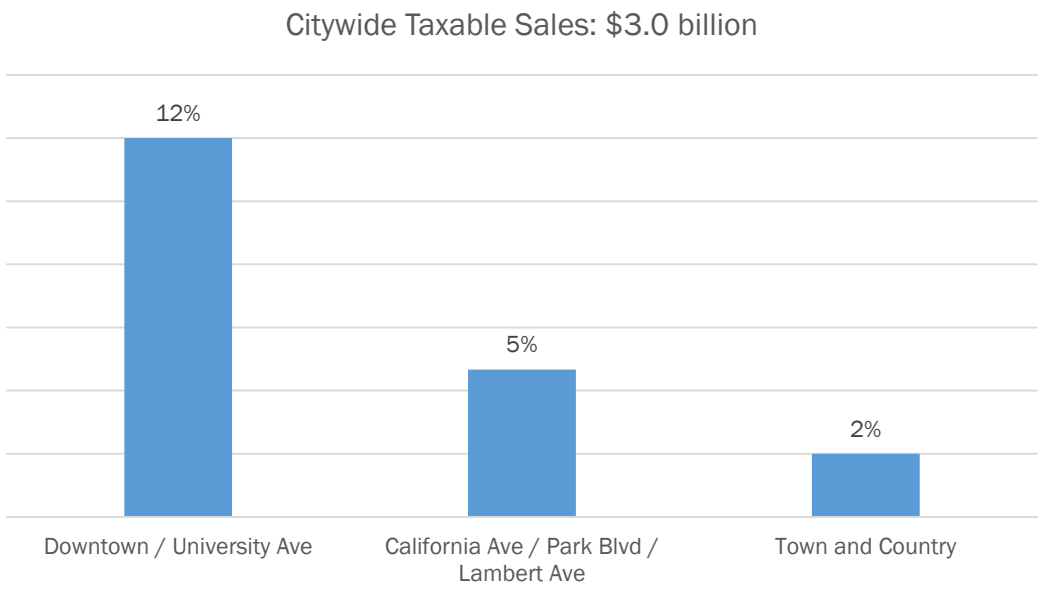


Figure 57: Shopping Centers within a Three-Mile Trade Area of North Ventura Plan Area

Figure 58: Taxable Sales as a Percent of Citywide Taxable Sales* by Retail Center, 2017



* Sales include any taxable business-to-business sales as well as retail sales.
Sources: City of Palo Alto, 2017; California Board of Equalization, 2017; Strategic Economics, 2018.

Figure 59: Retail Inventory, Vacancy, and Rent, Palo Alto Major Retail Clusters

	Inventory (Buildings)	Inventory (SF)	Total Vacancy Percent	Monthly Asking Rent* ($/sf)
University Avenue	110	777,658	4%	$6.45
California Avenue	47	281,937	2%	$5.45
Town and Country	5	172,360	3%	$6.00

* Rents are on a Triple Net (NNN) basis.
Source: Costar, 2018; Strategic Economics, 2018.

Neighborhood-serving Retail Demand Estimate

Because there are a number of existing regional retail and power centers in proximity to the Plan Area, Strategic Economics has concluded that North Ventura is not well positioned to attract a major new retail center. However, based on interviews with local brokers and developers, the Plan Area has strong potential to attract additional neighborhood-serving retail uses that would support new residents and employees in the Plan Area.

Strategic Economics developed an estimate for the additional demand for neighborhood-serving retail that would be supported with the addition of new multifamily housing in the Plan Area. For the purposes of this memo, neighborhood-serving retail is defined as businesses that provide goods and services that people would frequent at least weekly to take care of their personal and household needs. Examples include grocery stores, drug stores, eating and drinking establishments, dry cleaners, and hair salons.

Strategic Economics estimates the demand for new neighborhood-serving retail will be between 14,000 and 25,000 square feet of new retail space (Figure 60). This estimate is based on housing growth of 364 additional dwelling units in the Plan Area, a "realistic" capacity determined from Palo Alto's Housing Element, which considers identified housing opportunity sites and current zoning. Note that if the number of residential units in the Plan Area is above 364 units, the retail demand would increase proportionally with the additional households.

The demand estimate follows the approach below:

1. Strategic Economics collected estimates of per household annual spending on neighborhood-serving categories of retail for the City of Palo Alto. These estimates were assembled by Esri, a mapping software and data services provider. To represent neighborhood-serving uses, the following categories of spending were chosen: groceries, dining, alcoholic beverages, non-prescription and prescription drugs, housekeeping supplies, personal care, smoking products, and apparel products and services.

2. Next, the total annual spending associated with new household growth (estimated from the Housing Element at 364 units) was calculated.

3. Strategic Economics then divided the annual spending by a set of assumptions for average sales per square foot of retail space. Strategic Economics reviewed data published by Baker Tilly, the Food Marketing Institute, and news reports on retail performance to arrive at these estimates. Based on this review of the research, the expected sales per square foot of retail was estimated as a range. For example, restaurant sales generally ranged from $250 to $400 per square foot of sales depending on the type of restaurant. This range was used to estimate space needs for retail dining. For other categories of retail, a range of $500 to $1000 was used, reflecting the range of sales generated by grocery and general merchandise stores.

4. Annual spending was divided by annual sales per square foot for each use to estimate the retail space for each retail category. The high and low values for each category were summed to get total retail demand.

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Figure 60: Demand Estimate for Neighborhood-serving Retail

Categories	Spending per Household	Total Spending for 364 Households	Sales per SF - Low Estimate	Sales per SF - High Estimate	Retail Demand (sf) - Low Estimate	Retail Demand (sf) - High Estimate
Food at Home	$11,321	$4,120,902	$500	$1,000	4,121	8,242
Food away from Home	$8,420	$3,064,964	$250	$400	7,662	12,260
Alcoholic Beverages	$1,485	$540,362	$500	$1,000	540	1,081
Nonprescription Drugs	$288	$104,978	$500	$1,000	105	210
Prescription Drugs	$744	$270,732	$500	$1,000	271	541
Housekeeping Supplies	$1,587	$577,610	$500	$1,000	578	1,155
Personal Care	$1,145	$416,755	$500	$1,000	417	834
Smoking Products	$771	$280,546	$500	$1,000	281	561
Apparel Products and Services	$227	$82,785	$500	$1,000	83	166
Total	**$25,988**	**$7,796,400**			**14,057**	**25,049**

Sources: Retail Goods and Services Expenditures, ESRI, 2018; Baker Tilly, 2014; Food Marketing Institute, 2014; Business Insider, 2014; Strategic Economics, 2018.

Summary of Opportunities and Constraints

This section summarizes the opportunities and constraints associated with developing new retail in the North Ventura Plan Area.

- The North Ventura is not a competitive location for large malls and shopping centers. The map in Figure 57 shows that the trade areas for Stanford Shopping Center, Ravenwood and San Antonio Center all include the North Ventura Plan Area. In addition, the Plan Area is located in close proximity to the California Avenue district and the Mollie Stone's/Palo Alto Central Center, which offer a variety of retail and services for existing and new residents.
- Given the existing supply of retail in the trade area, as well as limited household growth in the Plan Area, North Ventura could support up to 25,000 square feet of additional neighborhood-serving retail. According to brokers and developers interviewed for this study, the retail opportunity in North Ventura is limited to neighborhood-serving retail, such as convenience goods, services, restaurants and cafes. The demand estimate shows potential for between 14,000 and 25,000 square feet of new retail in the Plan Area. The retail space could be provided on the ground floor of new mixed-use developments.
- A "big box" replacement to the Fry's store or suburban mall formats is unlikely to succeed in North Ventura. Nationally, retail is undergoing a transformation from largely "big box" and suburban mall formats to experiential and lifestyle retail. As sales of more consumer products shift online, "big box" and suburban mall retail formats across the country have struggled in recent years. As part of a national shift in retail, Fry's Electronics store likely will not be replaced by a similar large format store. Should Fry's eventually close its business location in North Ventura, retail brokers and developers expect that its current space will be converted to another use, such as R&D or office, or be redeveloped entirely.

Infrastructure

As an area that is already fully developed, the Plan Area is completely serviced with existing utilities. However, new development may require some upgrades of aging infrastructure and/or new utilities to meet the needs of the increased population and development intensities.

Storm Drainage

Storm drainage facilities in and around the North Ventura Coordinated Area Plan are owned and maintained by the City of Palo Alto's Department of Public Works. The Palo Alto models, provided as part of the City's Storm Drain Master Plan[3], splits the storm drain system into three parts. The NVCAP is entirely contained within the Matadero watershed model, consisting of 55 linear miles of pipe (greater than 12-inches in diameter) and four pump stations.

The Matadero Creek Watershed drains to the San Francisco Bay. Figure 61 shows the watersheds in Palo Alto.

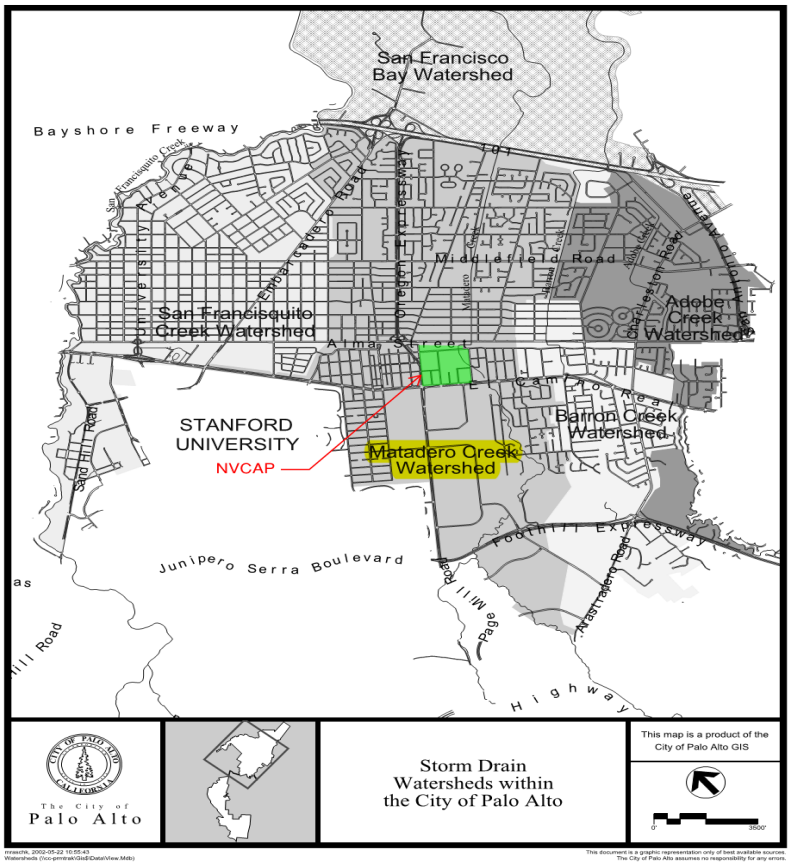

Figure 61: Palo Alto Watersheds

[3] City of Palo Alto, Storm Drain Master Plan, Schaaf & Wheeler Consulting Civil Engineers, June 2015.

The North Ventura Coordinated Area Plan falls within FEMA Flood Zone Map Number 06085C0017H, dated May 18, 2009. The majority of the NVCAP is within Flood Zone X (areas of 0.2% annual chance flood, areas of 1% annual chance flood with average depth of less than 1 foot or with drainage areas less than 1 square mile, and areas protected by levees from 1% annual chance flood). The Matadero Creek channel is within Flood Zone A (1% annual chance of flood discharge contained within channel). Figure 62 shows the FEMA Map 06085C0017H, and Figure 63 is the Plan Area within FEMA Map 06085C0017H.

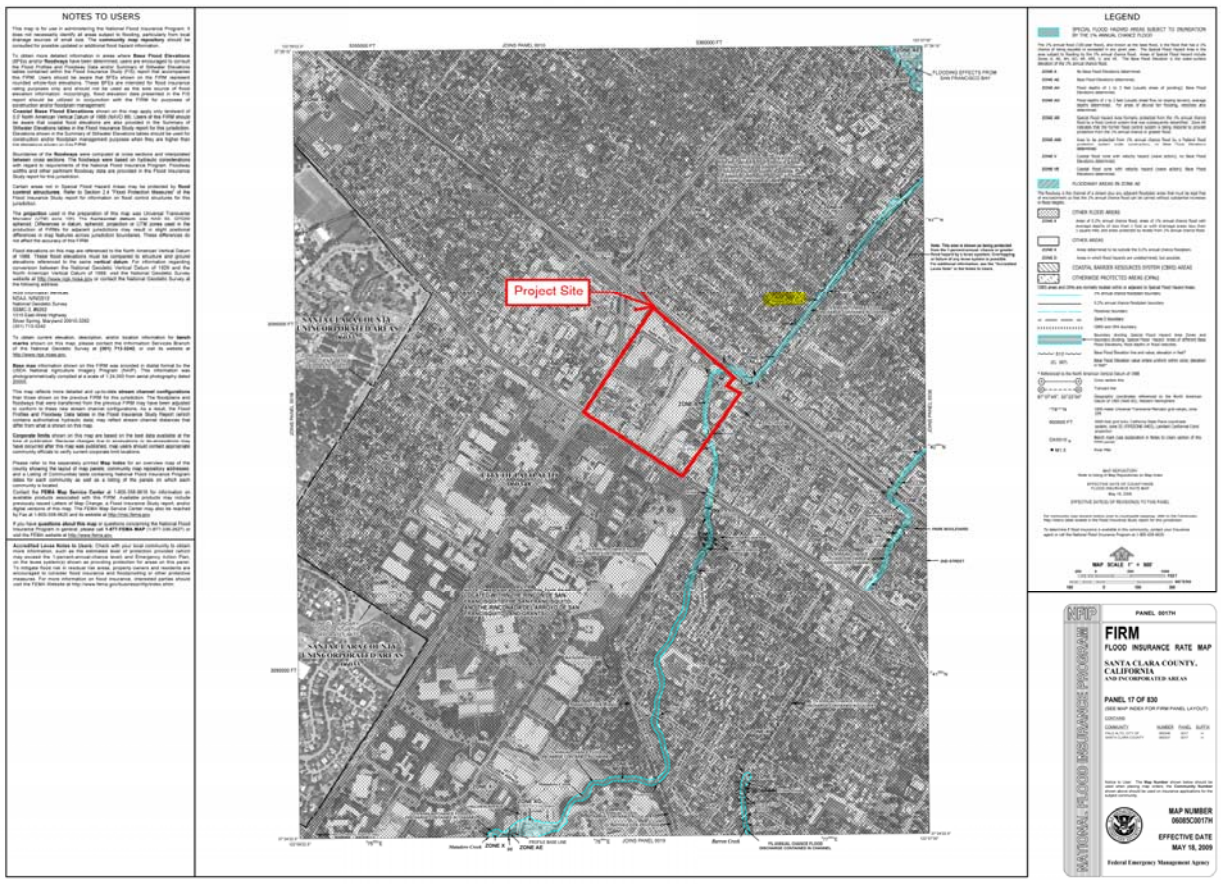

Figure 62: FEMA FIRM 06085C0017H

Figure 63: FEMA FIRM 06085C0017H, Focused on NVCAP Project Site

Matadero Creek Channel

The Matadero Creek Channel is maintained by the Santa Clara Valley Water District (SCVWD). The portion of Matadero Creek running through the North Ventura Coordinated Area Plan is contained within a concrete trapezoidal channel, which was built in 1990 from El Camino Real to the Caltrain tracks, see Figure 64.

Where the Matadero Creek channel runs through NVCAP, the existing site has several outfalls connected to the channel, with sizes varying from 12" storm drain inlet connections up to 60" storm drain mains, see Figure 65.

Future development in this area will need to be coordinated with the SCVWD to ensure adequate measures are implemented to reduce impact to the existing channel, and to ensure the plan meets SCVWD standards.

The channel is currently a concrete lined, engineered waterway, and the revised channel area would potentially be landscaped as a natural riparian corridor with native trees, shrubs and groundcovers, including erosion control measures (rip rap or other methods). This existing conditions memo identifies that there is an existing hardened channel and that there is a desire to naturalize it. It should be noted that work within the channel requires a permit and coordination with the Santa Clara Valley Water District. Permits will need to be obtained by the responsible party for this revision, if it is desired and permissible by the SCVWD.

Figure 64: Existing Matadero Creek Channel

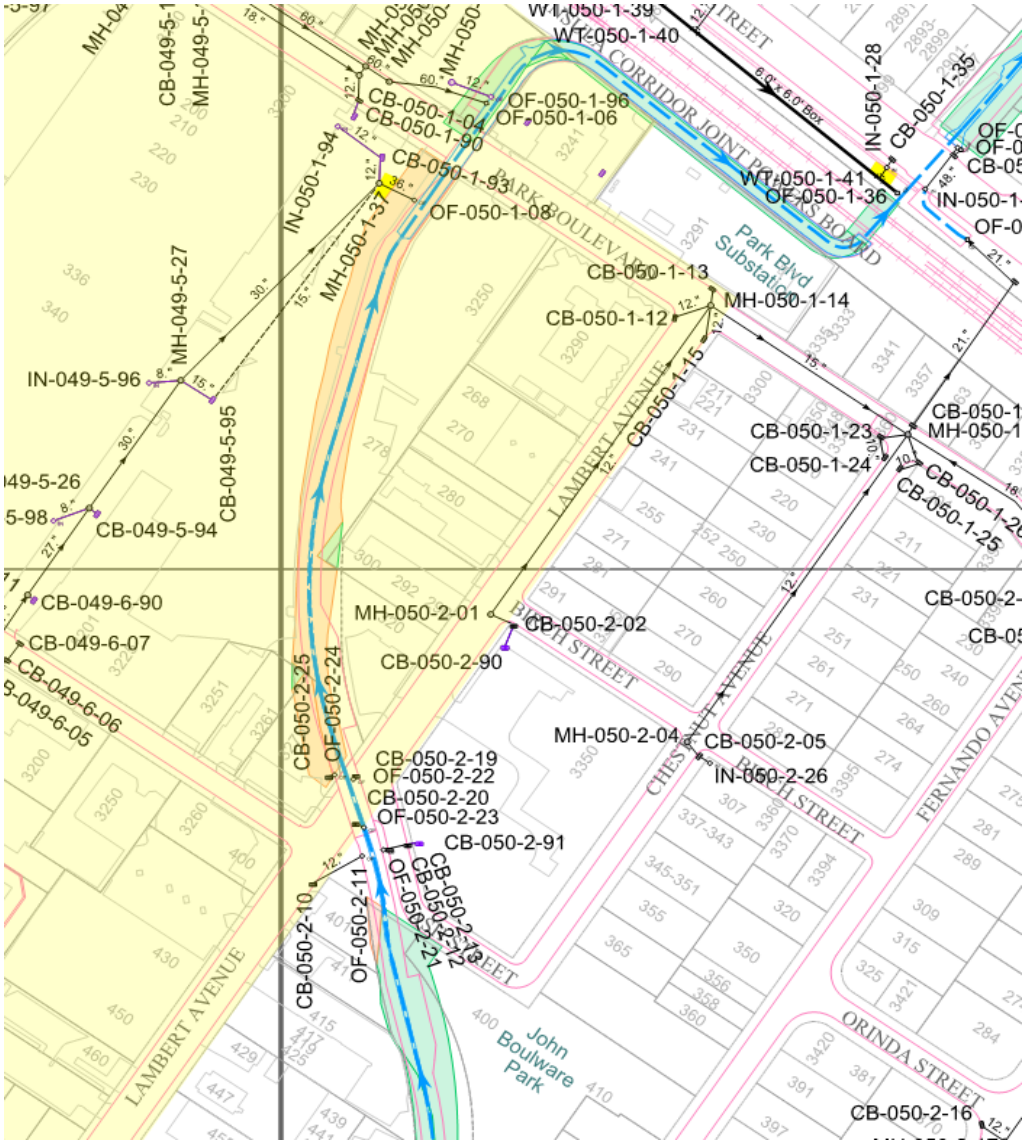

Figure 65: Storm Drain Outfalls to Matadero Creek Channel

Storm Drain Findings

The NVCAP consultants have provided the following summary based on the information made available by the City of Palo Alto. Additional analysis will need to be performed by the City in order to determine the feasibility of serving the future development. In future efforts within the NVCAP preparation, the development square footages and locations will be determined, and this information will be provided to the City to perform their analysis of the existing conditions capacity. Per City of Palo Alto's records, the storm drain pipes around the Plan Area were installed between the

1950's and the 1960's, with the exception of the pipes running through the site (between Ash Street and Park Boulevard), which were built in the 1990's. All of the existing pipes are Reinforced Concrete Pipes (RCP). See Figure 66.

The City of Palo Alto designs the public storm drain system to convey the runoff from a 10-year storm event; creeks and pump stations are designed to convey the runoff from a 100-year storm event. The City of Palo Alto Storm Drain Master Plan by Schaaf & Wheeler concluded the following about the drainage systems within the North Ventura Coordinated Area Plan:

- The Matadero watershed analysis for a 10-year storm event shows flooding occurs at 693 of the 1,373 nodes. The model predicts less than 6 inches of flooding at 353 nodes; between 6 inches and 12 inches of flooding occur at 129 nodes; and more than 12 inches of flooding will occur at 212 nodes. A map of the 10-year flooding depths predicted by the analysis is provided in Figure 62.

An aspect of this existing conditions memo is to provide a summary of existing conditions within the NVCAP that could impact the future development. When more information has been determined regarding the individual parcels within the NVCAP (i.e. impervious/pervious areas, C.3 treatment provided, etc.), a more detailed analysis can be run with the City to determine whether the City's existing systems may handle the additional capacity. For the purposes of this report, the team has researched the City's reports and found that there are portions of the City's existing system which are currently deficient, which is critical information to start the evaluation once a development is proposed. See below for the list of capital projects to be undertaken by the City in the next few years:

The Storm Drain Master Plan recommended the following capital projects be performed near the North Ventura Coordinated Area Plan (Figures 69, 70, 71):

- Oregon Expressway Pump Station (Figure 69):
  - Pump Station is experiencing maintenance issues and requires upgrade to ensure capacity during a 10-year storm event
  - $320,000 Capital Improvement Cost
  - Existing Capacity: Unknown, Proposed Capacity: 5 CFS
  - City's Priority Level: Moderate
- Page Mill Road (Figure 70):
  - Existing pipes on Page Mill Road lack the capacity for a 10-year storm event
  - $1,800,000 Capital Improvement Cost
  - 74 LF of existing 12" pipe to be upsized to 21"
  - 380 LF of existing 24" pipe to be upsized to 42"
  - 1,407 LF of existing 30" pipe to be upsized to 42"
  - 96 LF of existing 36" pipe to be upsized to 48"
  - City's Priority Level: Moderate
- Portage Avenue (Figure 71):
  - Existing pipes on Portage Avenue lack the capacity for a 10-year storm event
  - $420,000 Capital Improvement Cost
  - 6 LF of existing 12" pipe to be upsized to 27"
  - 556 LF of existing 15" pipe to be upsized to 27"
  - City's Priority Level: Low

December 18, 2018

Re: **DRAFT - Existing Conditions and Analysis Memo**

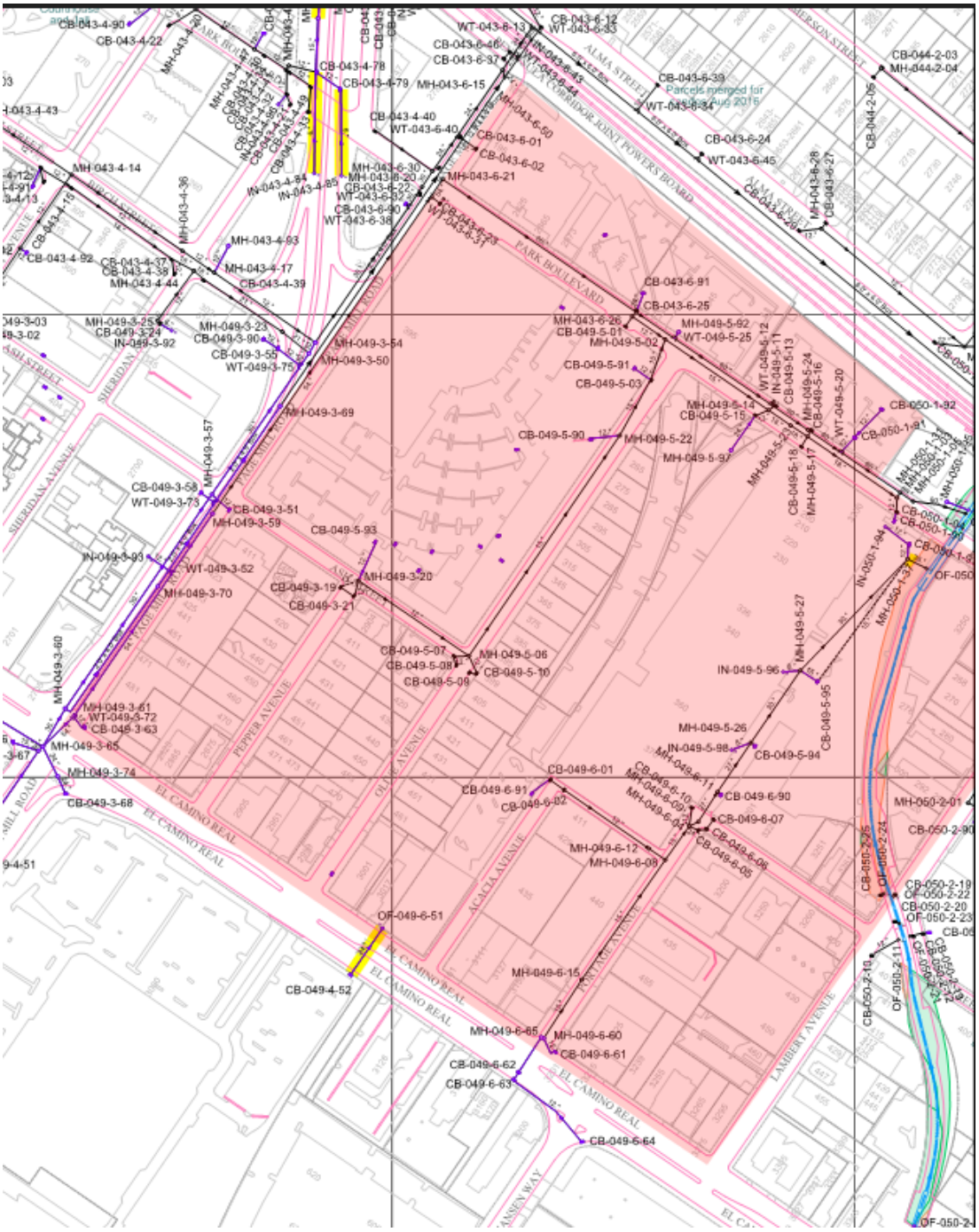

Figure 66: NVCAP Existing Storm Drain System. Produced and provided by the City of Palo Alto to BKF Engineers based on the City's GIS Data on 12/04/2018.

Matadero System Capacity Legend

- Pump Station
- Outfalls
- Existing system
- Street
- Streams

Flood Depth

- No flooding
- 0" to 6"
- 6" to 12"
- >12"

Figure 67: Matadero Area 10-Year System Capacity

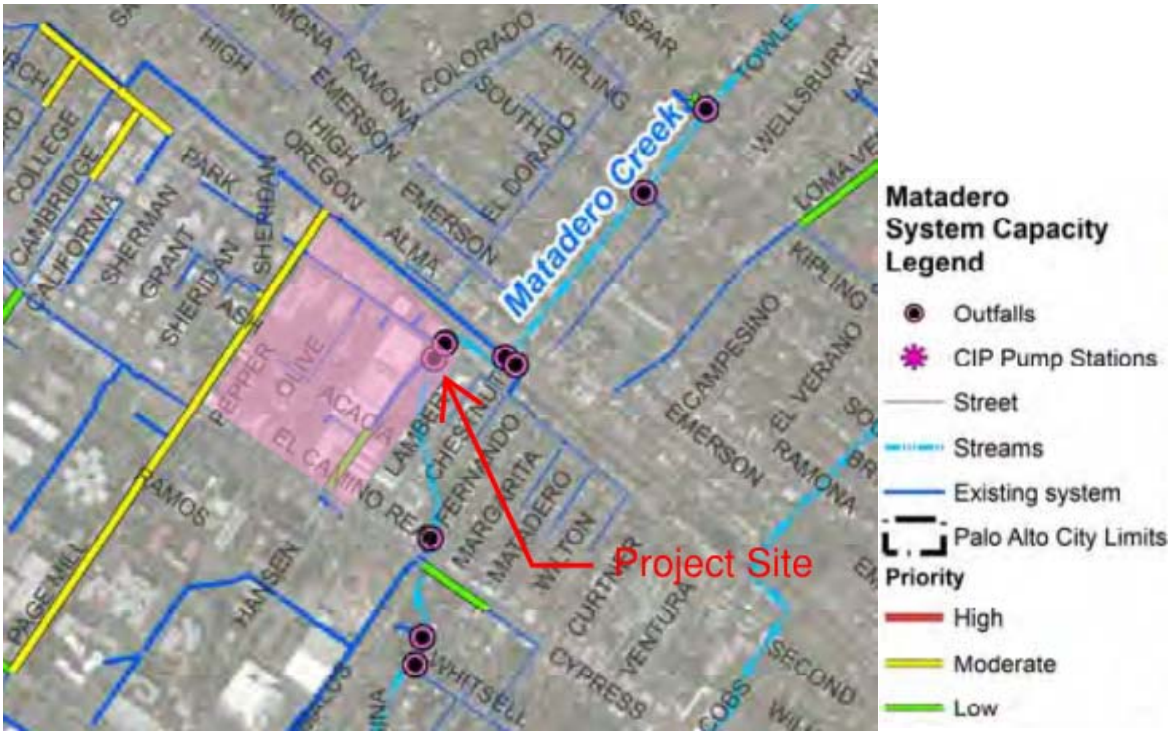

Figure 68: Matadero Area Recommended Improvements

A. Project ID: 21	B. Project Name: Oregon Expwy Pump
C. Project Location: Alma Street underpass on Oregon Expressway	
D. Priority: Moderate	
E. Type: Capacity F. Project Description: The existing pump station at the Alma Street underpass has experienced maintenance issues and nuisance flooding. Improvement to maintenance and/or capacity of this pump station to achieve a 10-year level of service is recommended.	

Ex. Capacity (cfs)	Imp. Capacity (cfs)
Unknown	5

G. Construction Subtotal	$210,000
H. Total Construction Cost	$270,000
I. Estimated CIP	$320,000

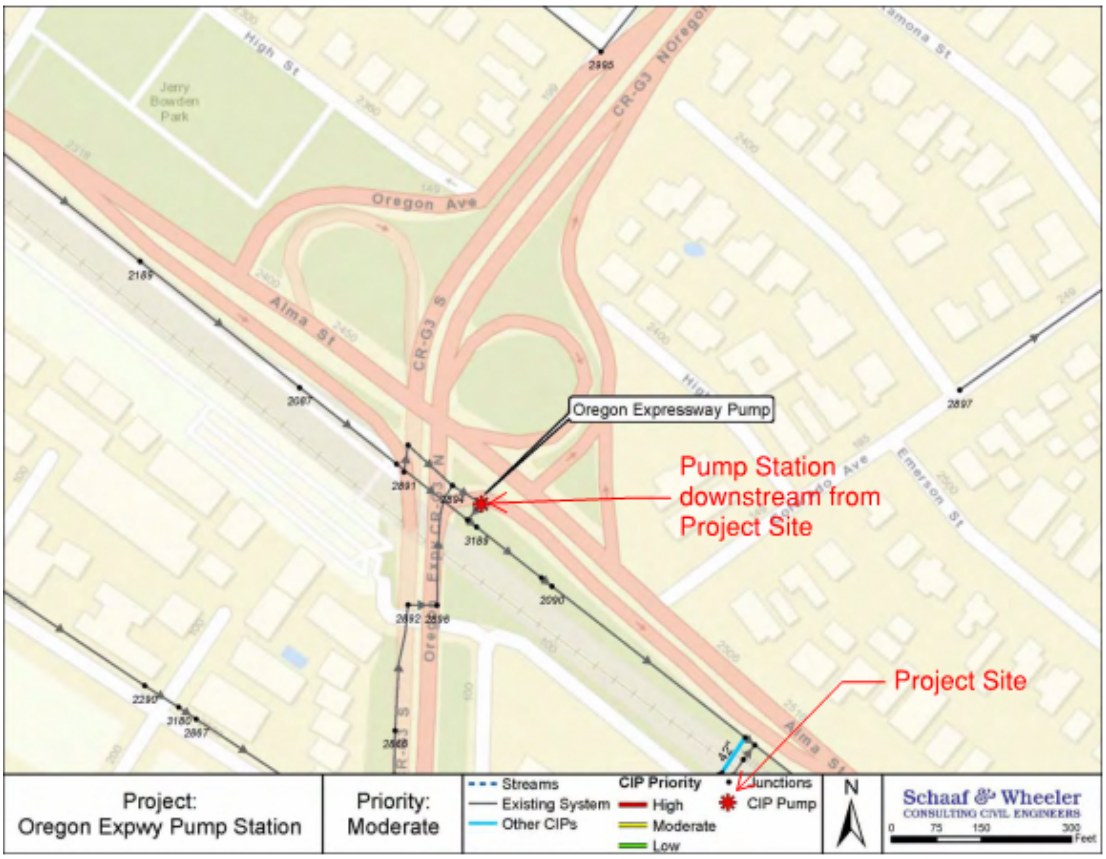

Figure 69: Recommended Oregon Expressway Pump

A. Project ID: 22 | **B. Project Name: Page Mill & Alma**

C. Project Location: Page Mill Rd. between El Camino Real and Alma St.

D. Priority: Moderate

E. Type: Capacity

F. Project Description: The existing pipes on Page Mill Rd. between El Camino and Alma St. lack the capacity required to convey 10-year storm runoff. Upsizing these pipes to achieve a 10 year level of service is recommended.

Ex. Diameter (in)	Imp. Diameter (in)	Length (ft)
12	21	74
24	42	380
30	42	1,407
36	48	96

G. Construction Subtotal **$1,150,000**
H. Total Construction Cost **$1,500,000**
I. Estimated CIP **$1,800,000**

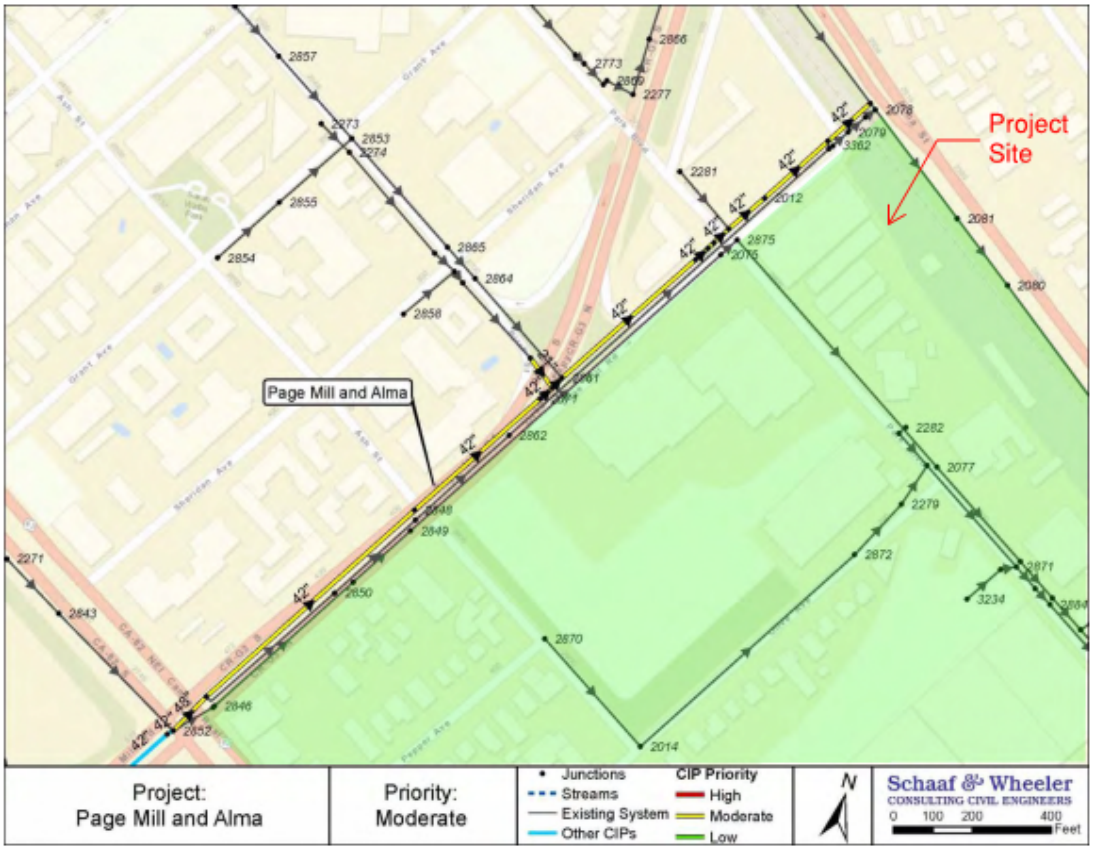

Figure 70: Recommended Page Mill Road Storm Drain Improvements

A. **Project ID: 56**	B. **Project Name: Portage**
C. **Project Location: Portage Ave. between El Camino Real and Ash St.**	
D. **Priority: Low**	

E. **Type: Capacity**
F. **Project Description:** The existing pipes on Portage Ave. lack the capacity required to convey 10-year storm runoff. Upsizing these pipes to achieve a 10 year level of service is recommended.

Ex. Diameter (in)	Imp. Diameter (in)	Length (ft)
12	27	6
15	27	556

G. **Planning/Design/Admin/Permitting** **$270,000**
H. **Total Construction Cost** **$350,000**
I. **Estimated CIP** **$420,000**

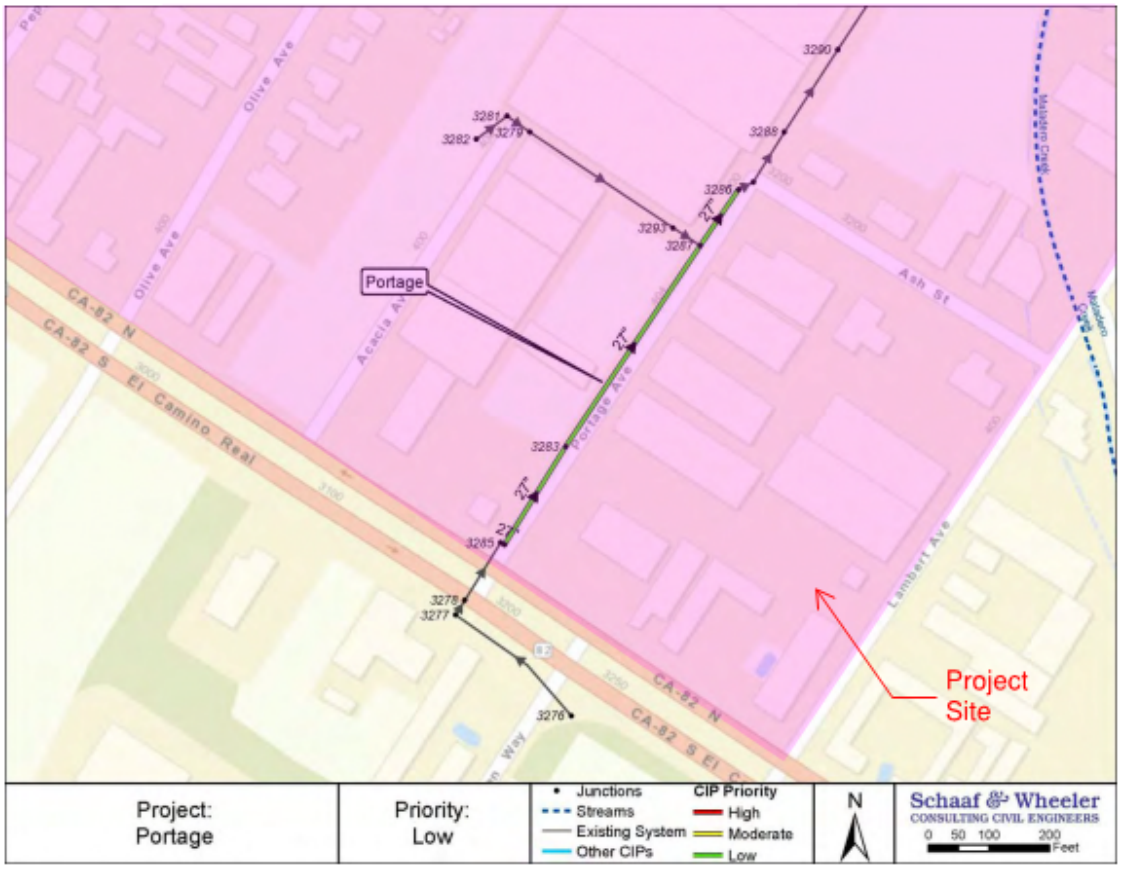

Figure 71: Recommended Portage Avenue Storm Drain Improvements

A. Wastewater Treatment

The NVCAP consultants have provided the following summary based on the information made available by the City of Palo Alto. Additional analysis will need to be performed by the City in order to determine the feasibility of serving the future development. In future efforts within the NVCAP preparation, the development square footages and locations will be determined, and this information will be provided to the City to perform their analysis of the existing conditions capacity.

The City of Palo Alto owns and operates the existing sanitary sewer mains within and surrounding the North Ventura Coordinated Area Plan[4]. The plan's wastewater will be treated at the Regional Water Quality Control Plant that is operated by the City of Palo Alto in partnership with the City of Mountain View, City of Los Altos, East Palo Alto Sanitary Sewer District, Town of Los Altos Hills and Stanford University.

The North Ventura Coordinated Area Plan currently consists of sanitary sewer mains within each public road and between the dead end of Portage Avenue and Park Boulevard. These existing sewer mains vary in size from 6" to 15". There are also two parallel sewer mains in Olive Avenue, (one 15" and one 8"), which connect to two parallel sewer mains in Park Avenue (one 12" and one 15").

When each development parcel prepares an application for their proposed building, they will utilize the existing sewer main size to compare to their proposed sewer discharges. If the proposed discharge is greater than the capacity of the existing main, the developer will need to identify mitigations to the system to accommodate the additional discharge. For the purposes of this report, the team has researched the City's reports and has identified the existing mains where the system is currently deficient, which is critical information to start the evaluation once a development is proposed. The City of Palo Alto's Wastewater Map shows that there will be upgrades to existing sanitary sewer mains in El Camino Real, Page Mill Road and Lambert Avenue (Figure 72).

[4] City of Palo Alto, Sanitary Sewer Management Plan, City of Palo Alto Wastewater Ops, 2016.

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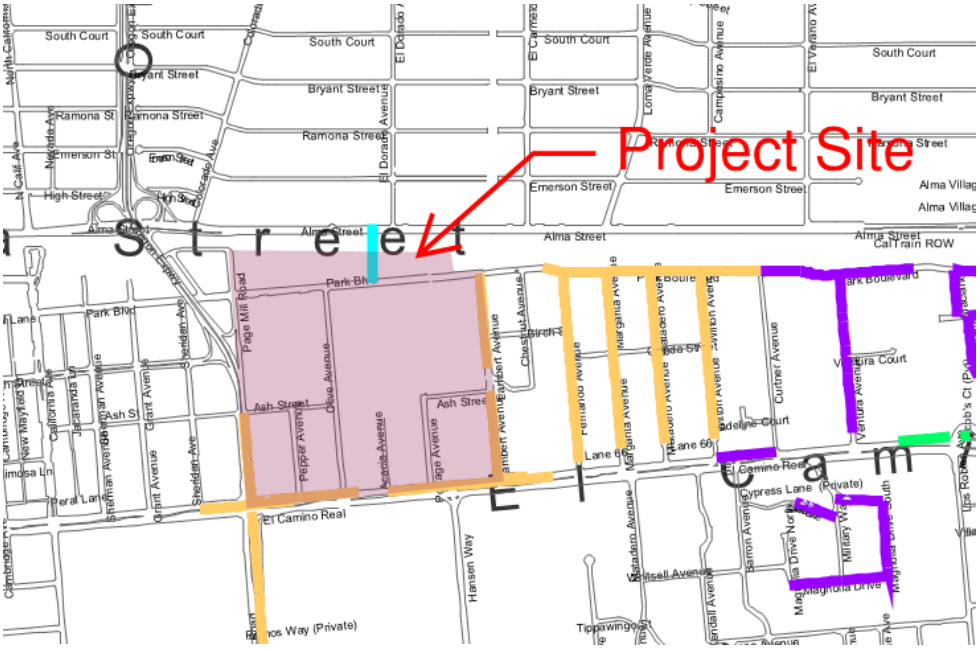

Figure 72: City of Palo Alto Wastewater Main Improvements

B. Potable Water

The NVCAP consultants have provided the following summary based on the information made available by the City of Palo Alto. Additional analysis will need to be performed by the City in order to determine the feasibility of serving the future development. In future efforts within the NVCAP preparation, the development square footages and locations will be determined, and this information will be provided to the City to perform their analysis of the existing conditions capacity.

The City of Palo Alto's water comes from the City and County of San Francisco's Regional Water Supply System (RWS), operated by the San Francisco Public Utilities Commission (SFPUC)5. This water supply consists almost entirely of Sierra Nevada snowmelt delivered through the Hetch Hetchy aqueducts, but also includes treated water produced by the SFPUC from its local watersheds and facilities in Alameda and San Mateo Counties. The SFPUC has adequate supplies to meet its contractual obligation to the wholesale customers (City of Palo Alto) of 184 MPG, through the year 2030. The City has an ISG of 17.07 MGD (or 19,118 SFY).

The water distribution system is operated by the City of Palo Alto Public Works. The North Ventura Coordinated Area Plan consists of existing water mains within the public streets (and between the dead end of Acacia Avenue and Park Boulevard), varying in size from 6" to 12". When additional detailed information is known for each parcel within the NVCAP (i.e. building type, construction type, floor areas, numbers of floors, hydrants required, etc.), then a more detailed fire flow and water analysis may be performed by the developer of that parcel. The City will provide existing flow and pressure to each developer upon request, for use in the individual analysis of each development. Analysis depends on building size, construction type and fire hydrant and fire sprinkler systems, in addition to the existing flow and pressure in the system.

C. Recycled Water

No recycled water is currently available in the study area. Based on the City's Recycled Water Pipeline and Strategic Plan, there will be future recycled water along Oregon Expressway, El Camino Real and Alma Street, however there is no current timeline for when these mains would be installed and when they would become available to the NVCAP. The nearest active recycled water mains are located on the other side of Highway 101 and in Mountain View.

D. Electrical Utilities

Based on the Electrical and Fiber Optic Service Maps provided by the City of Palo Alto (Figures 7071 and 7172), there are existing electrical and fiber optic lines serving the North Ventura Coordinated Area Plan. The existing electrical utilities consist of both overhead and underground lines. There are overhead electric lines serving existing buildings on each road within the NVCAP boundaries. Based on the City of Palo Alto's 2019-2023 Capital Improvement Program, the NVCAP is not within an area that the City plans on undergrounding between now and 2023. However, as part of the NVCAP's conditions, the City and PG&E may require the NVCAP underground all overhead electric lines. Per PG&E Rule 20B, "Undergrounding within Rule 20B is done when the area…involves

[5] City of Palo Alto, Urban Water Management Plan, City of Palo Alto Utilities, June 2016

both sides of the street for at least 600 feet. Under rule 20B, the applicant is responsible for the installation of the conduit, substructures and boxes."

The majority of the existing electrical utilities, including a 60KV electric line and a fiber optic backbone line, run along Lambert Avenue and Park Boulevard to an existing substation, "Park Boulevard Substation" at the corner of Park Boulevard and Lambert Avenue. The Park Boulevard Substation is not within the North Ventura Coordinated Area Plan. When additional detailed information has been provided for each parcel within the NVCAP, the developers will work with the City and the parcel's joint trench consultant to determine whether the existing dry utilities serving the parcel will be sufficient, or whether improvements need to be made to the systems serving the parcel.

Figure 73: City of Palo Alto Existing Electrical Utilities Map

December 18, 2018
Re: **DRAFT - Existing Conditions and Analysis Memo**

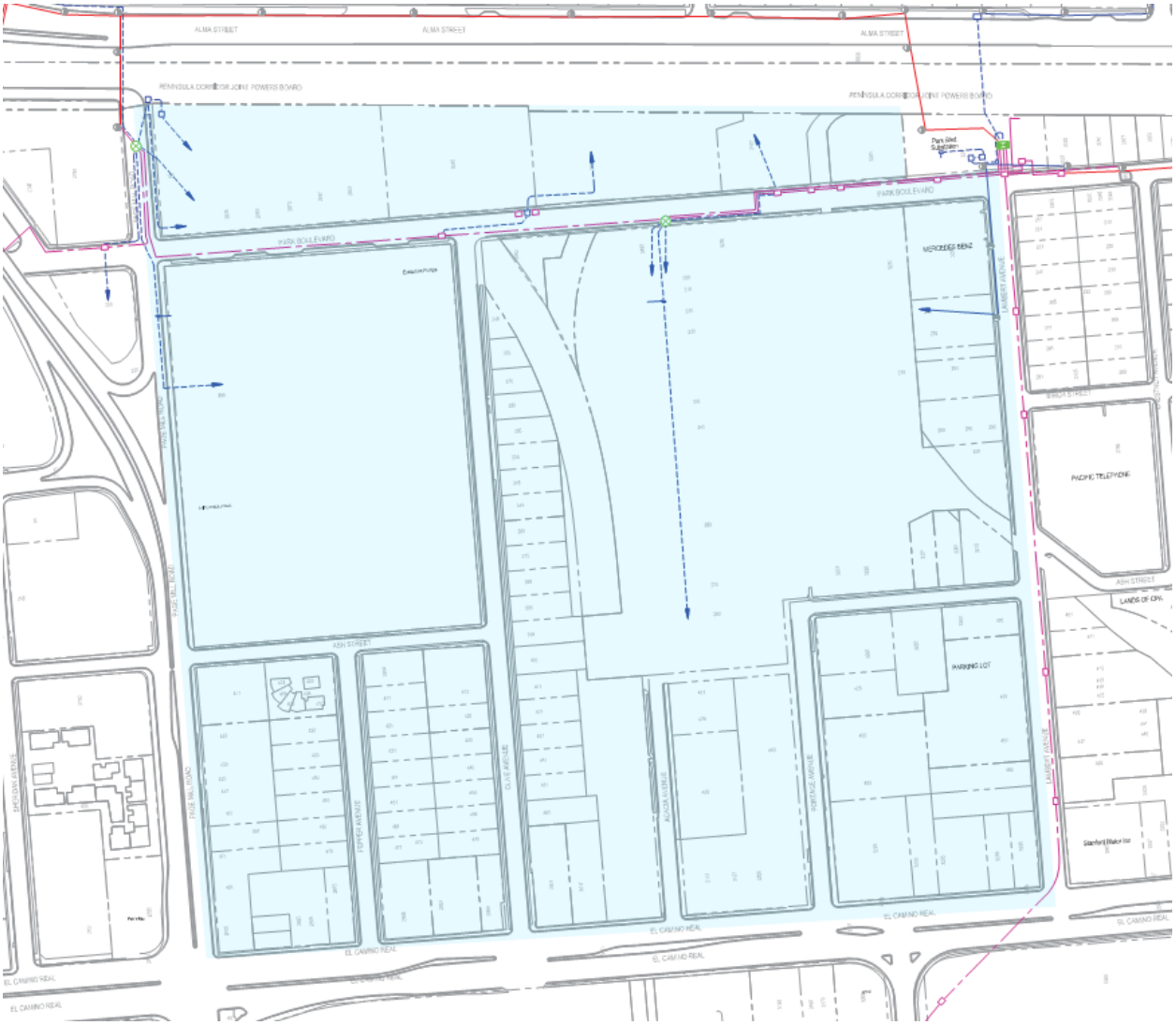

Figure 74: City of Palo Alto Existing Fiber Optic Utilities Map

E. Gas

Based on the existing underground Map provided by the City of Palo Alto to BKF Engineers on October 29, 2018, there are multiple gas mains servicing the NVCAP Plan Area. The existing gas mains vary in size from 2" to 4", and run within every public street in the North Ventura Coordinated Area Plan. When additional detailed information has been provided for each parcel within the NVCAP, the developers will work with the City and the parcel's joint trench consultant to determine whether the existing gas serving the parcel will be sufficient, or whether improvements need to be made to the gas systems serving the parcel.

F. Soil & Groundwater

The North Ventura Coordinated Area Plan is located within the California Olive Emerson regional plume of volatile organic compounds (VOC) affected groundwater, based on off-site contamination. Chlorinated VOCs associated with this regional plume have been found in soil and/or groundwater samples, as well as vapor intrusion at low concentrations. Additional Environmental reports and design recommendations from the project's Environmental consultant will need to be performed prior to the commencement of design and construction.

References

1. City of Palo Alto, Storm Drain Master Plan, Schaaf & Wheeler Consulting Civil Engineers, June 2015.
2. City of Palo Alto, Sanitary Sewer Management Plan, City of Palo Alto Wastewater Ops, 2016.
3. City of Palo Alto, Urban Water Management Plan, City of Palo Alto Utilities, June 2016.

cc: Project File
[continue list of recipients]

DAVID J. POWERS & ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS & PLANNERS

November 30, 2018

Nibedita Das
Perkins & Will
2 Bryant Street, Suite 300
San Francisco, CA 94105

RE: Existing Conditions Memo Regarding Hazardous Materials for the North Ventura Coordinated Plan Area

Ms. Das,
David J. Powers & Associates (DJP&A) was asked to provide a overview of the existing hazardous materials issues within the North Ventura Coordinated Plan Area (NVCPA). To assist with this effort, a Screening Level Phase I Environmental Site Assessment (ESA) was prepared by Cornerstone Earth Group in November 2018.

Based on the available information, the groundwater on-site and in the vicinity of the site has been impacted by the California Olive Emerson (COE) plume. The COE plume is a multi-source plume originating off-site from the Hewlett-Packard Company facilities at 395 and 640 Page Mill Road and the Varian Medical Systems, Inc. facility at 601 California Street. These facilities are located upgradient of the NVCPA and are considered open cases, meaning regulatory oversight and remediation are on-going. The Hewlett-Packard facility at 640 Page Mill Road is also on the National Priorities List, meaning it is classified as a Superfund site.

The San Francisco Bay Regional Water Quality Control Board (Water Board) is the lead agency for the COE soil and groundwater investigation and remediation (Order No. 94-130, issued September 21, 1994). In addition, the United Stated Environmental Protection Agency (USEPA) provides the Water Board with technical guidance and support for the Superfund site.

Hewlett-Packard and Varian have performed soil and groundwater remediation activities within the COE area since the 1980s. This has included hundreds of soil borings, cone penetration test borings, and installation of groundwater monitoring wells.

In addition to the COE area, records identified the Varian Study Area which is an approximately 70-acre area bounded by El Camino Real, Page Mill Road, and Hanover Street, within the Stanford Research Park (SRP). Varian previously had manufacturing operations in many of the 15 buildings in this area resulting in soil and groundwater contamination with VOC's. Separate from the COE, the Department of Toxic Substances Control (DTSC) is overseeing remediation and monitoring

activities at the Varian Study Area. Remediation activities within the Varian Study Area are similar to the activities in the COE area.

Based on recent groundwater monitoring data (Stantec, 2018), most of the parcels within the NVCPA are located within the impacted groundwater zone. Contaminants include trichloroethene (TCE) and tetrachloroethene (PCE) in concentrations that exceed the drinking water maximum contaminant level (MLC) of 5.0 µg/L.

In June 2011, the Water Board required Hewlett-Packard and Varian to complete indoor air testing in buildings within the COE area. Multiple rounds of testing were completed in residential and commercial buildings where TCE concentrations in the groundwater exceeded 50 and 100 µg/L, respectively. None of the air samples contained chemicals of concern attributable to vapor intrusion at levels in excess of long- and short-term screen levels or response action levels. Based on the findings, Stantec concluded that there is no unacceptable health risk to residential or commercial building occupants and the Water Board concurred with this conclusion in January 2015.

The USEPA and Water Board subsequently requested an assessment of indoor air within an expanded testing area (referred to as the Supplemental Assessment Area) which included commercial and residential properties with subsurface construction. During this assessment, none of the air samples contained chemicals of concern attributable to vapor intrusion at levels in excess of long- and short-term screen levels or response action levels. In October 2016, the Water Board approved the findings and stated that no further action on vapor intrusion in existing building in the study area is required.

In September 2015, the USEPA and the State of California completed the fourth Five-Year Review for the site. The Five-Year Review concluded that the cleanup remedy for the site currently protects human health and the environment because exposure to the contaminated groundwater is not currently possible and the vapor intrusion study did not find unacceptable vapor levels in currently occupied living or work spaces. The USEPA has determined that the source location is under control for human exposure but cannot state for certain that migration of contaminated groundwater has stabilized.

Deed restrictions attributable to the COE groundwater plume are in place for drinking water.

The ESA also identified 14 on-site facilities which were listed in the hazardous materials regulatory databases as outlined below.

Facility Name/Address	Status
Park Plaza: 195 Page Mill Road and 2825-2891 Park Boulevard	This site has been determined to be eligible for closure. Due to VOCs at the property, a vapor mitigation system was installed due to redevelopment of the site. The site has also been identified as a previous leaking underground storage tank (LUST) site. Residual petroleum hydrocarbons remain on-site.

Southern Pacific: 2901 Park Boulevard	This is an open but inactive case. Records from 1981 indicate a black oily material and elevated metal concentrations in a ditch along the boundary of the property.
3045 Park Boulevard	Prior to redevelopment in the mid 1980's, this property was used as a railroad spur and turn-around point for the Southern Pacific Railroad. The property was then occupied by Stanford BMW/Lamborghini until 2008 and then by Akins Body Shop and Hertz Rental Car until 2015. Petroleum hydrocarbons and metals were detected in the soil above the Water Board's environmental screening levels and VOC's and petroleum hydrocarbons were found in the groundwater. VOC's in soil vapor was also identified. Redevelopment of the site is currently planned. The case is open and a vapor intrusion mitigation system is included in the design of the proposed building.
Lockheed Martin: 3101 Park Boulevard	Contaminants were found in the groundwater from the regional plume and were not attributed to Lockheed Martin. This case is closed. The site has also been identified as a previous LUST site. Residual petroleum hydrocarbons remain on-site.
423, 433, 441, and 451 Page Mill	These parcels were historically residential properties, but elevated concentrations of pesticides were identified in the soil. Elevated lead concentrations were also identified as well as VOC's in soil vapor and groundwater. Redevelopment of the site is currently planned. The case is open and a site management plan and vapor mitigation plan was approved by the Water Board in 2016.
Stanford Cleaners 2875 El Camino Real	An underground storage tank was removed in 1986 and dry-cleaning equipment was removed in 2010. Soil containing PCE and Stoddard solvent was excavated in 2012 in accordance with the Water Board's approved Remedial Action Plan. Other measures included installation of a vapor intrusion mitigation system and installation of cut-off walls within utility trenches that cross portions of the property. This case is closed. The property has a deed restriction which precludes residential development on this parcel.
Sobrato 3001-3017 El Camino Real	This is an open case. Prior occupants included a plumbing supply company, a dry cleaner, a furniture store, a car dealership, an auto wrecking yard, and an automotive repair facility. A portion of the property was also in the railroad right of way.

	There are closed LUST cases at 3001 and 3017 El Camino Real, but residual petroleum hydrocarbons remain on-site in the soil and groundwater. Elevated metals have also been detected and VOCs were identified in the groundwater and soil vapor. Redevelopment of the site is currently planned. A Site Management and Contingency Plan was submitted to the Santa Clara County Department of Environmental Health in September 2018 and includes a vapor intrusion mitigation system.
Portage LLC 3111, 3127, and 3159 El Camino Real, and 440 Portage	This is an open case. Subsurface investigations identified VOC's in the groundwater and soil vapor. The contaminants were not attributable to the property. Redevelopment of the site is currently planned. A site mitigation plan was approved by the Water Board and USEPA in 2014. Agency comments indicate that additional evaluation of potential vapor intrusion concerns is required.
Mercer Processing 230 Portage	Mercer Processing, Inc. occupied the site from 1989 to 1999 and conducted freeze drying activities. TCE was used in these operations and impacted the soil on-site. Contaminated soils were removed under Water Board oversight in 2002. A no further action letter was issued, and the case is closed.
Bleibler Iron Works 411 Page Mill Jost Heating & Sheet Metal 412 Olive Carmean Trust 411 Acacia Dura Bond Bearing Co. 3201 Ash El Camino Center 340 Portage	These sites have been identified as previous LUST sites. These sites are closed, but residual petroleum hydrocarbons remain on-site.

In addition to these site-specific recognized environmental conditions, the entire NVCPA has the potential for residential soil contamination from historic agricultural activities, as well as lead from lead-based paint and metals from the rail operations.

Recommendations to Consider in the EIR

- Preparation and implementation of a corrective action/risk management plan to protect the health and safety of future site occupants, and establishment of appropriate management practices for handling and monitoring of impacted soil, soil vapor, and groundwater that may be encountered during construction. As part of the corrective action/risk management plan, a health and safety plan (HAP) should also be prepared for construction workers and other on-site workers.

- Completion of vapor intrusion evaluations for all redevelopment projects within the NVCPA pursuant to the most recent guidance document from DTSC, the State Water Board, and the Regional Water Board. Please note that these agencies are in the process of preparing a supplemental vapor intrusion guidance document to supplement the existing DTSC *2011 Vapor Instruction Guidance* and the Regional Water Board's *2014 Interim Framework.*

- Preparation and implementation of a vapor intrusion mitigation plan as needed based on the vapor intrusion evaluations.

- Soil sampling be completed along the former railroad track alignments on-site to assess shallow soil contamination levels.

These recommendations are intended to address all recognized environmental conditions summarized in this memo from both off-site and on-site sources of contamination.

If you have any questions or comments on this existing conditions memo, please feel free to contact me at 408-454-3402.

Sincerely,

Shannon George
Principal Project Manager