IV. SETTING, IMPACTS AND MITIGATION MEASURES

This chapter analyzes each topic that has been preliminarily identified as posing potentially significant impacts and, as such, constitutes the major portion of this EIR. Sections A through F of this chapter describe the environmental setting of the proposed project as it relates to each specific environmental topic, the impacts resulting from implementation of the project, and mitigation measures that would reduce impacts of the project, if necessary.

DETERMINATION OF SIGNIFICANCE

Under CEQA, a significant effect is defined as a substantial, or potentially substantial, adverse change in the environment.[1] The *CEQA Guidelines* direct that this determination be based on scientific and factual data. Each impact evaluation in this chapter is prefaced by criteria of significance, which are the thresholds for determining whether an impact is significant. These criteria of significance are based on those in Appendix G of the *CEQA Guidelines* and were developed in coordination with City of Albany staff.

ISSUES ADDRESSED IN THE DRAFT EIR

The following environmental issues are addressed in this chapter:

A. Transportation, Circulation and Parking
B. Air Quality
C. Global Climate Change
D. Noise
E. Biological Resources
F. Hydrology and Water Quality

FORMAT OF ISSUE SECTIONS

Each environmental issue section has two main subsections: 1) Setting, and 2) Impacts and Mitigation Measures. Any identified significant impacts are numbered and shown in bold type, and the corresponding mitigation measures are numbered and indented. Significant impacts and mitigation measures are numbered consecutively within each topic and begin with a shorthand abbreviation for the impact section (e.g., AIR for Air Quality).

[1] Public Resources Code Section 21068.

The following abbreviations are used for individual topics:

TRANS:	Transportation, Circulation and Parking
AIR:	Air Quality
GCC:	Global Climate Change
NOISE:	Noise
BIO:	Biological Resources
HYDRO:	Hydrology and Water Quality

The following notions are provided after each identified significant impact and after identification of mitigation measures:

LTS	=	Less than Significant
SU	=	Significant and Unavoidable
S	=	Significant

These notations indicate the significance of the impact before and after mitigation.

A. TRANSPORTATION, CIRCULATION AND PARKING

This section evaluates potential transportation and circulation impacts that may result from completing the proposed University Village at San Pablo Avenue project in the City of Albany. The evaluation of environmental effects presented in this section focuses on the potential transportation and circulation impacts associated with the full range of transportation concerns, including vehicle traffic circulation, pedestrian and bicycle circulation, public transit use, and parking. Feasible mitigation measures to reduce or eliminate potential significant impacts of the project are included.

1. Setting

The proposed University Village at San Pablo Avenue project would be located in the City of Albany along the west side of San Pablo Avenue on both sides of Monroe Street. The proposed site is surrounded by University of California student-family housing (University Village) to the west, residential neighborhoods to the east, and commercial, industrial, and office uses to the north and south. Figure IV.A-1 illustrates the area and its relationship to the surrounding roadway system. The "project" would consist of a 55,000 square foot Whole Foods Market, 30,000 square feet of retail space, and up to 175 multi-family senior housing units. Some Gill Tract research structures are located within the project site. The remainder of the project site is currently vacant, but was previously occupied by University Village student housing.

The scope of this analysis, the methodology used for the analysis, the existing setting for transportation and circulation issues, and an analysis of future transportation and circulation issues are documented in this section as described below.

a. Scope of Study. This study was conducted according to the requirements of the City of Albany and the Alameda County Congestion Management Agency (ACCMA). The basis of analysis is peak hour level of service calculations for key intersections in the area, and road segment volume-to-capacity (v/c) ratios for the Metropolitan Transportation System (MTS). The peak hours are defined as the highest hour for each intersection between the peak periods of 7:00 a.m. and 9:00 a.m. and between 4:00 p.m. and 6:00 p.m. on weekdays, and between 11:30 a.m. and 2:30 p.m. on Saturdays. These peak hours will be identified as the AM, PM, and Saturday peak hours, respectively.

The study intersections were selected in consultation with City staff. The 19 intersections selected for evaluation are intersections that are most likely to be affected by the proposed project and are listed below and shown on Figure IV.A-1.

1. Solano Avenue/San Pablo Avenue
2. Buchanan Street/I-80/I-580 Westbound ramps
3. Buchanan Street/I-80/I-580 Eastbound ramps
4. Buchanan Street/Eastshore Highway
5. Buchanan Street/Jackson Street
6. Buchanan Street/San Pablo Avenue
7. Marin Avenue/San Pablo Avenue
8. Marin Avenue/Masonic Avenue
9. Monroe Street/Jackson Street
10. Monroe Street/San Pablo Avenue
11. Dartmouth Street/San Pablo Avenue
12. Harrison Street/San Pablo Avenue
13. Gilman Street/I-80 Westbound ramps/ West Frontage Road
14. Gilman Street/I-80 Eastbound ramps
15. Gilman Street/Eastshore Highway
16. Gilman Street/6th Street
17. Gilman Street/8th Street
18. Gilman Street/San Pablo Avenue
19. Gilman Street/Hopkins Street

LSA

FIGURE IV.A-1

University Village at San Pablo Avenue Project EIR

Project Vicinity and Study Intersection Locations

N

1 = Study Intersection

NOT TO SCALE

SOURCE: FEHR & PEERS, 2009.

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The potential effects of the proposed mixed-use project on the study intersections were evaluated during the AM, PM, and Saturday peak hours for the following six scenarios:

- *Scenario 1: Existing Conditions.* Existing conditions were established using traffic counts collected in 2007 and 2008. At the time counts were collected, local schools were in session and conditions are assumed to be representative of typical weekday conditions.
- *Scenario 2: Existing Plus Project Conditions.* Existing plus Project conditions were developed by adding the University Village at San Pablo Avenue-generated traffic to existing counts.
- *Scenario 3: Near-Term (Year 2015) No Project Conditions.* Near-term (Year 2015) traffic forecasts were developed using traffic volumes forecast by the Alameda County Congestion Management Agency (ACCMA) travel demand model.
- *Scenario 4: Near-Term (Year 2015) Plus Project Conditions.* Near-term (Year 2015) plus project traffic forecasts were developed by adding the project-generated traffic to Scenario 3.
- *Scenario 5: Cumulative (Year 2035) No Project Conditions.* Cumulative (Year 2035) traffic forecasts were developed using traffic volumes forecast by the ACCMA travel demand model.
- *Scenario 6: Cumulative (Year 2035) Plus Project Conditions.* Cumulative (Year 2035) plus project traffic forecasts were developed by adding the project-generated traffic to Scenario 5.

b. Methodology. The methods used to evaluate the traffic conditions are described in the following sections. This discussion includes descriptions of the data requirements, analysis methodologies, and applicable level of service standards.

(1) Data Requirements. Intersection lane configurations, intersection turning movement counts, pedestrian and bicycle facilities, and public transit routes and facility locations were collected and signal timing plans were obtained from the City of Albany.

(2) Analysis Methodologies and Level of Service Standards. To measure and describe the operational status of a local roadway network, transportation engineers and planners commonly use a grading system called level of service (LOS). LOS is an indicator of roadway or intersection operational characteristics, ranging from LOS A (indicating free-flowing traffic conditions with little or no delay) to LOS F (representing over-saturated conditions where traffic flows exceed design capacity, resulting in long delays). Currently the City of Albany does not have adopted LOS standards. Since several of the study intersections are located in the City of Berkeley, guidelines established by the City of Berkeley are used for this study. The City of Berkeley has set LOS D as the lowest acceptable LOS for signalized and all-way stop-controlled intersections. The lowest acceptable LOS for side-street stop-controlled intersections is LOS F for the worst movement if the overall intersection does not satisfy the peak hour signal warrant.

Signalized Intersections. Operations of the signalized study intersections were calculated using the methodology in Chapter 16 of the Transportation Research Board's *Highway Capacity Manual 2000 (*HCM2000*)*. This methodology correlates the LOS to the average control delay experienced at the intersection in seconds per vehicle. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration. LOS definitions for signalized intersections are presented in Table IV.A-1. The analysis of signalized intersections was conducted using the SYNCHRO software package.

Table IV.A-1: Signalized Intersection Level of Service Definitions

Level of Service	Description	Average Control Delay Seconds/Vehicle
A	Operations with very low delay occurring with favorable progression and/or short cycle lengths.	≤ 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 10.0 to ≥ 20.0
C	Operations with average delay resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 20.0 to ≥ 35.0
D	Operations with longer delay due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35.0 to ≥ 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	> 55.0 to ≥ 80.0
F	Operation with delay unacceptable to most drivers occurring due to oversaturation, poor progression, or very long cycle lengths.	> 80.0

Source: Transportation Research Board, 2000. *Highway Capacity Manual 2000*.

Unsignalized Intersections. For unsignalized (all-way stop- and side-street stop-controlled) intersections, the LOS calculations were conducted using methods from Chapter 17 of the HCM2000. The LOS rating is based on the average control delay expressed in seconds per vehicle. At all-way stop intersections, LOS is based on the average delay experienced on all approaches. At side-street stop intersections, LOS is calculated for the stopped movements. Typically the movement (or lane, if more than one movement occurs in a lane) with the worst LOS rating is reported. Table IV.A-2 presents the LOS definitions for unsignalized intersections. Similar to signalized intersections, unsignalized intersections were analyzed using the SYNCHRO software package.

Table IV.A-2: Unsignalized Intersection Level of Service Definitions

Level of Service	Description	Average Control Delay Seconds/Vehicle
A	Little or no delay.	≤ 10.0
B	Short traffic delays.	> 10.0 to ≥ 15.0
C	Average traffic delays.	> 15.0 to ≥ 25.0
D	Long traffic delays.	> 25.0 to ≥ 35.0
E	Very long traffic delays.	> 35.0 to ≥ 50.0
F	Extreme traffic delays with intersection capacity exceeded.	> 50.0

Source: Transportation Research Board, 2000. *Highway Capacity Manual 2000*.

(3) Peak Hour Traffic Signal Warrants. To assess the need for signalization of a stop-controlled intersection, the *Manual of Uniform Traffic Control Devices* (MUTCD)[1] presents eight signal warrants. Satisfying one or more of the signal warrants could justify signalization of an intersection; however, the full set of warrants should be considered as part of an evaluation and engineering study before the decision to install a signal is made. In addition, satisfaction of one or more signal warrants does not in itself require an installation of a traffic signal. Peak hour volume

[1] Federal Highway Administration, 2000.

warrant (Warrant 3) analysis for urban conditions was conducted for the unsignalized study intersections.

c. Existing Transportation Setting. The proposed project would be located along the west frontage of San Pablo Avenue on both sides of Monroe Street. Figure IV.A-1 illustrates the area and its relationship to the surrounding road system including the study intersections. The following section generally describes the transportation system in the area, including key facilities of the roadway, transit, pedestrian, and bicycle networks.

(1) Existing Roadway Network. Regional access to the project site is provided by I-80 and I-580. Local access to the project site is provided by several arterial roads and local streets. A description of key roadways follows:

- *Interstate 80 (I-80)* is a major east-west freeway that begins in San Francisco County at Highway 101 and extends cross-country to New Jersey in the east. In Alameda County, I-80 is a major commute route connecting residents in the northeast Bay Area to employment centers in the region. In the vicinity of the project, I-80 has a north-south orientation. I-80 is also designated I-580 through Albany, Berkeley, and Emeryville. Through Albany, I-80 provides between three to six mixed-flow lanes and one high-occupancy vehicle (HOV) lane in each direction. Access to the project site from I-80 is provided via interchanges at Buchanan Street and Gilman Street. I-80 has an average daily traffic (ADT) volume of 277,000 vehicles per day between Buchanan Street and Gilman Street interchanges.[2]
- *Interstate 580 (I-580)* is a major east-west freeway that begins in Marin County at Highway 101 and traverses east across the Altamont Pass into San Joaquin County where it joins with Interstate 5. I-580 is also designated I-80 through Albany, Berkeley, and Emeryville. West of the junction with I-80, I-580 provides three westbound and two eastbound mixed-flow lanes. Access to the project site from I-580 is provided via ramps at Buchanan Street. I-580 has an ADT of 88,000 vehicles per day west of the junction with I-80.[3]
- *San Pablo Avenue* (State Route 123) is a four-lane north-south arterial with a center median or two-way left turn. The portion of San Pablo Avenue in the project area has a mix of fronting retail and office uses with on-street parking in both directions and a posted speed limit of 35 mph. San Pablo Avenue extends between 17th Street in Oakland in the south to Willow Avenue in Rodeo in the north. San Pablo Avenue is a designated State highway and has an ADT of 25,500 vehicles per day south of Marin Avenue.[4] Changes to San Pablo Avenue require review and approval from the California Department of Transportation (CalTrans).
- *Solano Avenue* is a two-lane east-west arterial that extends from Cleveland Avenue near I-80 in the west to the Northbrae Tunnel and Sutter Street in the east. Solano Avenue has a mix of fronting retail, office, and residential uses, with on-street parking in both directions and a posted speed limit of 25 miles per hour. Solano Avenue is the primary east-west truck route within the City of Albany.
- *Buchanan Street* is a two to four-lane east-west arterial that extends west of I-80/580 to San Pablo Avenue in the east in Albany. On-street parking is allowed on some segments of the westbound

[2] Caltrans, 2007 (http://dot.ca.gov/hq/traffops/saferesr/trafdata/2007all.htm).

[3] Ibid.

[4] Ibid.

direction. There is a posted speed limit of 25 miles per hour. Trucks are prohibited on Marin Avenue

- *Marin Avenue* is a two-lane east-west arterial with a center two-way left turn lane. It extends from Buchanan Street in the west and continues to Grizzly Peak Boulevard in the east. Marin Avenue has fronting single-family residential uses with on-street parking and bicycle lanes on both sides and a posted speed limit of 25 miles per hour.
- *Gilman Street* is a two-lane east-west arterial that extends from Frontage Road in the west to Hopkins Street in the east. Gilman Street has a mix of fronting retail, office, and industrial uses west of San Pablo Avenue and residential neighborhoods east of San Pablo Avenue. On-street parking is provided on both sides of the street. Bicycle lanes are provided west of San Pablo Avenue and sharrows[5] are provided east of San Pablo Avenue. An at-grade railroad crossing exists on Gilman Street west of 4th Street. Gilman Street has a posted speed limit of 35 miles per hour. Trucks are prohibited on Gilman Street east of San Pablo Avenue.
- *Eastshore Highway* is a two-lane north-south collector that runs parallel to and east of I-80/580 and extends between University Avenue to the south and Buchanan Street to the north. On-street parking is provided on some segments in the northbound direction. The posted speed limit on Eastshore Highway is 25 miles per hour.
- *Harrison Street* is a two-lane east-west collector that extends between 4th Street to the west to Stannage Avenue to the east, with on-street parking on both sides, and a posted speed limit of 25 miles per hour.
- *6th Street* is a two-lane north-south collector that extends between Dwight Way to the south and Harrison Street to the north. Sixth Street provides bicycle lanes and a continuous two-way center left turn lane between Gilman Street and Hearst Avenue. On-street parking is provided in both directions and the posted speed limit varies between 25 and 35 miles per hour.
- *Dartmouth Street* is a two-lane east-west local street that extends from San Pablo Avenue in the west and continues through residential neighborhoods to Pomona Avenue in the east, with on-street parking on both sides and a posted speed limit of 25 miles per hour.
- *Monroe Street* is a two-lane east-west local street that extends between Jackson Street to the west and continues through the project site to San Pablo Avenue in the east. Monroe Street is the main access roadway for University Village. It provides angled parking on both sides of the roadway and has a posted speed limit of 25 miles per hour.
- *Jackson Street* is a two-lane north-south local street that extends between 8th Street to the south and north of Castro Street. In the vicinity of the project, Jackson Street provides on-street parking on both sides of the roadway and a posted speed limit of 25 miles per hour.

(2) Existing Pedestrian Facilities. Pedestrian facilities include sidewalks, crosswalks, and pedestrian signals. The existing pedestrian facilities near the project site are illustrated on Figure IV.A-2 and existing pedestrian volumes at the study intersections are shown on Figure IV.A-3. Sidewalks are provided on both sides of most existing roadways in the study area. However as shown on Figure IV.A-2, there are gaps in the sidewalks on the east side of Jackson Street just south of Buchanan Street and on the west side of 10th Street south of Monroe Street. In addition, a fence on 10th Street, just south of the project site along Codornices Creek, prohibits vehicular and bicycle access and allows very limited pedestrian access between Albany and Berkeley.

[5] A "sharrow" is an arrow-like design painted on a roadway surface to indicate a shared bicycling and automobile route.

LSA

LEGEND

- = Pedestrian Push Button
- = Crosswalk
- = Sidewalk
- = Fence Barrier
- = Traffic Signal

N

NOT TO SCALE

FIGURE IV.A-2

University Village at San Pablo Avenue Project EIR

Existing Pedestrian Facilities Near Project Site

SOURCE: FEHR & PEERS, 2009.

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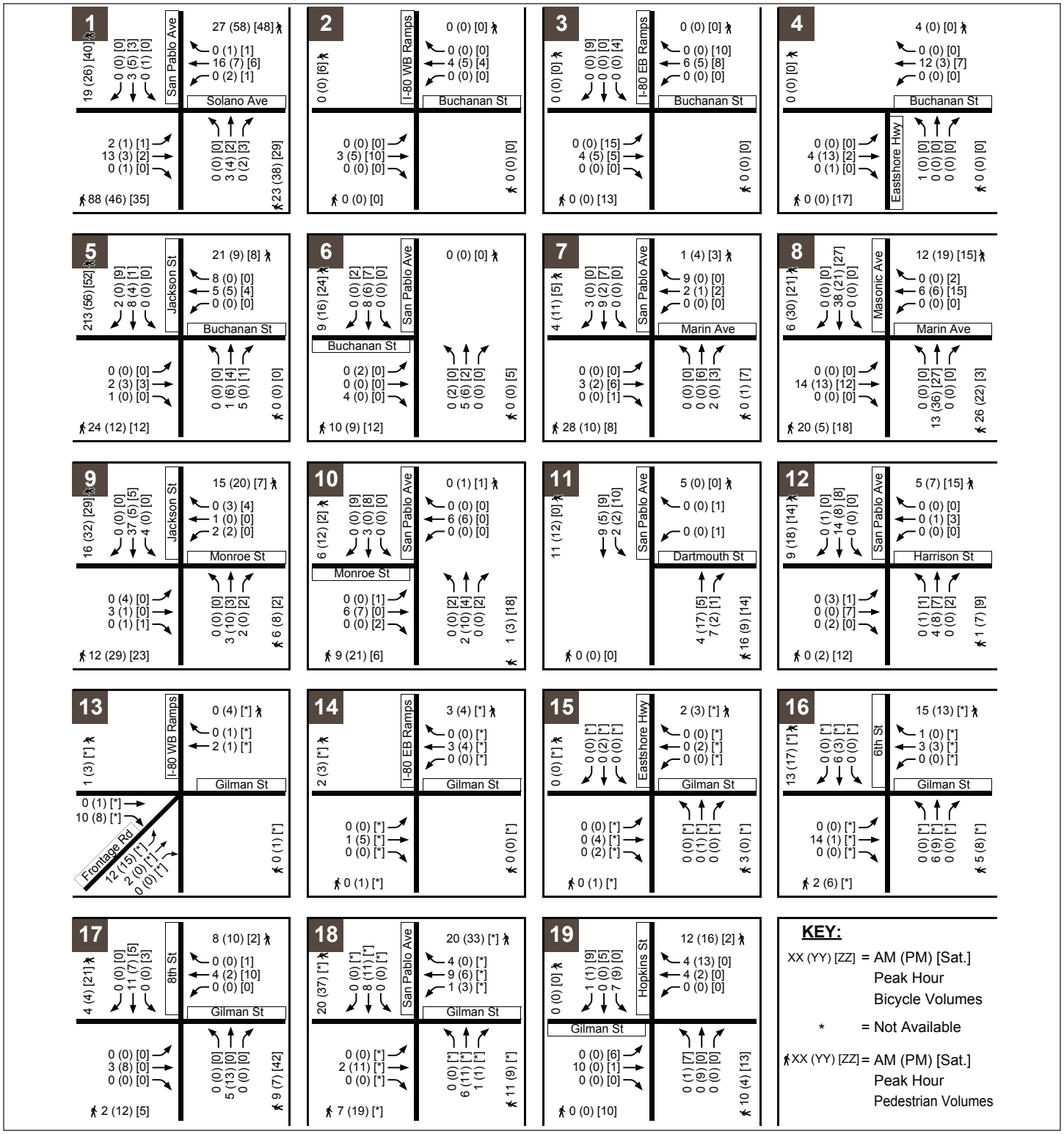

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FIGURE IV.A-3

University Village at San Pablo Avenue Project EIR

Existing Bicycle and Pedestrian Intersection Volumes

SOURCE: FEHR & PEERS, 2009.

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Pedestrian pathways are provided in the study area. The Ohlone Greenway is an off-street pedestrian/ bicycle thoroughfare that provides access to recreational facilities such as parks, community gardens, playing fields, and dog parks throughout the area. The Ohlone Greenway is a multi-city trail that parallels Masonic Avenue underneath the BART tracks in the vicinity of the project area. The Ohlone Greenway provides marked at-grade crossings at intersections with surface streets. The Ohlone Greenway is the primary bike route to nearby BART stations.

The San Francisco Bay Trail is a regional pedestrian/bicycle path that extends along the San Francisco and San Pablo Bays. In the study area, the trail is along Buchanan Street west of the I-80/ I-580 interchange and parallel to I-580 along the Bay north of Buchanan Street. The trail also runs parallel to West Frontage Road south of Gilman Street. Both the *Albany Bicycle Master Plan* and the *Berkeley Bicycle Plan* have proposed connecting the discontinuous segment of the trail from Gilman Street in Berkeley to Buchanan Street in Albany along the Bay. Other proposed pedestrian/bicycle paths near the project site include the Codornices Creek path between San Pablo Avenue and 6th Street, adjacent to the project site's southern edge, a path along Cleveland Avenue north of Buchanan Street, and a path along Buchanan Street between Pierce Street and San Pablo Avenue. Existing and proposed pedestrian/bicycle paths in the study area are highlighted on Figure IV.A-4.

All study intersections, except for the Buchanan Street/Eastshore Highway intersection, provide striped crosswalks on at least one approach. Pedestrian crossings on San Pablo Avenue are not marked at its intersection with Dartmouth Street; pedestrian crossings on Gilman Street are not allowed at the ramp-terminal intersections of the I-80/580 interchange; crossings across Buchanan Street are not allowed at the Eastshore Highway and the ramp-terminal intersections of the I-80/580 interchange. Pedestrian signal heads are provided at all signalized study intersections, except at the Gilman Street/ 6th Street intersection. Only the Gilman Street/San Pablo Avenue intersection provides pedestrian signal heads with countdown timers.

(3) Existing Bicycle Facilities. The Albany and Berkeley Bicycle Master Plans identify the following bicycle facilities types:

- Class I Paths – These facilities are located off-street and can serve both bicyclists and pedestrians. Recreational trails can be considered Class I facilities. Class I paths are typically 8 to 10 feet wide excluding shoulders and are generally paved.
- Class II Bicycle Lanes – These facilities provide a dedicated area for bicyclists within the paved street width through the use of striping and appropriate signage. These facilities are typically four to six feet wide.
- Class 2.5 Bikeways – These facilities are shared roadways that are signed and improved as a bikeway because they provide direct access to major destinations in the City of Berkeley. Bike lanes on these bikeways are not physically feasible. Most Class 2.5 facilities provide the shared lane marking (sharrow) to identify the bicycling path for bicyclists and to inform motorists to share the roadway.
- Class III Bicycle Routes – These facilities are found along streets that do not provide sufficient width for dedicated bicycle lanes. The street is then designated as a bicycle route through the use of signage informing drivers to share the roadway with bicyclists.

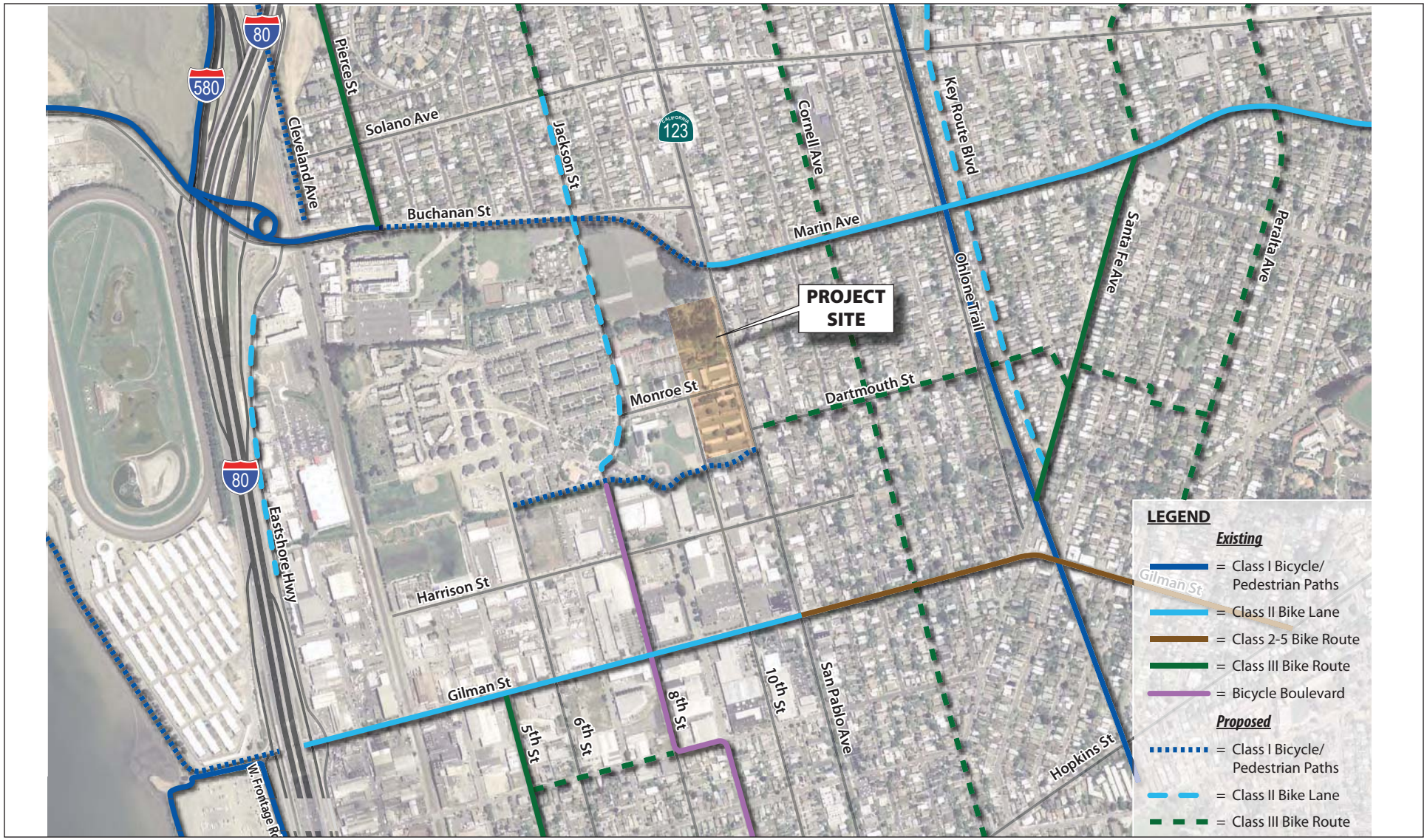

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FIGURE IV.A-4

University Village at San Pablo Avenue Project EIR

Existing and Proposed Bicycle Facilities

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SOURCE: FEHR & PEERS, 2009.

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Back of A-4

- Bicycle Boulevards – These facilities are found along streets that have been modified, as needed, to enhance bicyclists' safety and convenience. Modifications include bicycle right-of-way at intersections wherever possible, traffic control to help bicycles cross major streets, discouragement of non-local motor vehicle traffic, and signage informing drivers that the roadway is a priority route for bicyclist. [6]

Existing bicycle volumes at the study intersections are shown on Figures IV.A-3. Existing and proposed bicycle facilities in the study area are shown on Figure IV.A-4.

In the study area, Class I bicycle/pedestrian paths are provided on the Ohlone Greenway along the BART tracks, on Buchanan Street west of Pierce Street, along the Bay west of I-580 and north of Buchanan Street, and along West Frontage Road south of Gilman Street.

Class II bike lanes are provided on Marin Avenue east of Stannage Avenue, and on Gilman Street west of San Pablo Avenue. A designated Class 2.5 bike route is provided along Gilman Street east of San Pablo Avenue. Class III bike routes are provided along Pierce Street north of Buchanan Street, 5th Street south of Gilman Street, and Santa Fe Avenue south of Marin Avenue. Designated bicycle boulevards in the study area include 8th Street south of Codornices Creek.

Additional bicycle facilities planned near the project site include a combination of Class I and Class II facilities along the Buchanan Street/Marin Avenue corridor (See page 73 for more detail). Class I facilities are also planned along Cleveland Street north of Buchanan Street and along the Codornices Creek between San Pablo Avenue and 6th Street. Class II bike lanes are planned along Jackson Street south of Solano Avenue, Buchanan Street, and Eastshore Highway south of Buchanan Street. Class III bike routes are planned along Dartmouth Street, Cornell Avenue, Key Route Boulevard north of Santa Fe Avenue, Santa Fe Avenue north of Marin Avenue, and Peralta Avenue north of Marin Avenue.[7]

The City of Berkeley also plans to provide a Class I bicycle and pedestrian path connecting the existing path at West Frontage Road and Gilman Street in Berkeley to the existing path along Buchanan Street in Albany adjacent to the Bay. [8]

The Alameda County Congestion Management Agency (ACCMA)'s 2006 Countywide Bicycle Plan establishes a continuous network of bicycle facilities that connect the various communities in Alameda County. In the vicinity of the proposed project, the 2006 Countywide Bicycle Plan identifies the planned Buchanan Street/Marin Avenue bikeway as a high priority project, which qualifies the project for priority in funding and implementation.

(4) Existing Transit Service. Transit service providers in the project vicinity include Bay Area Rapid Transit (BART) which provides regional rail service; Alameda-Contra Costa Transit District (AC Transit) which provides local and Transbay bus service which provides connections to the Transbay Terminal in San Francisco; and UC Berkeley's BearTransit which provides shuttle service between the campus and off-campus student-family housing at University Village.

[6] City of Berkeley, *Berkeley Bicycle Plan,* 1998.

[7] City of Albany, *Albany Bicycle Master Plan,* 2003.

[8] City of Berkeley, *Berkeley Bicycle Plan Update,* 2005.

Figure IV.A-5 shows the existing transit services provided near the project site. Each service is described below.

Bay Area Rapid Transit. BART provides regional transit service to Alameda, San Francisco, Contra Costa, and San Mateo Counties. Weekday service is provided from 4:00 a.m. to 1:00 a.m., while Saturday and Sunday service is provided from 6:00 a.m. to 1:00 a.m., and 8:00 a.m. to 1:00 a.m., respectively. Trains have a typical headway of 15 minutes on weekdays and Sundays, and 20 minutes on Saturdays. The nearest BART stations to the project site are the North Berkeley and El Cerrito Plaza stations. Both stations are about 1.5 miles away from the project site. Considering the proposed uses at the site and the distance between the BART Stations and the project site, minimal usage of BART by project residents, employees, customers, or visitors is expected.

AC Transit. AC Transit provides bus service in 13 cities and adjacent unincorporated areas in Alameda County and Contra Costa County, with Transbay service to destinations in San Francisco, San Mateo and Santa Clara Counties. Five AC Transit bus routes directly serve the project site. Three more AC Transit bus routes operate within two blocks of the project site. The characteristics of the AC Transit routes operating in the project area are summarized in Table IV.A-3.

Local adult fares, as of January 2009, are $1.75. A transfer to other local AC Transit lines is an additional $0.25. TransBay adult fares are $3.50 and provide a free transfer to or from connecting AC Transit lines. Ten- and 31-day passes are also available for both local and Transbay services. Fares are paid on the bus, and passengers must have exact change. AC Transit also honors Translink, a universal fare card, which was introduced to the entire Bay Area region in the spring of 2008.[9] In addition, UC Berkeley students can ride free on all AC Transit routes with a Class Pass sticker affixed on student identification cards.

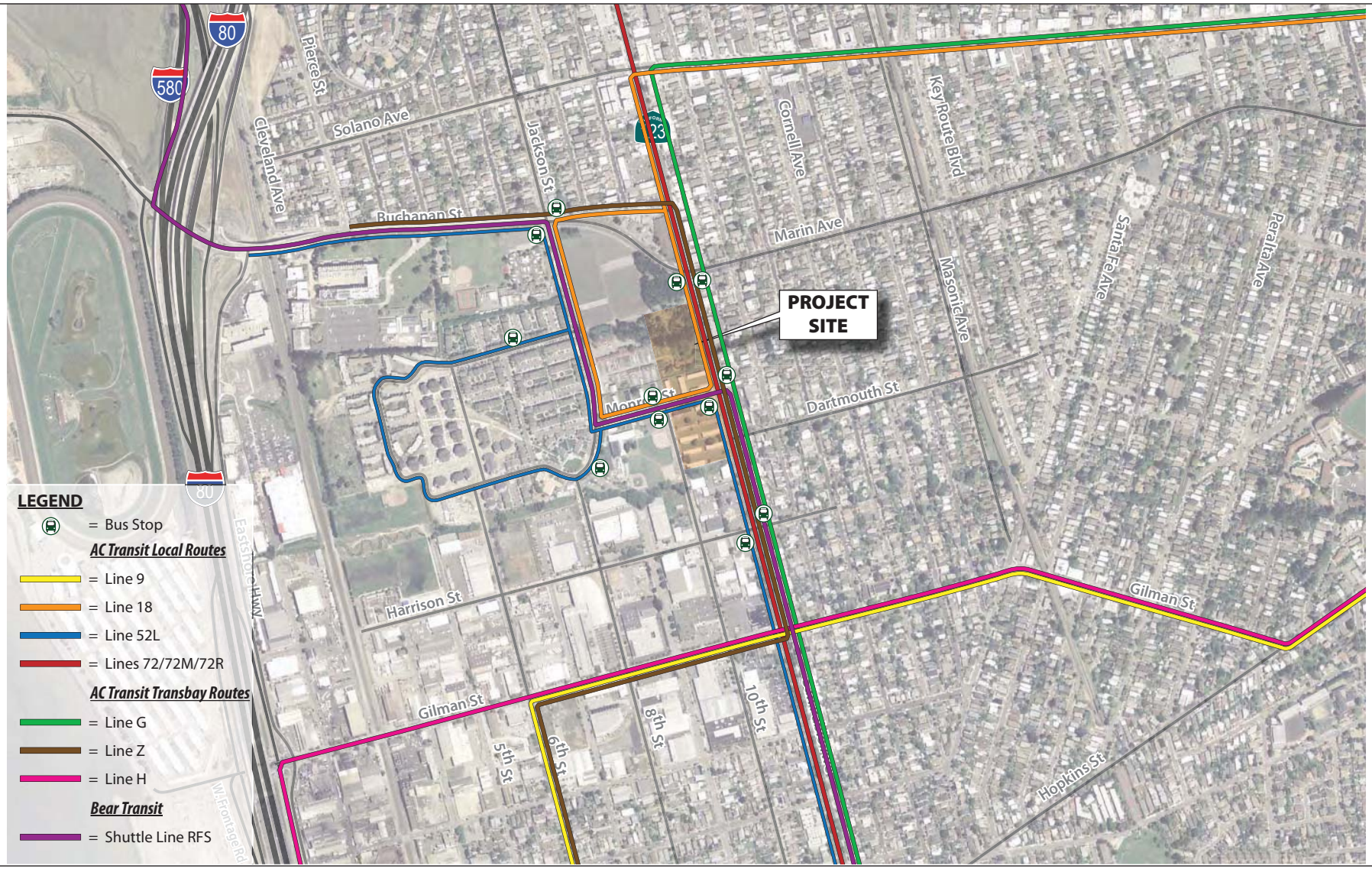
Table IV.A-4 shows the capacity and loads (passengers) of the AC Transit routes serving the project site and vicinity. Average and maximum load factors are also shown in Table IV.A-4. The load factor is defined as the ratio of occupied seats to the number of seats on the bus. A load factor of 100 percent or more indicates that the bus operates at or above its seated capacity. On average, these lines have excess capacity, with average daily load factors of 41 percent or less, and maximum daily load factors of 75 percent or less.

BearTransit. UC Berkeley provides shuttle service between the campus and university student family housing at University Village. BearTransit operates five weekday and two nightly shuttle routes. Shuttle fares are $1.00 for the general public and free for registered university students and faculty. Near the project site, BearTransit operates one shuttle route, the RFS line, which provides service between the campus and the Richmond Field Station with an interim stop at the University Village student-family housing; a stop is provided on Buchanan Street at Jackson Street. The RFS line operates between 7:00 a.m. and 6:00 p.m. on weekdays only. Shuttle headways range between 60 minutes during peak hours and 90 minutes during non-peak hours.[10]

(5) Existing Parking Characteristics. Parking supply was surveyed on the roadway segments surrounding the project site. Figure IV.A-6 illustrates parking supply and parking restrictions around the project site. Along San Pablo Avenue, 20, 90, and 120-minute time restricted

[9] AC Transit, 2009 (http://www.actransit.org).

[10] UC Berkeley Parking and Transportation Department, 2009 (http://pt.berkeley.edu/).



LSA

FIGURE IV.A-5

University Village at San Pablo Avenue Project EIR

Existing Transit Routes Near Project Site

NOT TO SCALE

SOURCE: FEHR & PEERS, 2009.

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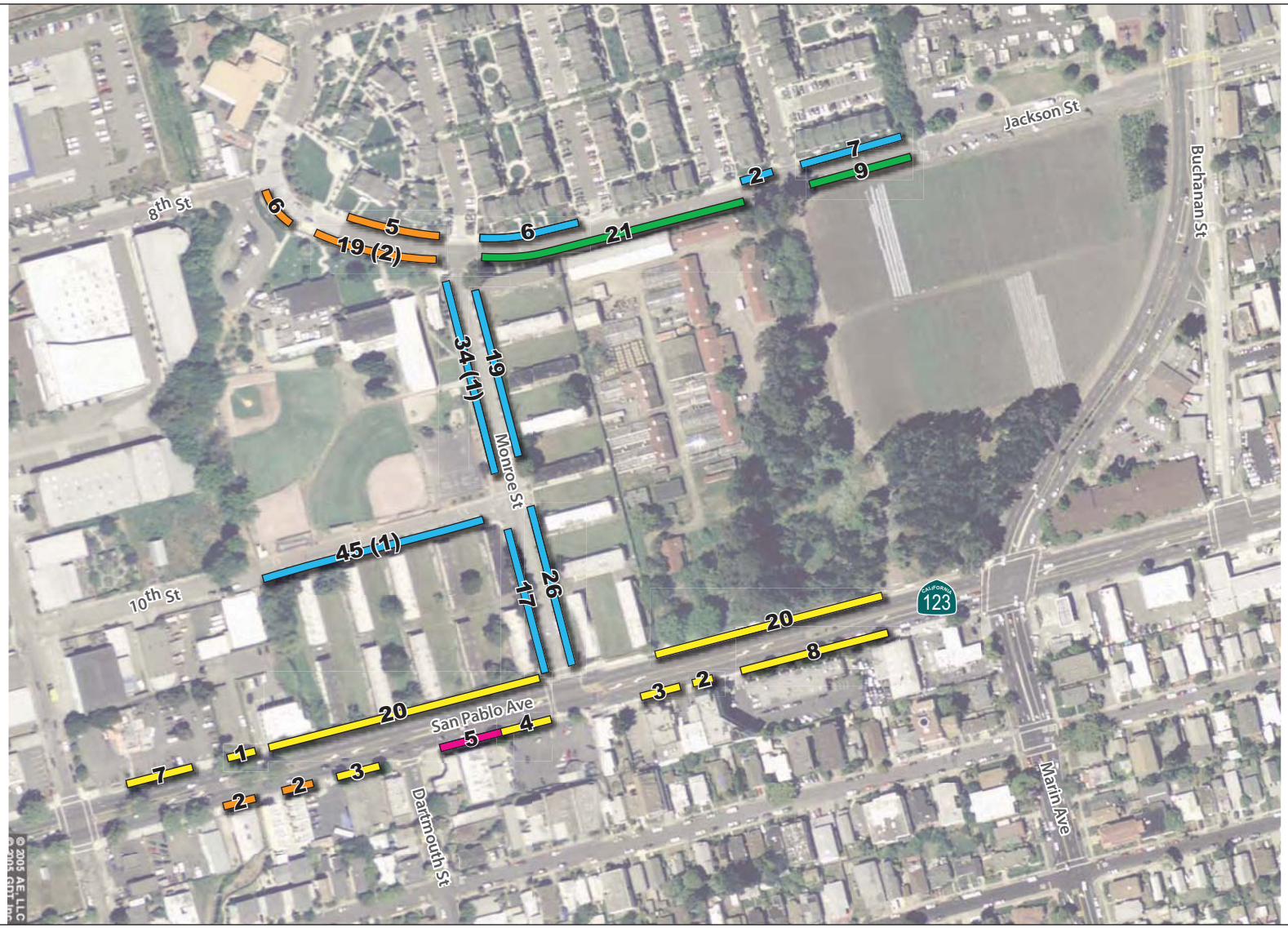

LSA

FIGURE IV.A-6

LEGEND

- = 2-hour Parking Limit
- = 90-minute Parking Limit
- = 20-minute Parking Limit
- = Permit Parking Only
- = Unrestricted Parking
- XX (YY) = Total Available Spaces (# of Disabled Spaces)

N

NOT TO SCALE

University Village at San Pablo Avenue Project EIR

Existing Parking Supply and Restrictions

SOURCE: FEHR & PEERS, 2009.

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Table IV.A-3: AC Transit Service Summary

Line	Route	Nearest Stop	Weekday		Weekend	
			Hours	Headway	Hours	Headway
Local Routes						
9	Berkeley Marina to Claremont Avenue	Gilman Street at San Pablo Avenue	6:00 a.m. to 9:00 p.m.	20 minutes (peak); 30 minutes (off-peak)	7:00 a.m. to 9:00 p.m.	30 minutes
18	Albany City Hall to Montclair	Monroe Street at 10th Street	5:00 a.m. to 12:00 a.m.	15 minutes (peak); 20 minutes (off-peak)	6:00 a.m. to 12 a.m.	20 minutes
52L	UC Berkeley to El Cerrito Plaza BART	San Pablo Avenue at Monroe Street	6:00 a.m. to 12:00 a.m.	10 minutes (peak); 30 minutes (off-peak)	6:00 a.m. to 12:00 a.m.	30 minutes
72	Oakland Amtrak Station to Hilltop Mall Shopping Center	San Pablo Avenue at Monroe Street	4:00 a.m. to 1:00 a.m.	30 minutes (peak); 40 minutes (off-peak)	5:00 a.m. to 1:00 a.m.	30 minutes (peak); 40 minutes (off-peak)
72M	Oakland Amtrak Station to Richmond BART	San Pablo Avenue at Monroe Street	5:00 a.m. to 12:00 a.m.	30 minutes (peak); 40 minutes (off-peak)	5:30 a.m. to 12:00 a.m.	30 minutes (peak); 40 minutes (off-peak)
72R	Jack London Square to Contra Costa College	San Pablo Avenue at Gilman Street	6:00 a.m. to 8:00 p.m.	12 minutes	n/a	n/a
Transbay Routes						
G	El Cerrito Plaza BART to San Francisco Transbay Terminal	San Pablo Avenue at Monroe Street	Westbound: 5:30 a.m. to 9:00 a.m.; Eastbound: 3:30 p.m. to 8:00 p.m.	30 minutes	n/a	n/a
H	Barrett Avenue at San Pablo Avenue to San Francisco Transbay Terminal	Gilman Street at San Pablo Avenue	Westbound: 6:00 a.m. to 9:00 a.m.; Eastbound: 4:00 p.m. to 9:00 p.m.	20 minutes	n/a	n/a
Z	Buchanan Street at Pierce Street to San Francisco Transbay Terminal	San Pablo Avenue at Monroe Street	Eastbound: 7:00 a.m. to 9:00 a.m.; Westbound: 4:30 p.m. to 7:00 p.m.	30 minutes	n/a	n/a

Source: AC Transit, January, 2009.

Table IV.A-4: AC Transit Loads, Boardings and Alightings (Average Weekday)

Bus Line	Stop Location	Direction	Average Capacity (Seats)[a]	Avg. Load[b]	Avg. Load Factor[c]	Maximum Load[d]	Max. Load Factor[e]	Boardings (On's)[f]	Alightings (Off's)[g]
9	Gilman Street at San Pablo Avenue	EB	25	5.4	22%	10	40%	25	10
		WB		4.9	20%	12	48%	12	29
18	Monroe Street at San Pablo Avenue	EB	35	1.6	5%	9	26%	6	1
		WB		n/a	n/a	n/a	n/a	n/a	n/a
	San Pablo Avenue at Marin Avenue	EB	35	1.3	4%	7	20%	71	0
		WB		0.5	1%	14	40%	0	66
52L	San Pablo Avenue at Monroe Street	NB	43	n/a	n/a	n/a	n/a	n/a	n/a
		SB		10.1	23%	32	74%	19	4
	Monroe Street at 10th Street	NB	43	7.0	16%	24	56%	3	39
		SB		9.8	23%	32	74%	7	1
	San Pablo Avenue at Harrison Street	NB	43	7.6	18%	26	60%	2	13
		SB		10.2	24%	32	74%	5	1
72/72 M	San Pablo Avenue at Harrison Street	NB	44	13.0	30%	27	61%	6	15
		SB		12.3	28%	27	61%	10	6
	San Pablo Avenue at Monroe Street	NB	44	12.9	29%	27	61%	9	11
		SB		12.3	28%	28	64%	14	12
	San Pablo Avenue at Marin Avenue	NB	44	12.9	29%	28	64%	7	12
		SB		12.2	28%	28	64%	13	19
72R	San Pablo Avenue at Gilman Street	NB	40	14.6	37%	33	83%	82	127
		SB		15.7	39%	35	88%	96	71
G	San Pablo Avenue at Gilman Street	EB	56	12.3	22%	19	34%	0	5
		WB		20.4	36%	35	63%	3	0
	San Pablo Avenue at Monroe Street	EB	56	11.2	20%	15	27%	0	9
		WB		20.0	36%	35	63%	10	0
	San Pablo Avenue at Marin Avenue	EB	56	10.8	19%	15	27%	0	4
		WB		18.4	33%	30	54%	6	0
H	Gilman Street at San Pablo Avenue	EB	54	14.5	27%	27	50%	0	5
		WB		22.4	41%	34	63%	4	1
Z	San Pablo Avenue at Harrison Street	EB	53	0.7	1%	2	4%	0	0
		WB		1.9	4%	4	8%	0	0
	San Pablo Avenue at Monroe Street	EB	53	0.7	1%	2	4%	0	0
		WB		1.9	4%	4	8%	0	0
	San Pablo Avenue at Marin Avenue	EB	53	0.6	1%	2	4%	0	0
		WB		1.9	4%	4	8%	7	0

Bold indicates maximum load factor above seating capacity.

[a] Average capacities are a weighted average of recommended assignment of buses per *AC Transit Bus Deployment, December 2008 Sign Up*

[b] Number of passengers on the bus averaged on a typical weekday.

[c] Average load divided by average seated capacity.

[d] Maximum number of passengers on the bus observed on a typical weekday.

[e] Maximum load divided by average seated capacity.

[f] Total number of passengers boarding the bus at this location on a typical weekday.

[g] Total number of passengers alighting the bus at this location on a typical weekday.

Source: Data collected June 2006 – June 2007 and provided by Howard Der, AC Transit, September 2008.

on-street parking spaces are provided; reserved permit parking spaces for residents of the old University Village facilities are provided along Monroe Street, 10th Street, and segments on Jackson Street.

Unrestricted and two-hour restricted parking is also provided along Jackson Street. Time-restrictions apply Monday through Saturday between 9:00 a.m. and 6:00 p.m. Although reserved parking signs are provided along Monroe Street and 10th Street, the permits may no longer be applicable due to the demolition of the older University Village facilities. Parking occupancy was observed around noon on a typical weekday on Wednesday, September 24, 2008; parking spaces along Jackson Street were about 50 percent occupied, spaces along Monroe Street were 30 percent occupied, spaces along 10th Street were 0 percent occupied, and spaces along San Pablo Avenue were about 20 percent occupied.

(6) Existing Conditions Intersection Configurations, Control and Traffic Volumes. Weekday AM and PM peak period intersection vehicle, pedestrian, and bicycle turning movement counts were collected in May 2008. Saturday peak period counts were also collected; for study intersections 1 through 12, 17, and 19, counts were collected in September 2008. For the remaining study intersections, the Saturday mid-day counts presented in the *West Berkeley Circulation Master Plan Existing Conditions Report*[11] were used. Counts for that report were collected in September and October 2007. Existing vehicle traffic volumes are shown on Figure IV.A-7 and the existing intersection configurations and controls are provided on Figure IV.A-8.

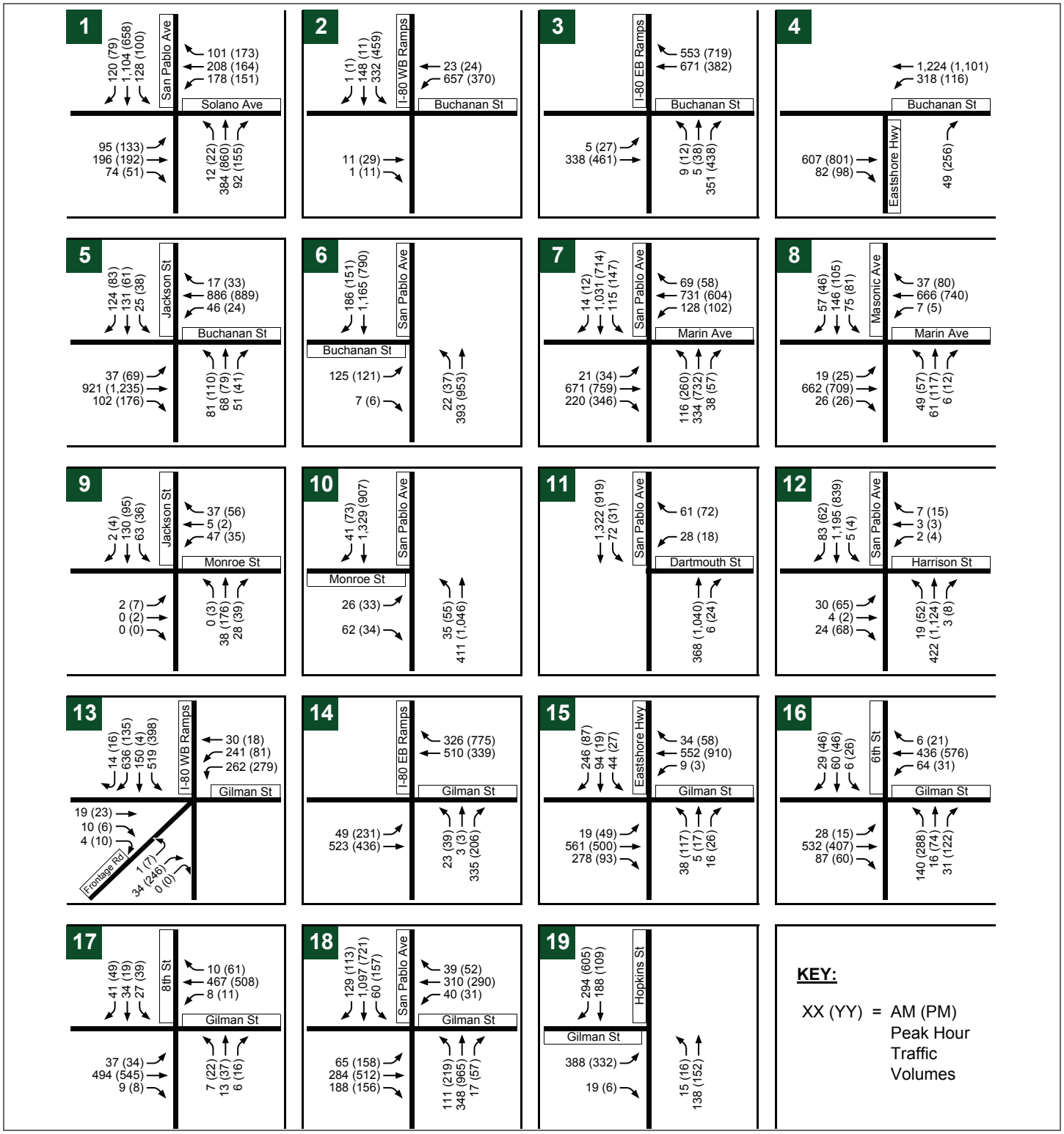
(7) Existing Conditions Intersection Analysis. Intersection service levels were calculated using the existing signal timings (for signalized intersections), turning movement counts, pedestrian and bicycle volumes, and lane configurations during the AM, PM and Saturday peak hours. The results are summarized in Table IV.A-5. The calculation worksheets are provided in Appendix B.

In the Project study area, the Gilman Street interchange along with the adjacent frontage roads experience heavy congestion during all peak periods of the day. Significant queuing occurs on the I-80/I-580 westbound off-ramp, which sometimes spills back onto the mainline during peak periods. Queuing at the interchange also increases when rail activity at the at-grade railroad crossing on Gilman Street blocks the roadway. In addition, major intersections along San Pablo Avenue also experience excessive delay during peak periods.

As shown in Table IV.A-5, the following study intersections operate at an unacceptable LOS:

- The signalized Marin Avenue/San Pablo Avenue (#7) intersection currently operates at LOS F during the PM peak hour
- The unsignalized Harrison Street/San Pablo Avenue (#12) currently operates at LOS F in the eastbound approach during the AM, PM, and Saturday peak hours
- The unsignalized Gilman Street/I-80 Westbound Ramps (#13) currently operates at LOS F in the northbound and southbound approaches during the AM, PM, and Saturday peak hours
- The unsignalized Gilman Street/I-80 Eastbound Ramps (#14) currently operates at LOS F in the northbound approach during the Saturday peak hour
- The unsignalized Gilman Street/Eastshore Highway (#15) currently operates at LOS F in the northbound and southbound approaches during the AM, PM, and Saturday peak hours

[11] Wilbur-Smith Associates, 2007. *West Berkeley Circulation Master Plan Existing Conditions Report*. October



LSA

FIGURE IV.A-7a

University Village at San Pablo Avenue Project EIR

Existing (2008) Peak Hour Intersection Volumes

SOURCE: FEHR & PEERS, 2009.

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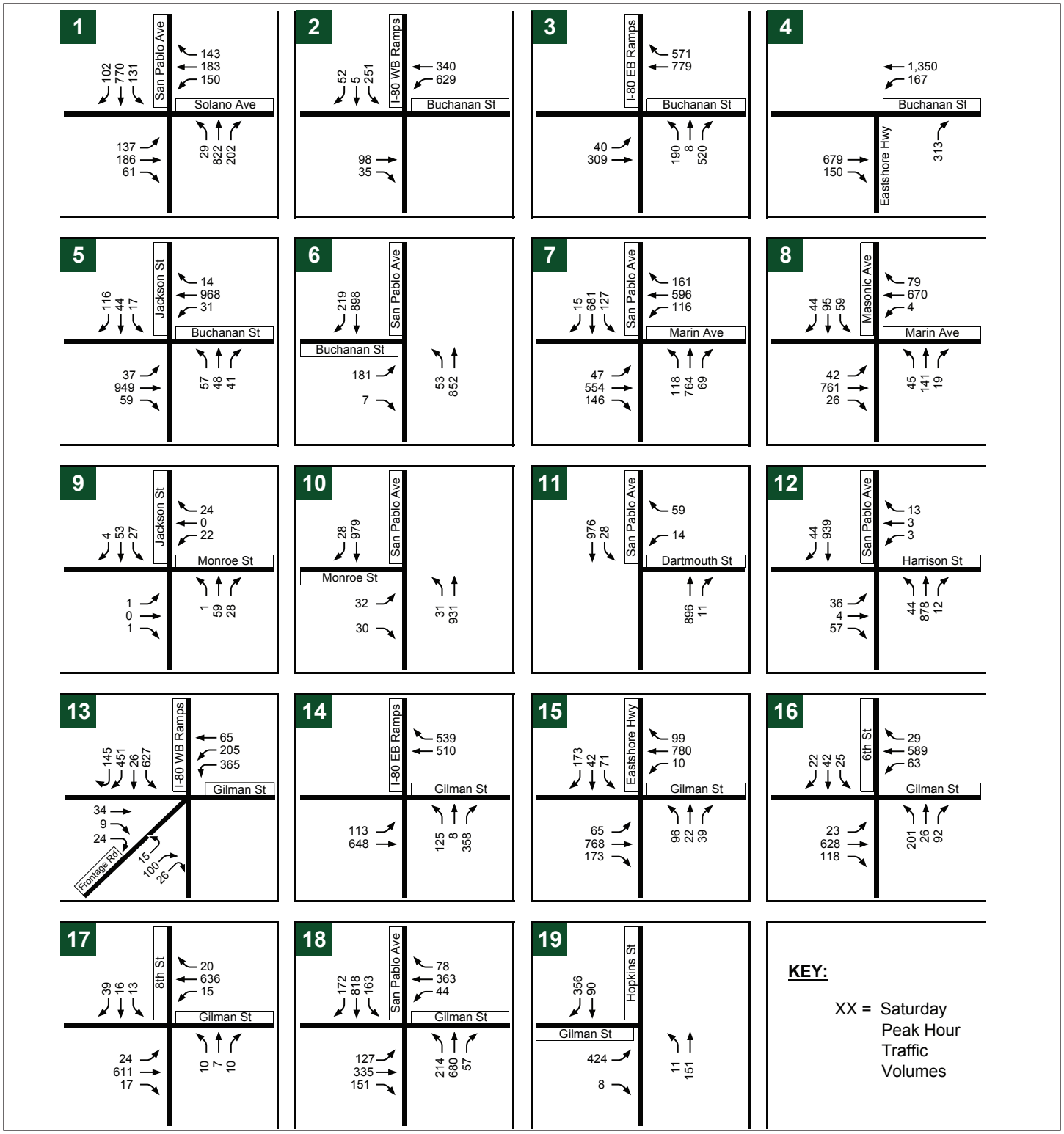

LSA

FIGURE IV.A-7b

University Village at San Pablo Avenue Project EIR

Existing (2008) Saturday Peak Hour Intersection Volumes

SOURCE: FEHR & PEERS, 2009.

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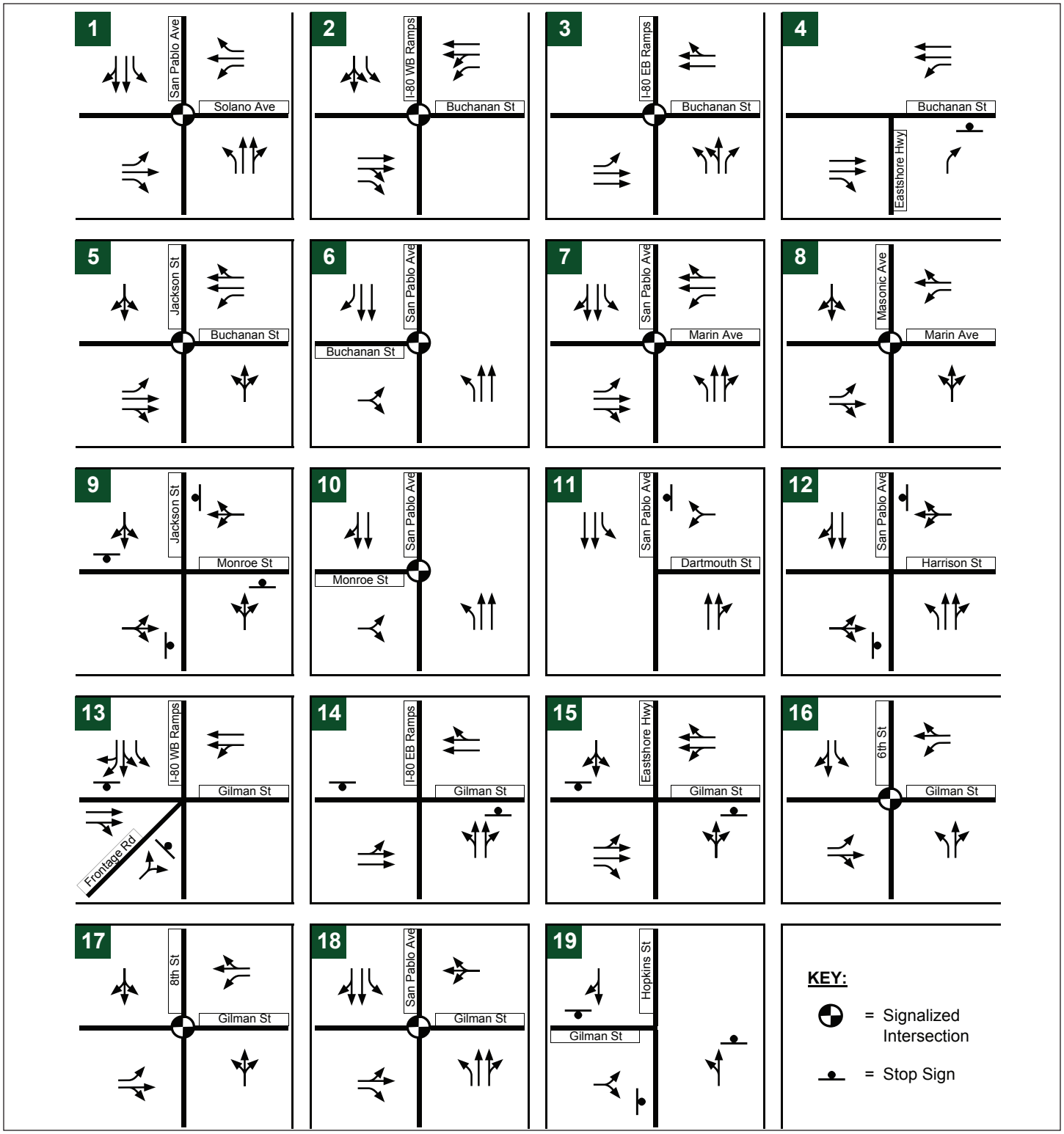

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FIGURE IV.A-8

University Village at San Pablo Avenue Project EIR

Existing Traffic Controls and Lane Configurations

SOURCE: FEHR & PEERS, 2009.

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Table IV.A-5: Existing Conditions Peak Hour Intersection Level of Service

	Intersection	Control	Peak Hour	Delay [a] (sec)	LOS
1.	Solano Avenue/San Pablo Avenue	Signal	AM	34	C
			PM	33	C
			Saturday	33	C
2.	Buchanan Street/I-80/I-580 Westbound ramps	Signal	AM	12	B
			PM	12	B
			Saturday	15	B
3.	Buchanan Street/I-80/I-580 Eastbound ramps	Signal	AM	9	A
			PM	13	B
			Saturday	13	B
4.	Buchanan Street/Eastshore Highway	Side-Street Stop	AM	2 (12 WBL)	A (B)
			PM	2 (16 NB)	A (C)
			Saturday	3 (17 NB)	A (C)
5.	Buchanan Street/Jackson Street	Signal	AM	14	B
			PM	11	B
			Saturday	10	A
6.	Buchanan Street/San Pablo Avenue	Signal	AM	6	A
			PM	6	A
			Saturday	7	A
7.	Marin Avenue/San Pablo Avenue	Signal	AM	51	D
			PM	**89 [v/c = 0.84]**	**F**
			Saturday	39	D
8.	Marin Avenue/Masonic Avenue	Signal	AM	12	B
			PM	13	B
			Saturday	12	B
9.	Monroe Street/Jackson Street	All-Way Stop	AM	9	A
			PM	9	A
			Saturday	8	A
10.	Monroe Street/San Pablo Avenue	Signal	AM	6	A
			PM	7	A
			Saturday	5	A
11.	Dartmouth Street/San Pablo Avenue	Side-Street Stop	AM	1 (19 WB)	A (C)
			PM	1 (16 WB)	A (C)
			Saturday	1 (16 WB)	A (C)
12.	Harrison Street/San Pablo Avenue	Side-Street Stop	AM	2 **(>50 EB)**	A **(F)**
			PM	11 **(>50 EB)**	B **(F)**
			Saturday	4 **(>50 EB)**	A **(F)**
13.	Gilman Street/I-80 Westbound ramps	Side-Street Stop	AM	**>50 (>50 SBL)**	**F (F)**
			PM	**>50 (>50 SBL)**	**F (F)**
			Saturday	**>50 (>50 SBL)**	**F (F)**
14.	Gilman Street/I-80 Eastbound ramps	Side-Street Stop	AM	4 (26 NBL)	A (D)
			PM	6 (**>50 NBL**)	A (**F**)
			Saturday	18 **(>50 NBL)**	C **(F)**
15.	Gilman Street/Eastshore Highway	Side-Street Stop	AM	**>50 (>50 NB)**	**F (F)**
			PM	**>50 (>50 NB)**	**F (F)**
			Saturday	**>50 (>50 NB)**	**F (F)**
16.	Gilman Street/6th Street	Signal	AM	8	A
			PM	12	B
			Saturday	11	B
17.	Gilman Street/8th Street	Signal	AM	6	A
			PM	6	A
			Saturday	5	A
18.	Gilman Street/San Pablo Avenue	Signal	AM	41	D
			PM	**61**	**E**
			Saturday	48	D
19.	Gilman Street/Hopkins Street	All-Way Stop	AM	23	C
			PM	**46**	**E**
			Saturday	22	C

Deficient intersections indicated in **bold**.

[a] For side-street stop-controlled intersections, delay for worst movement (in seconds per vehicle) is presented in parenthesis. For all-way stop-controlled and signalized intersections, average delay for all movements is presented. For signalized intersections operating at LOS F, the volume-to-capacity (v/c) ratio is also reported in brackets. All calculations based on the 2000 *Highway Capacity Manual* methodologies.

Source: Fehr & Peers, 2009.

- The signalized Gilman Street/San Pablo Avenue (#18) intersection currently operates at LOS E during the PM peak hour
- The unsignalized Gilman Street/Hopkins Street (#19) intersection currently operates at LOS E during the PM peak hour

(8) Existing Peak Hour Signal Warrants. To assess the need for signalization of stop-controlled intersections, the *Manual of Uniform Traffic Control Devices* (MUTCD) (Federal Highway Administration, 2003, as amended for California), presents eight signal warrants. Meeting any of the signal warrants could justify signalization of an intersection; however, the full set of warrants should be considered as part of an evaluation and survey before the decision to install is made. Meeting one or more of the signal warrants is not, in itself, a reason to signalize. Peak hour volume warrant (Warrant 3) analysis for urban conditions was conducted for this study. The results of the traffic signal warrant analysis are shown in Table IV.A-6 and the signal warrant calculations are provided in Appendix B. The peak hour volume traffic signal warrant is currently satisfied at:

- Buchanan Street/Eastshore Highway (intersection #4)
- Gilman Street/I-80 Westbound Ramps/West Frontage Road (intersection #13)
- Gilman Street/I-80 Eastbound Ramps (intersection #14)
- Gilman Street/Eastshore Highway (intersection #15)
- Gilman Street/Hopkins Street (intersection #19)

Table IV.A-6 Existing Peak Hour Signal Warrant Analysis

Intersection		Control1	Peak Hour Warrant Met?
4.	Buchanan Street/Eastshore Highway	Side-Street Stop	**Yes**
9.	Monroe Street/Jackson Street	All-Way Stop	No
11.	Dartmouth Street/San Pablo Avenue	Side-Street Stop	No
12.	Harrison Street/San Pablo Avenue	Side-Street Stop	No
13.	Gilman Street/I-80 WB Ramps/West Frontage Road	Side-Street Stop	**Yes**
14.	Gilman Street/I-80 EB Ramps	Side-Street Stop	**Yes**
15.	Gilman Street/Eastshore Highway	Side-Street Stop	**Yes**
19.	Gilman Street/Hopkins Street	All-Way Stop	**Yes**

Source: Fehr & Peers, 2009.

The Gilman Street/I-80 Westbound Ramps/West Frontage Road, Gilman Street/I-80 Eastbound Ramps, Gilman Street/Eastshore Highway, and Gilman Street/Hopkins Street intersections operate below the accepted thresholds and therefore are considered deficient intersections.

(9) Current Operating Conditions on the Congestion Management Program Network. The Alameda County Congestion Management Agency (ACCMA) is responsible for maintaining the Congestion Management Program (CMP) for Alameda County. The CMP requires that LOS standards be established and monitored biennially on the Alameda County CMP designated roadway system. In the project traffic study area, the CMP designated system includes I-80, I-580, San Pablo Avenue, Gilman Street, Buchanan Street, Marin Avenue, and Solano Avenue.

The CMA has established LOS E as the standard for all CMP designated system facilities, except where the segment operated at LOS F in 1991, when the first CMP was prepared. In the project study area, there are no such "grandfathered" segments.

The CMA's monitoring program uses "floating car" travel time runs to measure the average travel speed and corresponding operating condition on the CMP designated system. The CMA's 2008 LOS Monitoring Report, which is the most recently published report, lists the following segments in the study area as currently operating at LOS F:

- Westbound I-80 between Central Avenue and University Avenue during the AM peak hour
- Eastbound I-80 between I-580 and Central Avenue during the PM peak hour
- Northbound San Pablo Avenue (SR 123) between Marin Avenue and Washington Avenue during the PM peak hour

d. Planned Improvements. This subsection discusses planned and proposed infrastructure improvements in the study area.

(1) Planned Roadway Improvements. Currently, the following roadway improvements are planned or proposed in the study area:

- Buchanan Street/Jackson Street intersection (Intersection #5) – the City of Albany is planning on modifying the signal equipment to provide protected eastbound and westbound left-turns, and providing corner bulb-outs to better accommodate pedestrian crossings. The improvements may also include striping left-turn lanes on the northbound and southbound approaches.
- Gilman Street/I-80 Interchange (Intersections #13, 14 and 15) – The City of Berkeley is considering installing dual roundabouts at this interchange.[12] The west roundabout would serve the westbound I-80 ramps and West Frontage Road; the east roundabout would serve the eastbound I-80 ramps and Eastshore Highway. The project is still in preliminary design, does not have full funding, and will require approval from Caltrans.
- Gilman Street/San Pablo Avenue (Intersection #18) – The City of Berkeley is considering eliminating on-street parking on the north side of Gilman Street between Kains Avenue and San Pablo Avenue to provide an additional vehicular lane on westbound Gilman Street.[13]

(2) Planned Bicycle Improvements. In addition to the roadway and intersection improvements described above, the following bicycle improvement projects are currently under consideration:

- Buchanan Street bikeway gap closure project – the following alternatives are currently under consideration to close the gap between the Marin Avenue bike lanes and the Bay Trail at Buchanan Street/I-80 interchange:
  - Alternative 1 – This alternative would provide a Class I bike path along the south side of the Marin Avenue/Buchanan Street corridor between San Pablo Avenue and Taylor Street and on the north side between Taylor and Pierce Streets. It would also include a Class II bike lane on

[12] Wilbur Smith Associates, 2008. *West Berkeley Circulation Master Plan – Draft Circulation Improvements Report*. November 6.

[13] Ibid.

the north side of the corridor between Taylor Street and San Pablo Avenue and on both sides of the roadway between San Pablo Avenue and Cornell Street. This alternative would install a signal at the Buchanan Street/Taylor Street intersection.

- Alternative 2 – This alternative would provide a Class I bike path along the south side of the Marin Avenue/Buchanan Street corridor between San Pablo Avenue and Pierce Street. It would also include a Class II bike lane on the north side of the corridor between Pierce Street and San Pablo Avenue and on both sides of the roadway between San Pablo Avenue and Cornell Street. This alternative would install a signal at the Buchanan Street/Pierce Street intersection.
- Alternative 3 – This alternative would provide a Class I bike path along the south side of the Marin Avenue/Buchanan Street corridor between San Pablo Avenue and Pierce Street. West of Pierce Street, the bike path would cross under Buchanan Street and connect with the existing path on the north side of the corridor. This alternative would also include a Class II bike lane on the north side of the corridor between Pierce Street and San Pablo Avenue and on both sides of the roadway between San Pablo Avenue and Cornell Street.

e. Future No Project Conditions Analysis. This section discusses Near-Term (Year 2015) and Cumulative (Year 2035) No Project conditions. The process used to estimate the future intersection forecasts is described followed by a discussion of intersection operations.

(1) Traffic Volumes Forecasts. The impacts of the proposed project under Near-Term (Year 2015) and Cumulative (Year 2035) conditions on intersection operations were assessed using the latest Alameda County Congestion Management Agency (ACCMA) Countywide Travel Demand Model (Countywide Model) released in February 2009. Land use, employment, and population projections in the model are based on Association of Bay Area Governments (ABAG) *Projections* 2007.

The main inputs to the Near-Term and Cumulative forecasting processes are the AM and PM peak hour model outputs from the updated ACCMA Countywide Model and the existing AM and PM peak hour traffic counts. However, these model forecasts are not used directly to predict intersection turning movements. The ACCMA model outputs are instead used as an input into the "Furnessing" process, which "grows" existing turning movement volumes to reflect increases in roadway link volumes determined from the ACCMA model.[14] In each scenario (2015 and 2035), two versions of the CMA model were run – 2005 and the analysis year (2015 or 2035). The 2005 model corresponds to the existing level of development within the project study area. The roadway segment growth between the 2005 and 2015 (and 2035) model runs is then added to the existing turning movements based on the existing proportions between left-turn/through/right-turn movements. In this way, the year 2015 and 2035 analyses account for past, present, approved, pending, and reasonably foreseeable future developments accounted for in the model. The Near-Term (2015) and Cumulative (2035) No Project forecasts assume no change at the project site.

[14] The Furness technique is used to modify projected (future) intersection turning movement volumes based upon a comparison of existing traffic volume counts and the travel demand model calibrated results. It uses mathematical formulae to balance roadway volumes approaching, and departing from, the intersection and thus balances turning volumes that make sense compared to the existing counts and model calibrated turning movements. This process improves the level of confidence in the forecasted future turning movement volumes.

Since the ACCMA model provides weekday volume forecasts, a different process was used to forecast future Saturday volumes. At each intersection, the growth rate between the AM and PM peak hour forecasts (2015 or 2035) and existing volumes were calculated and applied to the existing Saturday peak hour volumes to estimate the future (2015 or 2035) Saturday peak hour intersection volumes.

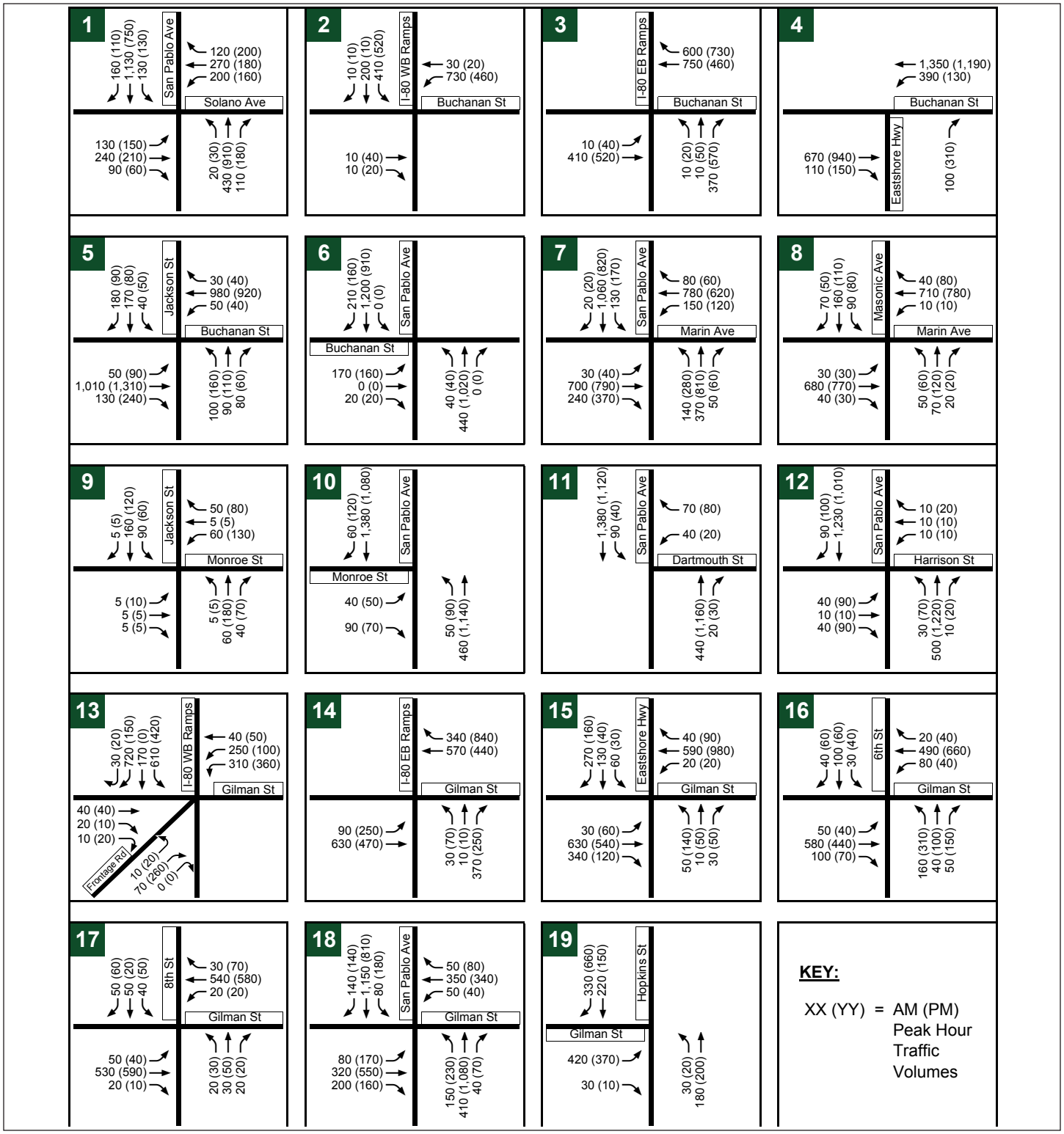
(2) Near-Term (Year 2015) No Project Conditions Intersection Analysis. The Near-Term (2015) intersection volumes, developed using the process described above, are shown on Figures IV.A-9a and IV.A-9b. Intersection levels of service were calculated using these volumes. Table IV.A-7 presents the LOS results for the study intersections. The calculation worksheets are provided in Appendix B. (Note that Table IV.A-7 also presents the "plus project" outcome in the far right columns. These modeled outcomes are addressed below in the Impact Analysis.)

In addition, peak hour volume warrant (Warrant 3) analysis for urban conditions was conducted at the unsignalized study intersections. The results of the traffic signal warrant analysis are shown in Table IV.A-8 and the signal warrant calculations are provided in Appendix B.

Based on the results, the following study intersections would operate at a deficient LOS under Near-Term (2015) No Project conditions:

- The unsignalized Harrison Street/San Pablo Avenue (#12) would operate at LOS F in the eastbound approach during the AM, PM, and Saturday peak hours. The intersection would not satisfy the peak hour signal warrant.
- The unsignalized Gilman Street/I-80 Westbound Ramps (#13) would operate at LOS F in the northbound and southbound approaches during the AM, PM, and Saturday peak hours. The intersection would satisfy the peak hour signal warrant.
- The unsignalized Gilman Street/I-80 Eastbound Ramps (#14) would operate at LOS F in the northbound approach during the PM and Saturday peak hour. The intersection would satisfy the peak hour signal warrant.
- The unsignalized Gilman Street/Eastshore Highway (#15) would operate at LOS F in the northbound and southbound approaches during the AM, PM, and Saturday peak hours. The intersection would satisfy the peak hour signal warrant.
- The signalized Gilman Street/San Pablo Avenue (#18) intersection would operate at LOS F during the PM and Saturday peak hours.
- The unsignalized Gilman Street/Hopkins Street (#19) intersection would operate at LOS F during the PM peak hour and LOS E during the Saturday peak hour. The intersection would satisfy the peak hour signal warrant.

(3) Cumulative (Year 2035) No Project Conditions Intersection Analysis. The Cumulative (2035) intersection volumes, developed using the process previously described, are shown on Figures IV.A-10a and IV.A-10b. Intersection levels of service were calculated using these volumes. Table IV.A-9 presents the LOS results for the study intersections. The calculation worksheets are provided in Appendix B. (Note that Table IV.A-9 also presents the "plus project" outcome in the far right columns. These modeled outcomes are addressed below in the Impact Analysis.)



LSA

FIGURE IV.A-9a

University Village at San Pablo Avenue Project EIR

Near-Term (2015) No Project Peak Hour Intersection Volumes

SOURCE: FEHR & PEERS, 2009.

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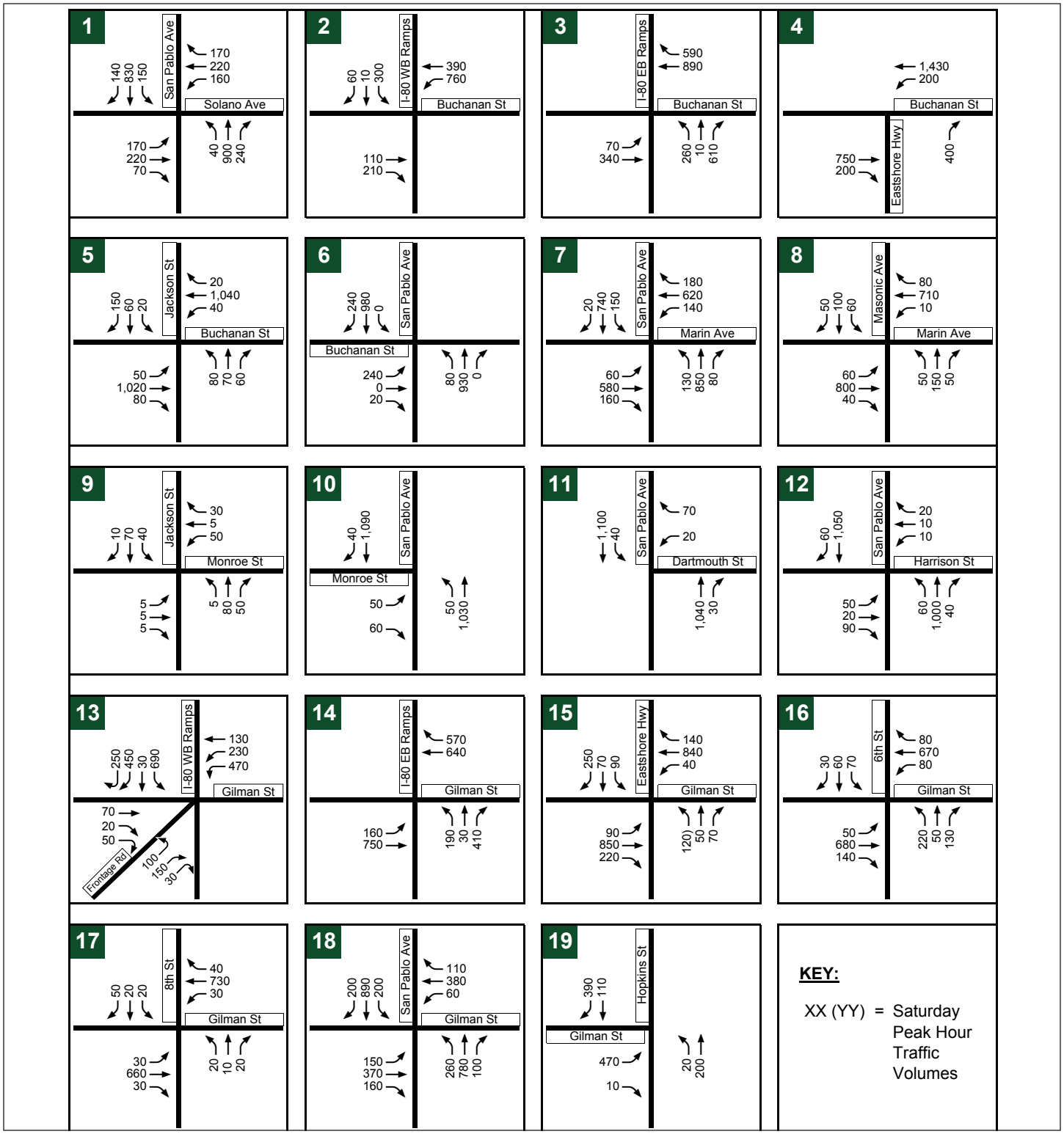

LSA

FIGURE IV.A-9b

University Village at San Pablo Avenue Project EIR

Near-Term (2015) No Project

Saturday Peak Hour Intersection Volumes

SOURCE: FEHR & PEERS, 2009.

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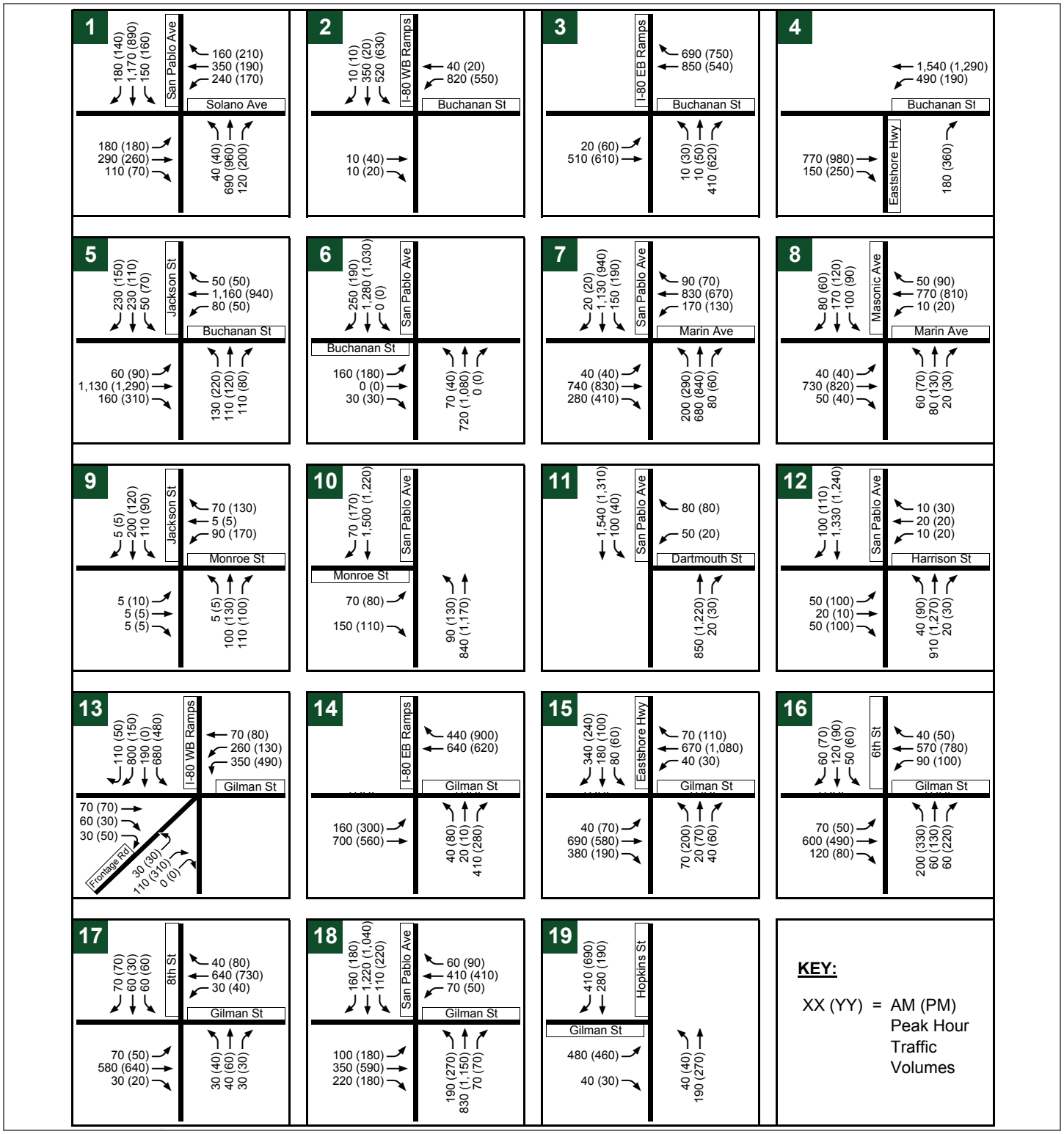

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FIGURE IV.A-10a

University Village at San Pablo Avenue Project EIR

Cumulative (2035) No Project
Peak Hour Intersection Volumes

SOURCE: FEHR & PEERS, 2009.

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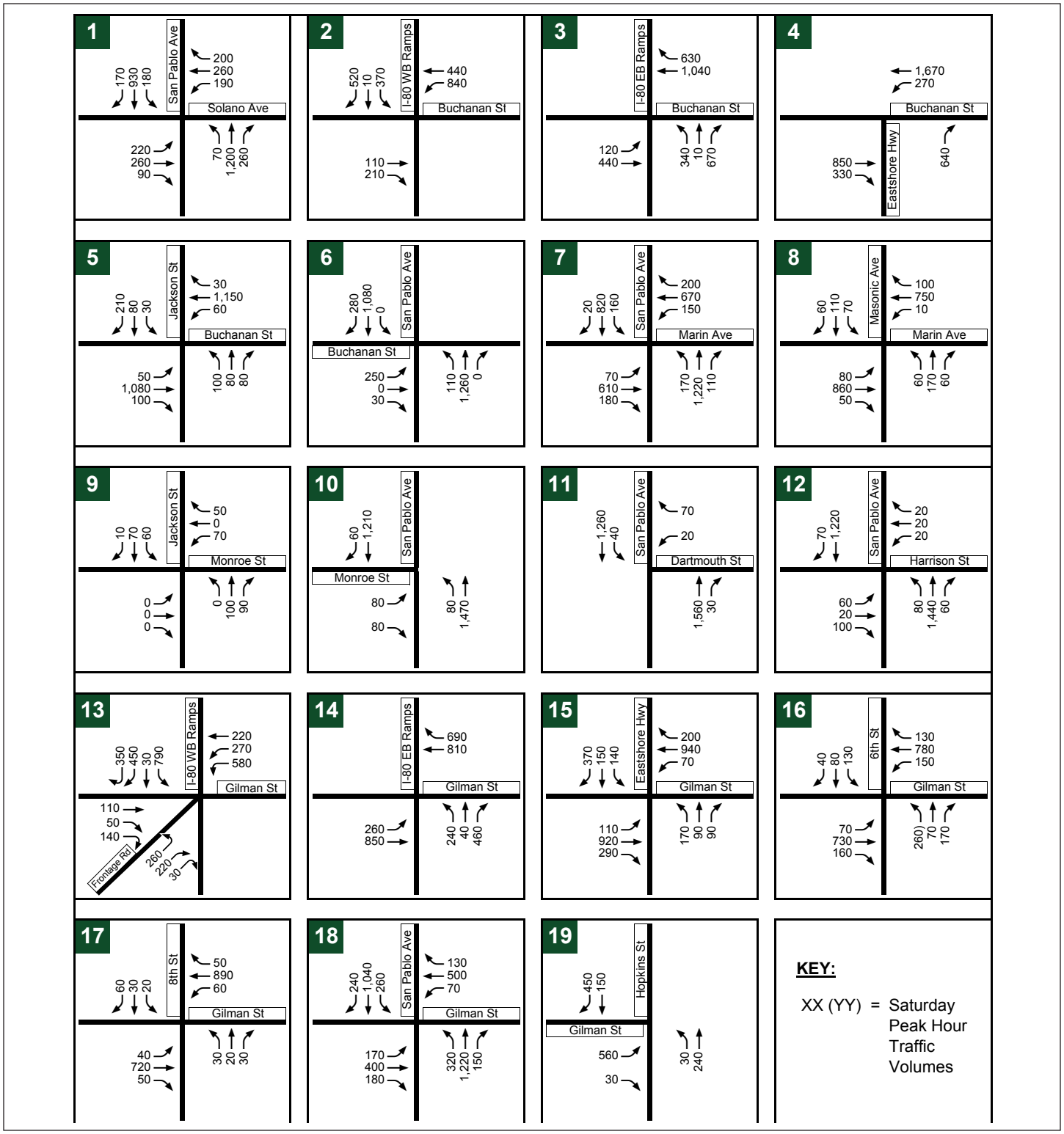

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FIGURE IV.A-10b

University Village at San Pablo Avenue Project EIR

Cumulative (2035) No Project

Saturday Peak Hour Intersection Volumes

SOURCE: FEHR & PEERS, 2009.

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Table IV.A-7: Near-Term (2015) Conditions Peak Hour Intersection Level of Service

Intersection		Control	Peak Hour	Near-Term (2015) No Project Conditions		Near-Term (2015) Plus Project Conditions	
				Delay [a] (sec)	LOS	Delay [a] (sec)	LOS
1.	Solano Avenue/ San Pablo Avenue	Signal	AM	41	D	42	D
			PM	36	D	36	D
			Saturday	44	D	42	D
2.	Buchanan Street/I-80/I-580 Westbound ramps	Signal	AM	14	B	15	B
			PM	12	B	12	B
			Saturday	16	B	17	B
3.	Buchanan Street/I-80/I-580 Eastbound ramps	Signal	AM	10	A	10	A
			PM	12	B	13	B
			Saturday	19	B	21	C
4.	Buchanan Street/ Eastshore Highway	Side-Street Stop	AM	3 (12)	A (B)	3 (12)	A (B)
			PM	3 (20)	A (C)	3 (20)	A (C)
			Saturday	4 (24)	A (C)	4 (24)	A (C)
5.	Buchanan Street/Jackson Street	Signal	AM	25	C	26	C
			PM	27	C	29	C
			Saturday	16	B	17	B
6.	Buchanan Street/San Pablo Avenue	Signal	AM	14	B	14	B
			PM	5	A	6	A
			Saturday	9	A	9	A
7.	Marin Avenue/San Pablo Avenue	Signal	AM	47	D	51	D
			PM	49	D	**63**	**E**
			Saturday	40	D	47	D
8.	Marin Avenue/Masonic Avenue	Signal	AM	14	B	14	B
			PM	14	B	15	B
			Saturday	14	B	15	B
9.	Monroe Street/Jackson Street	All-Way Stop	AM	9	A	10	A
			PM	10	B	10	B
			Saturday	8	A	8	A
10.	Monroe Street/San Pablo Avenue	Signal	AM	9	A	14	B
			PM	10	A	22	C
			Saturday	7	A	26	C
11.	Dartmouth Street/San Pablo Avenue	Side-Street Stop	AM	2 (29)	A (D)	2 (35)	A (D)
			PM	1 (19)	A (C)	1 (18)	A (C)
			Saturday	1 (22)	A (C)	1 (21)	A (C)
12.	Harrison Street/San Pablo Avenue	Side-Street Stop	AM	6 **(>50)**	A **(F)**	9 **(>50)**	A **(F)**
			PM	16 **(>50)**	C **(F)**	17 **(>50)**	C **(F)**
			Saturday	12 **(>50)**	B **(F)**	12 **(>50)**	B **(F)**
13.	Gilman Street/I-80 Westbound ramps	Side-Street Stop	AM	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
			PM	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
			Saturday	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
14.	Gilman Street/I-80 Eastbound ramps	Side-Street Stop	AM	8 (25)	A (C)	6 (27)	A (D)
			PM	24 **(>50)**	C **(F)**	29 **(>50)**	D **(F)**
			Saturday	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
15.	Gilman Street/Eastshore Highway	Side-Street Stop	AM	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
			PM	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
			Saturday	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
16.	Gilman Street/ 6th Street	Signal	AM	10	A	10	B
			PM	15	B	16	B
			Saturday	13	B	14	B
17.	Gilman Street/ 8th Street	Signal	AM	7	A	7	A
			PM	6	A	6	A
			Saturday	6	A	6	A
18.	Gilman Street/ San Pablo Avenue	Signal	AM	53	D	**59**	**E**
			PM	**94 [1.11]**	**F**	**>100 [1.21]**	**F**
			Saturday	**83 [1.09]**	**F**	**>100 [1.23]**	**F**
19.	Gilman Street/ Hopkins Street	All-Way Stop	AM	34	D	**37**	**E**
			PM	**>50**	**F**	**>50**	**F**
			Saturday	**38**	**E**	**46**	**E**

Deficient intersections indicated in **bold**.

[a] For side-street stop-controlled intersections, delay for worst movement (in seconds per vehicle) is presented in parenthesis. For all-way stop-controlled and signalized intersections, average delay for all movements is presented. For signalized intersections operating at LOS F, the volume-to-capacity (v/c) ratio is also reported in brackets. All calculations based on the 2000 *Highway Capacity Manual* methodologies.

Source: Fehr & Peers, 2009.

Table IV.A-8 Near-Term (2015) Conditions Peak Hour Signal Warrant Analysis

Intersection		Control	Near-Term (2015) No Project Conditions	Near-Term (2015) Plus Project Conditions
			Peak Hour Warrant Met?	Peak Hour Warrant Met?
4.	Buchanan Street/Eastshore Highway	Side-Street Stop	**Yes**	**Yes**
9.	Monroe Street/Jackson Street	All-Way Stop	No	No
11.	Dartmouth Street/San Pablo Avenue	Side-Street Stop	No	No
12.	Harrison Street/San Pablo Avenue	Side-Street Stop	No	No
13.	Gilman Street/I-80 WB Ramps/West Frontage Road	Side-Street Stop	**Yes**	**Yes**
14.	Gilman Street/I-80 EB Ramps	Side-Street Stop	**Yes**	**Yes**
15.	Gilman Street/Eastshore Highway	Side-Street Stop	**Yes**	**Yes**
19.	Gilman Street/Hopkins Street	All-Way Stop	**Yes**	**Yes**

Source: Fehr & Peers, 2009.

In addition, peak hour volume warrant (Warrant 3) analysis for urban conditions was conducted at the unsignalized study intersections. The results of the traffic signal warrant analysis are shown in Table IV.A-10 and the signal warrant calculations are provided in Appendix B. (Note that Table IV.A-9 also presents the "plus project" outcome in the far right columns. These modeled outcomes are addressed below in the Impact Analysis.)

Based on the results, the following study intersections would operate at a deficient LOS under Cumulative (2035) No Project conditions:

- The signalized Solano Avenue/San Pablo Avenue (#1) intersection would operate at LOS E during the Saturday peak hour.
- The unsignalized Buchanan Street/Eastshore Highway (#4) intersection would operate at LOS F in the northbound approach during the Saturday peak hour. The intersection would satisfy the peak hour signal warrant.
- The signalized Marin Avenue/San Pablo Avenue (#7) intersection would operate at LOS E during the AM and PM peak hours.
- The unsignalized Dartmouth Street/San Pablo Avenue (#11) would operate at LOS F in the eastbound approach during the AM and Saturday peak hours. The intersection would not satisfy the peak hour signal warrant.
- The unsignalized Harrison Street/San Pablo Avenue (#12) would operate at LOS F in the eastbound approach during the AM, PM, and Saturday peak hours. The intersection would satisfy the peak hour signal warrant.
- The unsignalized Gilman Street/I-80 Westbound Ramps (#13) would operate at LOS F in the northbound and southbound approaches during the AM, PM, and Saturday peak hours. The intersection would satisfy the peak hour signal warrant.
- The unsignalized Gilman Street/I-80 Eastbound Ramps (#14) would operate at LOS F in the northbound approach during the AM, PM, and Saturday peak hours. The intersection would satisfy the peak hour signal warrant.
- The unsignalized Gilman Street/Eastshore Highway (#15) would operate at LOS F in the northbound and southbound approaches during the AM, PM, and Saturday peak hours. The intersection would satisfy the peak hour signal warrant.

Table IV.A-9: Cumulative (2035) Conditions Peak Hour Intersection Level of Service

Intersection		Control	Peak Hour	Cumulative (2035) No Project Conditions		Cumulative (2035) Plus Project Conditions	
				Delay [a] (sec)	LOS	Delay [a] (sec)	LOS
1.	Solano Avenue/ San Pablo Avenue	Signal	AM	49	D	50	D
			PM	42	D	44	D
			Saturday	**55**	**E**	**60**	**E**
2.	Buchanan Street/I-80/I-580 Westbound ramps	Signal	AM	19	B	20	B
			PM	14	B	14	B
			Saturday	18	B	22	C
3.	Buchanan Street/I-80/I-580 Eastbound ramps	Signal	AM	12	B	12	B
			PM	17	B	18	B
			Saturday	42	D	44	D
4.	Buchanan Street/Eastshore Highway	Side-Street Stop	AM	5(14)	A (B)	5 (14)	A (B)
			PM	4 (25)	A (D)	4 (26)	A (D)
			Saturday	22 **(>50)**	C **(F)**	22 **(>50)**	C **(F)**
5.	Buchanan Street/Jackson Street	Signal	AM	46	D	49	D
			PM	48	D	54	D
			Saturday	22	C	24	C
6.	Buchanan Street/San Pablo Avenue	Signal	AM	12	B	12	B
			PM	6	A	7	A
			Saturday	9	A	8	A
7.	Marin Avenue/San Pablo Avenue	Signal	AM	**57**	**E**	**65**	**E**
			PM	**61**	**E**	**79**	**E**
			Saturday	46	D	**55**	**E**
8.	Marin Avenue/Masonic Avenue	Signal	AM	17	B	18	B
			PM	17	B	19	B
			Saturday	19	B	22	C
9.	Monroe Street/Jackson Street	All-Way Stop	AM	11	B	13	B
			PM	11	B	11	B
			Saturday	9	A	9	A
10.	Monroe Street/ San Pablo Avenue	Signal	AM	14	B	16	B
			PM	12	B	24	C
			Saturday	9	A	25	C
11.	Dartmouth Street/ San Pablo Avenue	Side-Street Stop	AM	3 **(>50)**	A **(F)**	3 **(>50)**	A **(F)**
			PM	1 (18)	A (C)	1 (21)	A (C)
			Saturday	2 **(>50)**	A **(F)**	2 **(>50)**	A **(F)**
12.	Harrison Street/San Pablo Avenue	Side-Street Stop	AM	19 **(>50)**	C **(F)**	24 **(>50)**	C **(F)**
			PM	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
			Saturday	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
13.	Gilman Street/I-80 Westbound ramps	Side-Street Stop	AM	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
			PM	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
			Saturday	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
14.	Gilman Street/I-80 Eastbound ramps	Side-Street Stop	AM	21 **(>50)**	C **(F)**	25 **(>50)**	C **(F)**
			PM	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
			Saturday	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
15.	Gilman Street/Eastshore Highway	Side-Street Stop	AM	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
			PM	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
			Saturday	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
16.	Gilman Street/6th Street	Signal	AM	13	B	14	B
			PM	21	C	24	C
			Saturday	22	C	27	C
17.	Gilman Street/8th Street	Signal	AM	8	A	8	A
			PM	8	A	8	A
			Saturday	8	A	8	A
18.	Gilman Street/San Pablo Avenue	Signal	AM	**71**	**E**	**83 [1.16]**	**F**
			PM	**>100 [1.25]**	**F**	**>100 [1.37]**	**F**
			Saturday	**>100 [1.32]**	**F**	**>100 [1.36]**	**F**
19.	Gilman Street/Hopkins Street	All-Way Stop	AM	**>50**	**F**	**>50**	**F**
			PM	**>50**	**F**	**>50**	**F**
			Saturday	**>50**	**F**	**>50**	**F**

Deficient intersections indicated in **bold**.

[a] For side-street stop-controlled intersections, delay for worst movement (in seconds per vehicle) is presented in parenthesis. For all-way stop-controlled and signalized intersections, average delay for all movements is presented. For signalized intersections operating at LOS F, the volume-to-capacity (v/c) ratio is also reported in brackets. All calculations based on the 2000 *Highway Capacity Manual* methodologies.

Source: Fehr & Peers, 2009.

Table IV.A-10 Cumulative (2035) Conditions Peak Hour Signal Warrant Analysis

Intersection		Control	Cumulative (2035) No Project Conditions	Cumulative (2035) Plus Project Conditions
			Peak Hour Warrant Met?	Peak Hour Warrant Met?
4.	Buchanan Street/Eastshore Highway	Side-Street Stop	**Yes**	**Yes**
9.	Monroe Street/Jackson Street	All-Way Stop	No	No
11.	Dartmouth Street/San Pablo Avenue	Side-Street Stop	No	No
12.	Harrison Street/San Pablo Avenue	Side-Street Stop	**Yes**	**Yes**
13.	Gilman Street/I-80 WB Ramps/West Frontage Road	Side-Street Stop	**Yes**	**Yes**
14.	Gilman Street/I-80 EB Ramps	Side-Street Stop	**Yes**	**Yes**
15.	Gilman Street/Eastshore Highway	Side-Street Stop	**Yes**	**Yes**
19.	Gilman Street/Hopkins Street	All-Way Stop	**Yes**	**Yes**

Source: Fehr & Peers, 2009.

- The signalized Gilman Street/San Pablo Avenue (#18) intersection would operate at LOS E during the AM peak hour and LOS F during the PM and Saturday peak hours.
- The unsignalized Gilman Street/Hopkins Street (#19) intersection would operate at LOS F during the AM, PM, and Saturday peak hours. The intersection would satisfy the peak hour signal warrant.

f. Regulatory Setting. Applicable State, County, and City transportation/traffic plans and regulations that apply to the study area are summarized below. Streets in the study area are generally under the jurisdictions of the Cities of Albany and Berkeley. State facilities in the study area which are under Caltrans' jurisdiction include San Pablo Avenue (SR 123) and I-80 and I-580 freeways.

(1) State Regulations. Caltrans is responsible for planning, designing, constructing, and maintaining interstate freeways and State routes. Caltrans requirements are described in their *Guide for the Preparation of Traffic Impact Studies* (Caltrans 2001), which covers the information needed for Caltrans to review the impacts on state highway facilities.

(2) Regional Transportation Agencies and Plans. Regional transportation agencies and plans are described below.

Metropolitan Transportation Commission (MTC). The MTC regional agency is responsible for prioritizing transportation projects in a Regional Transportation Improvement Program (RTIP) for federal and State funding. The process is based on evaluating each project for need, feasibility, and adherence to federal transportation policies and to the Alameda County Congestion Management Program (CMP). The CMP requires each jurisdiction to identify existing and future transportation facilities that would operate below an acceptable service level and provide mitigation where future growth would degrade that service level on the Metropolitan Transportation System (MTS) roadways and transit systems. Designated MTS roadways in the project vicinity include I-80, I-580, San Pablo Avenue.

(3) Local Regulations. Relevant local regulations are described below.

City of Albany. The City of Albany General Plan Circulation Element establishes the following general goals for implementation of the Circulation Element:

- Goal CIRC 1: Preserve the character of residential areas near arterial streets.
- Goal CIRC 2: Protect residential neighborhoods from excessive parking demand.
- Goal CIRC 3: Maintain adequate circulation throughout the City and improve the parking capacity on Solano and San Pablo Avenues.
- Goal CIRC 4: Support public transit and other means to reduce reliance on the automobile as the primary means of transportation.
- Goal CIRC 5: Ensure that the I-80 reconstruction project meets the City's goals for improved earthquake safety on the Buchanan/I-80/580 interchange and the Buchanan Street overpass, improved automobile safety of the interchange, improved pedestrian and bicycle safety of the interchange, and improved access to the Albany Waterfront.
- Goal CIRC 6: Improve and enhance the City's bicycle route and path system.

The Circulation Element contains 26 specific policies that are intended to achieve these goals. The Element also includes maps illustrating peak hour roadway congestion and the Circulation Plan Map.

City transportation policies that most directly relate to the proposed project include the following:

- Policy CIRC 2.3: Evaluate the impacts of overflow parking from the University Village on adjacent streets and private parking areas. Consider more stringent parking regulations plus agreement with the University of California to provide more on-site parking or take steps to limit car ownership by residents.
- Policy CIRC 3.1: Monitor critical intersections (e.g., such as Buchanan/Jackson, Buchanan/San Pablo, Solano/San Pablo, Marin/Santa Fe, Marin/Key Route) for indications of necessary traffic improvements. Develop specific improvement plans to reduce impacts of increased traffic and incorporate into the City's Capital Improvements Plan.
- Policy CIRC 3.2: Conduct more detailed studies to address the traffic effects and needed improvements associated with specific development proposals.
- Policy CIRC 4.3: Continue to work with the City's Trip Reduction Ordinance and continue to develop programs and incentives for the use of carpools, staggered work hours, bicycling, walking and the increased use of public transit for community residents and employees in the community.
- Policy CIRC 4.7: Assure that sidewalks, pathways, and trails used by pedestrians are safe and provide unhindered access for all.

In addition, the City of Albany Bicycle Master Plan includes the following goals:

- Goal 1: Support bicycling and the development of a comprehensive bicycle transportation system as a viable alternative to the automobile.
- Goal 2: Use available state and federal funding for bicycle improvements in Albany.
- Goal 3: Improve upon existing bikeway facilities and programs in Albany.
- Goal 4: Develop a bicycle system that meets the needs of commuter and recreation users, helps reduce vehicle trips, and links residential neighborhoods with regional destinations.
- Goal 5: Maximize multi-modal connections to the bicycle system.
- Goal 6: Improve bicycle safety in Albany.
- Goal 7: Develop detailed bicycle facility improvement proposals.

- Goal 8: Encourage public participation and creation of an ongoing Advisory Committee.
- Goal 9: Develop a coordinated strategy to encourage bicycling in Albany.

The Bicycle Master Plan also includes specific objectives intended to achieve these goals. The Master Plan also includes a map illustrating proposed bicycle facilities in the City. Existing and planned bicycle facilities in the vicinity of the proposed project were described on page 37. Policies that most directly relate to the proposed project include the following:

- Objective 1.4: Encourage infill development concepts whose goal is the reduction of automobile use for short commute, shopping, and recreation trips.
- Objective 3.2: Encourage the use of existing natural and manmade corridors such as creeks, railroad right of ways, and other open space corridors for bike path and trail alignments, as shown in this Plan.
- Objective 4.1: Develop a commuter route system connecting residential neighborhoods and regional employment areas, multi-modal terminals, schools, and shopping areas.
- Objective 4.3: Develop incentives that will encourage people to bicycle to work.
- Objective 4.6: Continue to work to address barriers to bicycling, such as the lack of secure bicycle parking and signals that do not detect bicycles.
- Objective 4.7: Encourage development concepts and standards such as mixed-use and neighborhood-serving retail and employment opportunities.

City of Berkeley. The proposed project is located in the City of Albany. However, some of the study intersections are located in the City of Berkeley. Relevant policies from the City of Berkeley's General Plan Circulation Element are listed below:

- Policy T-22: Traffic Circles and Roundabouts – Encourage the use of landscaped traffic circles to calm traffic in residential areas.
    - Action A: – Consider roundabouts as a viable traffic-calming device, especially at the Shattuck and Adeline intersection, the Gilman Street Freeway on and off ramps, and at other appropriate intersections in the city.
- Policy T- 26: City Streets - Do not widen local, collector, or major streets unless necessary to allow passage of emergency vehicles, or remove parking from residential streets for the purpose of expanding automobile traffic lanes.
- Policy T-29: Infrastructure Improvements - Facilitate mobility and the flow of traffic on major and collector streets, reduce the air quality impacts of congestion, improve pedestrian and bicycle access, and speed public transportation throughout the city by making improvements to the existing physical infrastructure.
    - Action F: Improve freeway approaches and interchanges at Ashby Avenue (including removal of Potter Street ramp) and Gilman Street (to improve pedestrian and bicycle circulation to the waterfront and facilitate truck access to West Berkeley).
    - Action G: Complete the San Pablo Avenue Corridor Plan improvements designed in cooperation with the surrounding cities.
    - Action H: Time traffic signals on major transit corridors to give priority to and speed movement of transit vehicles.
- Policy T-30: Traffic Signals - Continue to pursue better signal devices and systems to facilitate movement on Berkeley's limited road network. Consider:
    - Signals that provide separate phases for through (straight) traffic, pedestrians and cyclists, and turning traffic.
    - Bus-activated signals.
    - All-way stop signals that allow the free flow of pedestrians through the intersection.

- "Smart" signals to calm traffic and improve intersection safety.
- Timed traffic signals to give priority to and speed movement of transit and emergency vehicles.
- Pedestrian /bicycle-activated signals that allow bikes and pedestrians to cross busy streets.

- Policy T-42: Bicycle Planning - Integrate the consideration of bicycle travel into City planning activities and capital improvement projects, and coordinate with other agencies to improve bicycle facilities and access within and connecting to Berkeley.
- Policy T-43: Bicycle Network - Develop a safe, convenient, and continuous network of bikeways that serves the needs of all types of bicyclists, and provide bicycle-parking facilities to promote cycling.
- Policy T-51: Pedestrian Priority - When addressing competing demands for sidewalk space, the needs of the pedestrian shall be the highest priority.
- Policy T-52: Pedestrian Safety and Accessibility - Provide safe and convenient pedestrian crossings throughout the city.
  - Action A: Seek to ensure that the distance between signal-controlled intersections, "smart crosswalks," or stop signs is never more than one-quarter mile on major and collector streets. At intersections with severe or high pedestrian/automobile collision rates and at heavily used pedestrian crossings, consider all-way stop signals that allow the free flow of pedestrians through the intersection, "smart" signals to calm traffic and improve intersection safety, and pedestrian/bicycle-activated signals that allow bikes and pedestrians to cross busy streets without inviting traffic onto cross streets.
  - Action D: Encourage the creation of accessible pedestrian medians or islands in wide streets where people have to cross more than two lanes.

2. Impacts and Mitigation Measures

This section identifies potential adverse impacts to transportation and circulation that may result from the proposed University Village at San Pablo Avenue project. Significant impacts are identified according to the significance criteria identified below. The significance criteria are followed by a discussion of the project's potential impacts on transportation and circulation in the area. Where feasible, mitigation measures are recommended to reduce the significant impacts to less-than-significant levels.

a. Criteria of Significance. According to the *CEQA Guidelines*, a traffic increase from the project or from cumulative development is considered to be a significant impact if the associated changes to the transportation system conflict with adopted environmental plans or goals of the community, or cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system. The *CEQA Guidelines* also include general statements applicable for identifying impacts on parking and alternative modes of travel.

Currently the City of Albany does not have established guidelines governing thresholds for when impacts on the transportation network would be considered "significant" and in need of mitigation. Since some of the study intersections are located in the City of Berkeley, the significance criteria established by the City of Berkeley in *Guidelines for Development of Transportation Impact Reports* for signalized and unsignalized intersections are used to identify significant impacts.

The following criteria are used to determine if the proposed project would cause a significant impact:

(1) Signalized and All-Way Stop-Controlled Intersections. A significant traffic-related impact would occur at signalized and all-way-stop controlled intersections if the addition of project traffic results in:

- Intersection operations degrade from LOS D to LOS E or worse *and* more than a 2-second increase in delay; or
- More than a 3-second increase in delay at intersections operating at LOS E without and with the project; or
- Intersection operations degrade from LOS E to LOS F *and* more than a 3-second increase in delay; or
- At intersections operating at LOS F without the project, a change in the volume-to-capacity (v/c) ratio of more than 0.01.

(2) Side-Street Stop-Controlled Intersections. A significant traffic-related impact would occur at side-street stop-controlled intersections if the addition of project-related traffic causes:

- The critical approach to operate at LOS F; and
- The intersection meets peak hour signal warrants; and
- No alternative routes are available.

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(3) Metropolitan Transportation System Roadways. A significant traffic-related impact would occur on a roadway segment on the Metropolitan Transportation System if the addition of project-related traffic causes:

- Roadway segment to degrade from LOS E or better to LOS F *and* increase the volume-to-capacity ratio by more than 5 percent; or
- Increase the volume-to-capacity ratio by more than 5 percent for a roadway segment that would operate at LOS F without the project.

(4) Bicycle/Pedestrian Facilities. The project would have a significant impact if it would:

- Hinder or eliminate an existing or designated bikeway, or interfere with implementation of a proposed bikeway; or
- Result in unsafe conditions for bicyclists, including unsafe bicycle/pedestrian or bicycle/ motor vehicle conflicts; or
- Adversely affect an existing pedestrian facility or result in unsafe conditions for pedestrians, including unsafe pedestrian/bicycle or pedestrian motor vehicle conflicts.

(5) Transit. The project would have a significant impact if it would:

- Cause a substantial delay in transit service or increase demand for transit beyond existing or planned service capacity.

(6) Additional Significance Criteria. The project will also be judged to have a significant impact if it would:

- Result in inadequate emergency access; or
- Result in inadequate parking capacity; or

- Substantially increase hazards due to a design feature or incompatible uses or create unsafe conditions for pedestrians or bicyclists; or
- Conflict with local or regional policies or programs supporting alternative transportation.

b. Impact Analysis. The following discussion describes impacts of the proposed project on transportation and circulation.

(1) Project Trip Estimates. Traffic generated by the proposed project is added to the baseline no project conditions for each scenario to determine the potential impacts of the project. The assumptions for the proposed project are described below.

Trip Generation. The estimated new vehicles trips generated by the proposed project is presented in Table IV.A-11. The assumptions and methodology used to estimate the trip generation for the different components of the project is described below:

Whole Foods Market. The proposed Albany store would be similar in operation to an existing Whole Foods Market located in Berkeley. In addition, both stores serve similar demographics and are located in urban areas with good transit service and pedestrian and bicycle connections. Thus, trip generation data at the existing Berkeley Whole Foods Market was collected to estimate the trip generation characteristics of the proposed Albany store. The data at the Berkeley store was collected during the weekday AM and PM peak periods in September 2003 and during the Saturday peak period in September 2008. As shown in Table IV.A-11, the proposed 55,000 square-foot Whole Foods Market is estimated to generate 326 AM peak hour, 743 PM peak hour, and 740 Saturday peak hour vehicle trips.

In addition to trip generation counts, Fehr & Peers also surveyed the customers at the Berkeley store to estimate their travel modes to and from the store. As summarized in Table IV.A-12, the majority of the customers drive to and from the store and about 25 to 30 percent of the trips are by other travel modes.

Other Retail. The proposed project would also include 30,000 square feet of retail. Since specific tenants for the retail space have not been determined, the average trip generation rates for shopping center published in Institute of Transportation Engineers' (ITE) *Trip Generation,* 8th Edition was used. The retail component of the project is estimated to generate 30 AM peak hour, 112 PM peak hour, and 147 Saturday peak hour vehicle trips.

Senior Housing. The proposed project would also include up to 175 multi-family senior housing units. Using the average trip generation rates for Senior Adult Housing-Attached published in ITE *Trip Generation,* the senior housing component of the project is estimated to generate 19 AM peak hour, 26 PM peak hour, and 26 Saturday peak hour vehicle trips.

As shown in Table IV.A-11, the proposed University Village at San Pablo Avenue project is estimated to generate about 375 AM peak hour, 881 PM peak hour, and 913 Saturday peak hour vehicle trips.

Table IV.A-11: Project Trip Generation Estimates

Land Use	Size[a]	Weekday AM Peak Hour			Weekday PM Peak Hour			Saturday Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
Proposed Whole Foods Store[b]	55 ksf	199	127	326	364	379	743	370	370	740
Proposed New Retail[c]	30 ksf	18	12	30	55	57	112	76	71	147
Proposed Senior Housing[d]	175 d.u.	7	12	19	16	10	26	16	10	26
New Project Trips		*224*	*151*	*375*	*435*	*446*	*881*	*462*	*451*	*913*
Pass-By Vehicles – New Whole Foods[e]		*-59*	*-59*	*-118*	*-133*	*-133*	*-266*	*-133*	*-133*	*-266*
Pass-By Vehicles – New Retail[f]		*-5*	*-5*	*-10*	*-19*	*-19*	*-38*	*-19*	*-19*	*-38*
Net New Project Trips		*160*	*87*	*247*	*283*	*294*	*577*	*310*	*299*	*609*

Notes:
[a] ksf = 1,000 square feet, d.u. = dwelling unit
[b] Trip generation based on door counts and mode split surveys conducted at the Berkeley Whole Foods Market in September 2003 for weekday rates, and September 2008 for Saturday rates:
AM: T = 5.93 (X); Enter = 61%, Exit = 39%
PM: T = 13.50 (X); Enter = 49%, Exit = 51%
Saturday: T = 13.46 (X); Enter = 50%, Exit = 50%
Where: T = trips generated, X = 1,000 square feet
[c] Trip generation based on Institute of Transportation Engineers (ITE), *Trip Generation*, (8th Edition) average rates for Shopping Center (Land Use Code 820) :
AM: T = 1.0 (X); Enter = 61%, Exit = 39%
PM: T = 3.73 (X); Enter = 49%, Exit = 51%
Saturday: T = 4.89 (X); Enter = 52%, Exit = 48%
Where: T = trips generated, X = 1,000 square feet
[d] Trip generation based on ITE *Trip Generation*, (8th Edition) regression equations for Senior Adult Housing-Attached (Land Use Code 252):
AM: T = 0.19 (X) – 13.86; Enter = 36%, Exit = 64%
PM: T = 0.24 (X) – 16.45; Enter = 60%, Exit = 40%
Saturday: no Saturday rates available, Weekday PM rates were assumed.
Where: T = trips generated, X = 1,000 square feet
[e] Trip pass-by rate based on ITE *Trip Generation Handbook* (2nd Edition) average pass-by for Supermarket (Land Use Code 850). Average Weekday PM pass-by rate = 36%; Average Weekday AM or Saturday pass-by rate not available, weekday PM pass-by rate was assumed.
[f] Trip pass-by rate based on ITE *Trip Generation Handbook* (2nd Edition) average pass-by for Shopping Center (Land Use Code 820). Average Weekday PM pass-by rate: 34%; average Saturday pass-by rate: 26%; average Weekday AM pass-by rate not available, Weekday PM pass-by rate was assumed.
Source: Fehr & Peers, 2009.

Table IV.A-11 presents the net project trips that would be added to the roadway network with the Whole Foods Market, the retail space, and the senior housing facility. The total net new additional trips also include pass-by trips. Pass-by vehicle trips are trips attracted to the project from traffic already on adjacent roadways as an interim stop on the way to their ultimate destination. Pass-by trips consist of vehicles that would be on the roadway network regardless of the project; therefore, these trips result in changed travel patterns but do not add *new* vehicle traffic to the roadway network.

The ITE *Trip Generation Handbook, 2nd Edition* provides an average pass-by reduction rate of 36 percent for supermarkets during the Weekday PM peak hour. Weekday PM peak hour average pass-by reduction was assumed for weekday AM and Saturday peak hours because pass-by data for supermarkets during these peak hours are not available. Also, the ITE *Trip Generation Handbook* provides an average pass-by reduction rate of 34 percent during the PM peak hour and 26 percent during the Saturday peak hour for shopping centers. Weekday PM peak hour average pass-by reduction was assumed for weekday AM peak hour because pass-by data for shopping centers during the AM peak hour is not available. No pass-by reductions were applied to the proposed senior housing facility.

Table IV.A-12: Whole Foods Market Mode Choice Summary

Travel Mode	Weekday		Saturday
	AM [a]	PM [b]	Mid-Day [c]
Drive	75%	75%	71%
Walk	23%	19%	23%
Transit	0%	1%	1%
Bike	2%	5%	5%
Total	**100%**	**100%**	**100%**

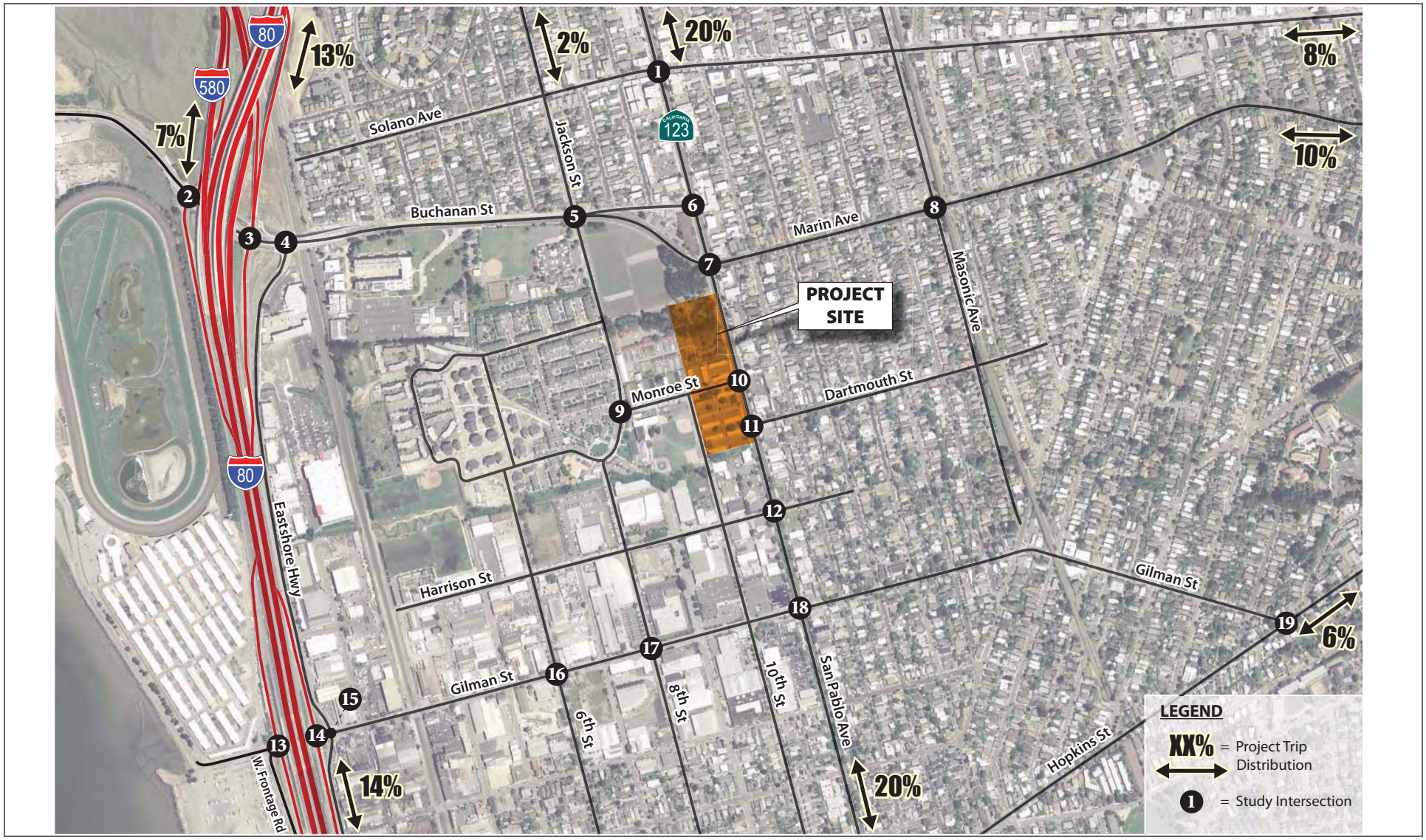
Notes:
[a] Weekday AM period from 7:00 a.m. to 9:00 a.m.; data based on mode split surveys of 222 customers conducted in September 2003.
[b] Weekday PM period from 4:00 p.m. to 6:00 p.m.; data based on mode split surveys of 504 customers conducted September 2003.
[c] Saturday mid-day period from 11:30 a.m. to 2:30 p.m.; data based on mode split surveys of 559 customers conducted in September 2008.
Source: Fehr & Peers, 2008.

To provide a more conservative analysis, the overall project trip generation was not reduced for internalization (i.e., trips internal to the project between the grocery store, retail and/or senior housing). Overall, the project is estimated to generate 247 net new weekday AM peak hour trips, 577 net new weekday PM peak hour trips, and 609 net new Saturday peak hour trips.

Trip Distribution. Trip distribution is defined as the directions of approach and departure that vehicles would use to arrive at and depart from the site. The trip distribution was primarily based on the results of the ACCMA latest available Countywide Travel Demand Model. Since the model is a regional model and does not accurately forecast local traffic, the trip distribution was further refined based on characteristics of the surrounding roadway network, existing traffic patterns, surrounding uses, and location of complimentary land uses. Figure IV.A-11 shows the estimated trip distribution for the proposed project. The project generated trips were assigned to the roadway network based on the estimated trip distribution.

(2) Existing Plus Project Intersection Operations. To determine the intersection levels of service under Existing Plus Project conditions, the assigned project trips were added to the existing traffic volumes. The resulting Existing Plus Project intersection volumes are shown on Figures IV.A-12a and IV.12b. These volumes were used in LOS calculations to determine intersection operations under Existing plus Project conditions. AM, PM and Saturday peak hour LOS under Existing Plus Project conditions are summarized in Table IV.A-13 along with the Existing conditions for comparison. The calculation worksheets are provided in Appendix B.

In order to simplify the presentation of intersection LOS impacts across each of the three scenarios (Existing Plus Project; Near Term (2015) Plus Project; and Cumulative (2035) Plus Project), Table IV.A-14 has been created. It summarizes how eight affected intersections would experience significant LOS impacts and facilitates the presentation of impacts under the two scenarios that follow this one. The presentation of impact findings under Near Term (2015) Plus Project conditions and Cumulative (2035) Plus Project conditions thus avoids being as repetitive as would otherwise be the case.



LSA

FIGURE IV.A-11

University Village at San Pablo Avenue Project EIR

Project Trip Distribution

NOT TO SCALE

SOURCE: FEHR & PEERS, 2009.

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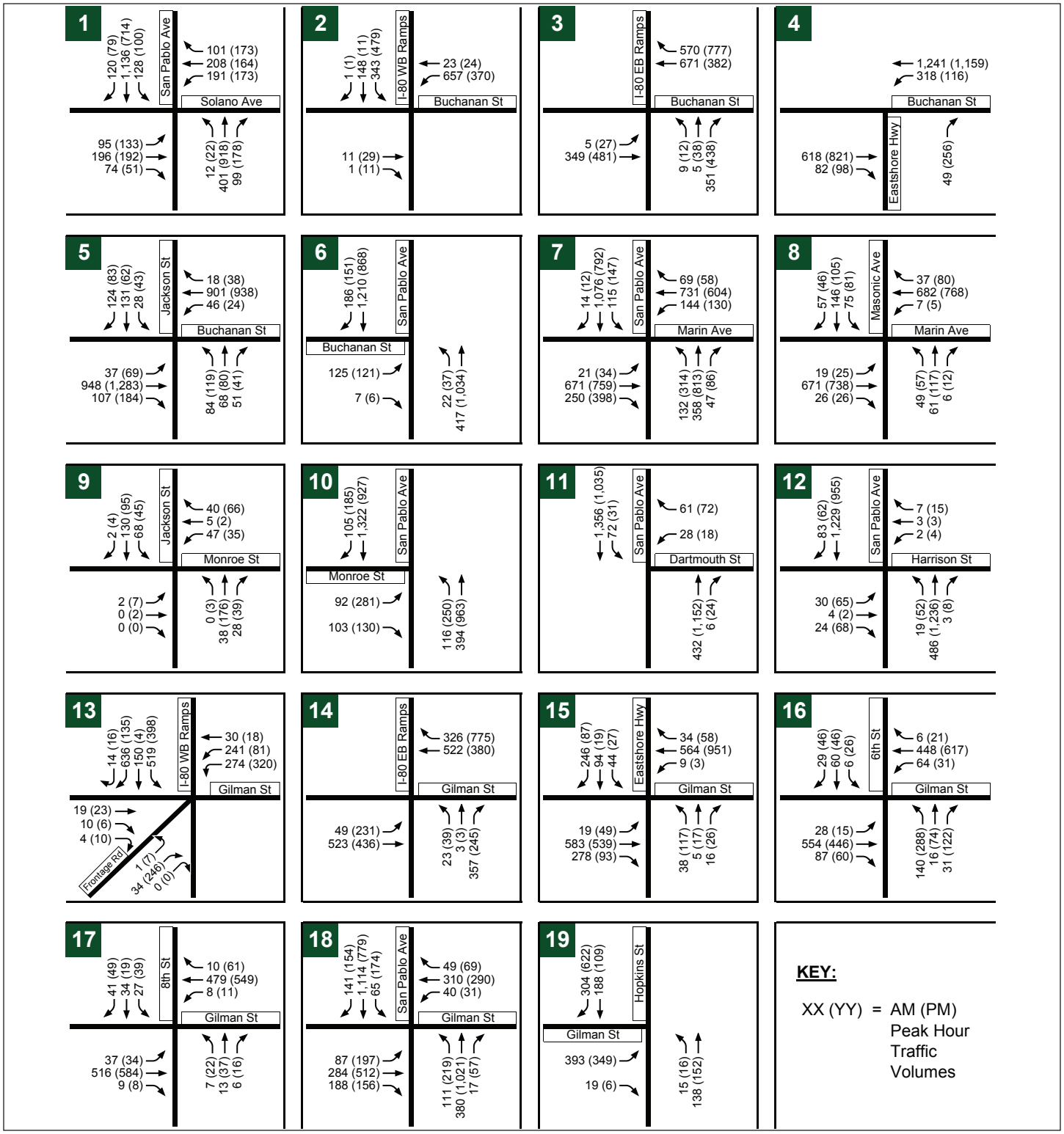

LSA

FIGURE IV.A-12a

University Village at San Pablo Avenue Project EIR

Existing (2008) Plus Project
Peak Hour Intersection Volumes

SOURCE: FEHR & PEERS, 2009.

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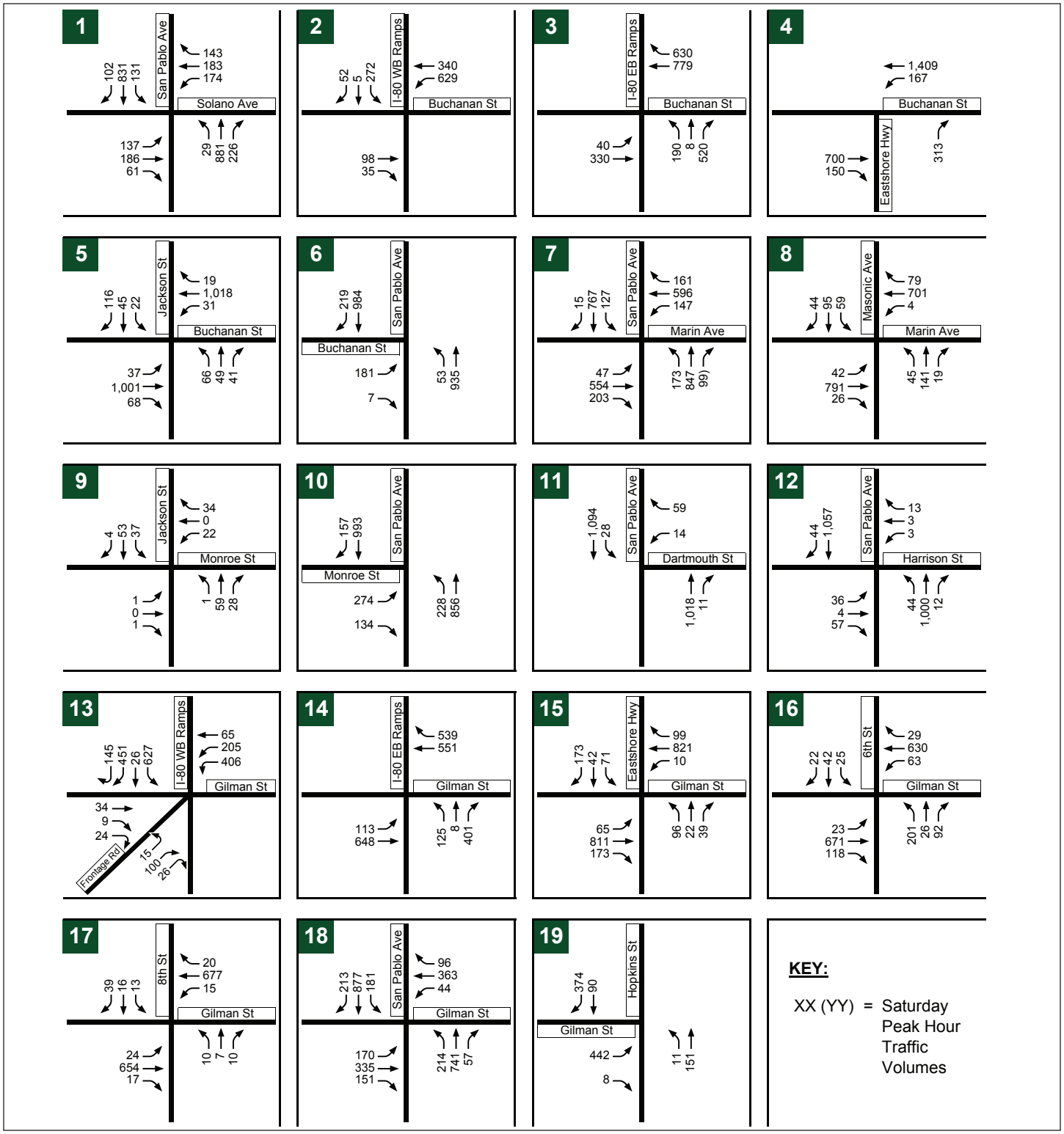

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FIGURE IV.A-12b

University Village at San Pablo Avenue Project EIR
Existing (2008) Plus Project
Saturday Peak Hour Intersection Volumes

SOURCE: FEHR & PEERS, 2009.

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Table IV.A-13: Existing Plus Project Conditions Peak Hour Intersection Level of Service

Intersection		Control	Peak Hour	Existing No Project Conditions		Existing Plus Project Conditions	
				Delay [a] (sec)	LOS	Delay [a] (sec)	LOS
1.	Solano Avenue/San Pablo Avenue	Signal	AM	34	C	35	C
			PM	33	C	33	C
			Saturday	33	C	33	C
2.	Buchanan Street/I-80/I-580 Westbound ramps	Signal	AM	12	B	12	B
			PM	12	B	13	B
			Saturday	15	B	15	B
3.	Buchanan /I-80/I-580 Eastbound ramps	Signal	AM	9	A	9	A
			PM	13	B	13	B
			Saturday	13	B	14	B
4.	Buchanan Street/ Eastshore Highway	Side-Street Stop	AM	2 (12)	A (B)	2 (12)	A (B)
			PM	2 (16)	A (C)	2 (16)	A (C)
			Saturday	3 (17)	A (C)	3 (17)	A (C)
5.	Buchanan Street/Jackson Street	Signal	AM	14	B	14	B
			PM	11	B	12	B
			Saturday	10	A	10	A
6.	Buchanan Street/San Pablo Avenue	Signal	AM	6	A	6	A
			PM	6	A	7	A
			Saturday	7	A	7	A
7.	Marin Avenue/San Pablo Avenue	Signal	AM	51	D	**57**	**E**
			PM	**89 [0.84]**	**F**	**100 [0.94]**	**F**
			Saturday	39	D	43	D
8.	Marin Avenue/Masonic Avenue	Signal	AM	12	B	12	B
			PM	13	B	13	B
			Saturday	12	B	12	B
9.	Monroe Street/Jackson Street	All-Way Stop	AM	9	A	9	A
			PM	9	A	9	A
			Saturday	8	A	8	A
10.	Monroe Street/San Pablo Avenue	Signal	AM	6	A	13	B
			PM	7	A	41	D
			Saturday	5	A	28	C
11.	Dartmouth Street/San Pablo Avenue	Side-Street Stop	AM	1 (19)	A (C)	1 (20)	A (C)
			PM	1 (16)	A (C)	1 (15)	A (B)
			Saturday	1 (16)	A (C)	1 (16)	A (C)
12.	Harrison Street/San Pablo Avenue	Side-Street Stop	AM	2 **(>50)**	A **(F)**	2 **(>50)**	A **(F)**
			PM	11 **(>50)**	B **(F)**	11 **(>50)**	B **(F)**
			Saturday	4 **(>50)**	A **(F)**	2 **(>50)**	A **(F)**
13.	Gilman Street/I-80 Westbound ramps	Side-Street Stop	AM	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
			PM	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
			Saturday	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
14.	Gilman Street/I-80 Eastbound ramps	Side-Street Stop	AM	4 (26)	A (D)	4 (26)	A (D)
			PM	6 (**>50**)	A (**F**)	6 (**>50**)	A (**F**)
			Saturday	18 **(>50)**	C **(F)**	20 **(>50)**	C **(F)**
15.	Gilman Street/Eastshore Highway	Side-Street Stop	AM	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
			PM	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
			Saturday	**>50 (>50)**	**F (F)**	**>50 (>50)**	**F (F)**
16.	Gilman Street/6th Street	Signal	AM	8	A	8	A
			PM	12	B	13	B
			Saturday	11	B	11	B
17.	Gilman Street/8th Street	Signal	AM	6	A	6	A
			PM	6	A	6	A
			Saturday	5	A	5	A
18.	Gilman Street/San Pablo Avenue	Signal	AM	41	D	41	D
			PM	**61**	**E**	**80**	**E**
			Saturday	48	D	**74**	**E**
19.	Gilman Street/Hopkins Street	All-Way Stop	AM	23	C	24	C
			PM	**46**	**E**	**>50**	**F**
			Saturday	22	C	25	C

Deficient intersections indicated in **bold**.

[a] For side-street stop-controlled intersections, delay for worst movement (in seconds per vehicle) is presented in parenthesis. For all-way stop-controlled and signalized intersections, average delay for all movements is presented. For signalized intersections operating at LOS F, the volume-to-capacity (v/c) ratio is also reported in brackets. All calculations based on the 2000 *Highway Capacity Manual* methodologies.

Source: Fehr & Peers, 2009.

Table IV.A-14: Impacted Intersection

Intersection		Project Scenario		
		Existing Plus Project	Near Term (2015) Plus Project	Cumulative (2035) Plus Project
1.	Solano Avenue/San Pablo Avenue			☑
4.	Buchanan Street/Eastshore Highway			☑
7.	Marin Avenue/San Pablo Avenue	☑	☑	☑
12.	Harrison Street/San Pablo Avenue			☑
13.	Gilman Street/I-80 Westbound Ramp	☑	☑	☑
14.	Gilman Street/I-80 Eastbound Ramp	☑	☑	☑
15.	Gilman Street/Eastshore Highway	☑	☑	☑
18.	Gilman Street/San Pablo Avenue	☑	☑	☑
19.	Gilman Street/Hopkins Street	☑	☑	☑

☑ indicates a Significant Unavoidable intersection LOS impact under the identified scenario.
Source: LSA Associates, Inc., 2009.

In addition, peak hour volume warrant (Warrant 3) analysis for urban conditions was conducted at the unsignalized study intersections. The results of the traffic signal warrant analysis are shown in Table IV.A-15 and the signal warrant calculations are provided in Appendix B.

Based on the results, the following study intersection would operate at a deficient LOS under Existing Plus Project conditions but the project would not cause a significant impact:

- Harrison Street/San Pablo Avenue (#12) would operate at LOS F in the eastbound approach during the AM, PM, and Saturday peak hours. However, the intersection would not satisfy the peak hour signal warrant. Thus, the project would not cause a significant impact at this intersection.

The proposed project would result in the following significant impacts under Existing Plus Project conditions.

<u>Impact TRANS-1</u>: Completion of the proposed project would significantly affect operations of the Marin Avenue/San Pablo Avenue (#7) intersection under Existing Plus Project conditions.(S)

Traffic generated by the proposed project would cause operations at the Marin Avenue/San Pablo Avenue intersection to degrade from LOS D to LOS E and increase intersection average delay by more than two seconds during the AM peak hour; the intersection would also continue to operate at LOS F during the PM peak hour with an increase of more than 0.01 in the v/c ratio.

> <u>Mitigation Measure TRANS-1</u>: Optimize traffic signal timing parameters (i.e., allocation of green time for each intersection approach and coordination with adjacent signals along San Pablo Avenue). This mitigation measure would improve intersection operations to LOS D during both AM and PM peak hours. Although this improvement would mitigate the impact to a less-than-significant level, the impact is considered significant and unavoidable because the City of Albany does not have jurisdiction over the mitigation measure. This mitigation measure would need to be implemented by Caltrans. (SU)

Table IV.A-15: Existing Plus Project Conditions Peak Hour Signal Warrant Analysis

Intersection		Control	Existing No Project Conditions	Existing Plus Project Conditions
			Peak Hour Warrant Met?	Peak Hour Warrant Met?
4.	Buchanan Street/ Eastshore Highway	Side-Street Stop	**Yes**	**Yes**
9.	Monroe Street/Jackson Street	All-Way Stop	No	No
11.	Dartmouth Street/San Pablo Avenue	Side-Street Stop	No	No
12.	Harrison Street/San Pablo Avenue	Side-Street Stop	No	No
13.	Gilman Street/I-80 WB Ramps/West Frontage Road	Side-Street Stop	**Yes**	**Yes**
14.	Gilman Street/I-80 EB Ramps	Side-Street Stop	**Yes**	**Yes**
15.	Gilman Street/Eastshore Highway	Side-Street Stop	**Yes**	**Yes**
19.	Gilman Street/Hopkins Street	All-Way Stop	**Yes**	**Yes**

Source: Fehr & Peers, 2009.

<u>Impact TRANS-2</u>: Completion of the proposed project would significantly affect operations of the Gilman Street/I-80 Westbound Ramps (#13) intersection under Existing Plus Project conditions. (S)

Traffic generated by the proposed project would contribute to a LOS F operations at the Gilman Street/I-80 Westbound Ramps intersection during the AM, PM, and Saturday peak hours. In addition, the intersection would meet the peak hour signal warrant and no other routes are available.

> <u>Mitigation Measure TRANS-2</u>: The project applicant shall contribute its fair share to the City of Berkeley's proposed dual roundabout project at the Gilman Street/I-80 Interchange. Based on a preliminary analysis, the west roundabout is expected to operate at LOS F and the east roundabout is expected to operate at LOS B during the AM peak hour; the west roundabout would operate at LOS C and the east roundabout would operate at LOS B during the PM peak hour; and both roundabouts would operate at LOS F during the Saturday peak hour after the implementation of this planned improvement.[15]Although either one or both roundabouts would operate at LOS F during certain peak hours, they would operate with less delay than the current configuration. Because the City of Albany does not have jurisdiction over the mitigation measure and it would need to be implemented by City of Berkeley and Caltrans, the impact is considered significant and unavoidable. In addition, the improvement is still in preliminary design, has not been approved, and does not have full funding. (SU)

<u>Impact TRANS-3</u>: Completion of the proposed project would significantly affect operations of the Gilman Street/I-80 Eastbound Ramps (#14) intersection under Existing Plus Project conditions. (S)

[15] The analysis of the roundabout operations was conducted using the SIDRA software package. SIDRA analyzes roundabouts as isolated facilities and does not account for the close spacing and the non-standard characteristics of the dual roundabouts at the Gilman Street Interchange. Thus, the two roundabouts may operate at worse conditions than reported.

Traffic generated by the proposed project would contribute to a LOS F operations at the Gilman Street/I-80 Eastbound Ramps intersection during the Saturday peak hour. In addition, the intersection would meet the peak hour signal warrant and no other routes are available.

Mitigation Measure TRANS-3: Implement Mitigation Measure TRANS-2. (SU)

Impact TRANS-4: Completion of the proposed project would significantly affect operations of the Gilman Street/Eastshore Highway (#15) intersection under Existing Plus Project conditions.(S)

Traffic generated by the proposed project would contribute to a LOS F operations at the Gilman Street/Eastshore Highway intersection during the AM, PM, and Saturday peak hours. In addition, the intersection would meet the peak hour signal warrant and no other routes are available.

Mitigation Measure TRANS-4: Implement Mitigation Measure TRANS-2. (SU)

Impact TRANS-5: Completion of the proposed project would significantly affect operations of the Gilman Street/San Pablo Avenue (#18) intersection under Existing Plus Project conditions. (S)

Traffic generated by the proposed project would contribute to a LOS E in operations at the Gilman Street/San Pablo Avenue intersection and increase intersection average delay by more than two seconds during the PM peak hour. It would cause the intersection to degrade from LOS D to LOS E and increase average delay by more than two seconds during the Saturday peak hour.

Mitigation Measure TRANS-5: The project applicant shall contribute its fair share to the City of Berkeley's plan to eliminate parking along the north side of Gilman Street between Kains Avenue and San Pablo Avenue and provide an additional travel lane on the westbound approach of the intersection. The improvement would reduce delay at the intersection. However, the intersection would continue to operate at LOS E during the PM and Saturday peak hours. Thus, the impact would remain significant and unavoidable. In addition, the City of Albany does not have jurisdiction over the mitigation measure. This mitigation measure would need to be implemented by City of Berkeley and may require approval from Caltrans. (SU)

Impact TRANS-6: Completion of the proposed project would significantly affect operations of the Gilman Street/Hopkins Street (#19) intersection under Existing Plus Project conditions. (S)

Traffic generated by the proposed project would cause operations at the Gilman Street/Hopkins Street intersection to degrade from LOS E to LOS F and increase intersection delay by more than three seconds during the PM peak hour. In addition, the intersection would meet the peak hour signal warrant.

Mitigation Measure TRANS-6: The project applicant shall contribute its fair share to signalize this intersection. This mitigation measure would improve intersection operations to LOS B during the PM peak hour. Although this improvement would mitigate the impact to a less-than-significant level, the impact is considered significant and unavoidable because the City of Albany does not have jurisdiction over the mitigation measure. This mitigation measure would

need to be implemented by City of Berkeley, and the City of Berkeley does not currently have any plans to signalize this intersection. (SU)

(3) Near-Term (2015) Plus Project Intersection Operations. To determine the intersection levels of service under Near-Term (2015) Plus Project conditions, the assigned project trips were added to the Near-Term (2015) No Project traffic volumes. The resulting Near-Term (2015) Plus Project intersection volumes are shown on Figures IV.A-13a and IV.A-13b. These volumes were used in LOS calculations to determine intersection operations under Near-Term (2015) Plus Project conditions. AM, PM and Saturday peak hour LOS under Near-Term (2015) Plus Project conditions are summarized in Table IV.A-7 along with the Near-Term (2015) No Project conditions for comparison. The calculation worksheets are provided in Appendix B.

In addition, peak hour volume warrant (Warrant 3) analysis for urban conditions was conducted at the unsignalized study intersections. The results of the traffic signal warrant analysis are shown in Table IV.A-8 and the signal warrant calculations are provided in Appendix B.

Based on the results, the following study intersection would operate at a deficient LOS under Near-Term (2015) Plus Project conditions, but the project would not cause a significant impact:

- Harrison Street/San Pablo Avenue (#12) would operate at LOS F in the eastbound approach during the AM, PM, and Saturday peak hours. However, the intersection would not satisfy the peak hour signal warrant. Thus, the project would not cause a significant impact at this intersection.

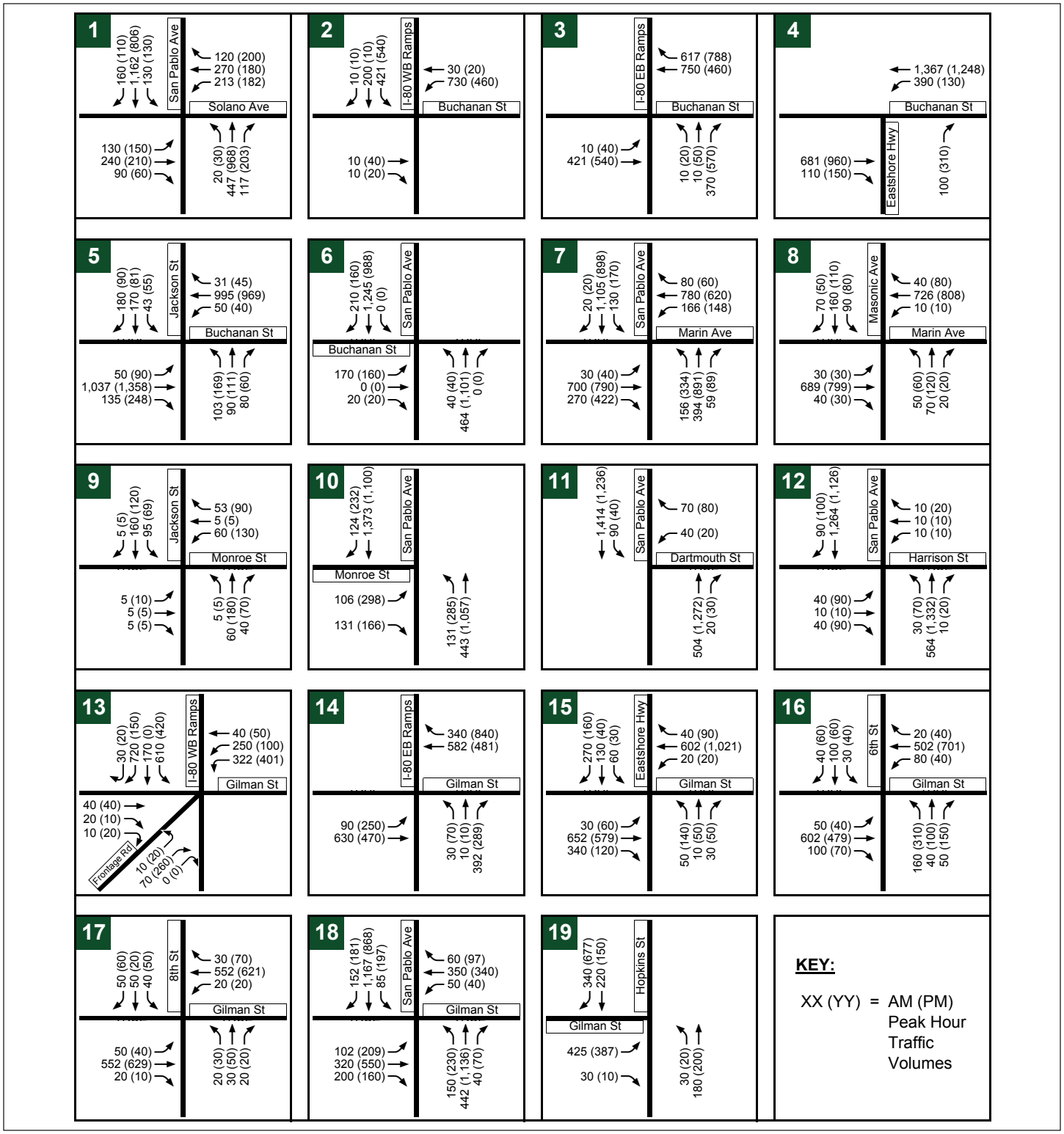
The proposed project would result in the following significant impacts under Near-Term (2015) Plus Project conditions.

<u>Impact TRANS-7</u>: Completion of the proposed project would significantly affect operations of the Marin Avenue/San Pablo Avenue (#7) intersection under Near-Term (2015) Plus Project conditions. (S)

The addition of traffic generated by the proposed project would cause operations at the Marin Avenue/San Pablo Avenue intersection to degrade from LOS D to LOS E and increase intersection average delay by more than two seconds during the PM peak hour.

<u>Mitigation Measure TRANS-7</u>: The project applicant shall install an exclusive right-turn lane and convert the current shared through/right-turn lane into an exclusive through lane on eastbound Marin Avenue approach of the intersection. This mitigation measure would improve intersection operations to LOS D during the PM peak hour. Although this improvement would mitigate the impact to less-than-significant level, the impact is considered significant and unavoidable because the mitigation measure would need to be approved by Caltrans. In addition, this mitigation measure would adversely affect pedestrian circulation by increasing the distance to cross the west approach of the intersection. (SU)

The following intersections would have significant unavoidable impacts in the Near Term (2015) Plus Project Conditions. These intersections were also identified in Existing Plus Project Conditions as having significant and unavoidable impacts, and would have the same mitigation measures in the



LSA

FIGURE IV.A-13a

University Village at San Pablo Avenue Project EIR

Near Term (2015) Plus Project
Peak Hour Intersection Volumes

SOURCE: FEHR & PEERS, 2009.

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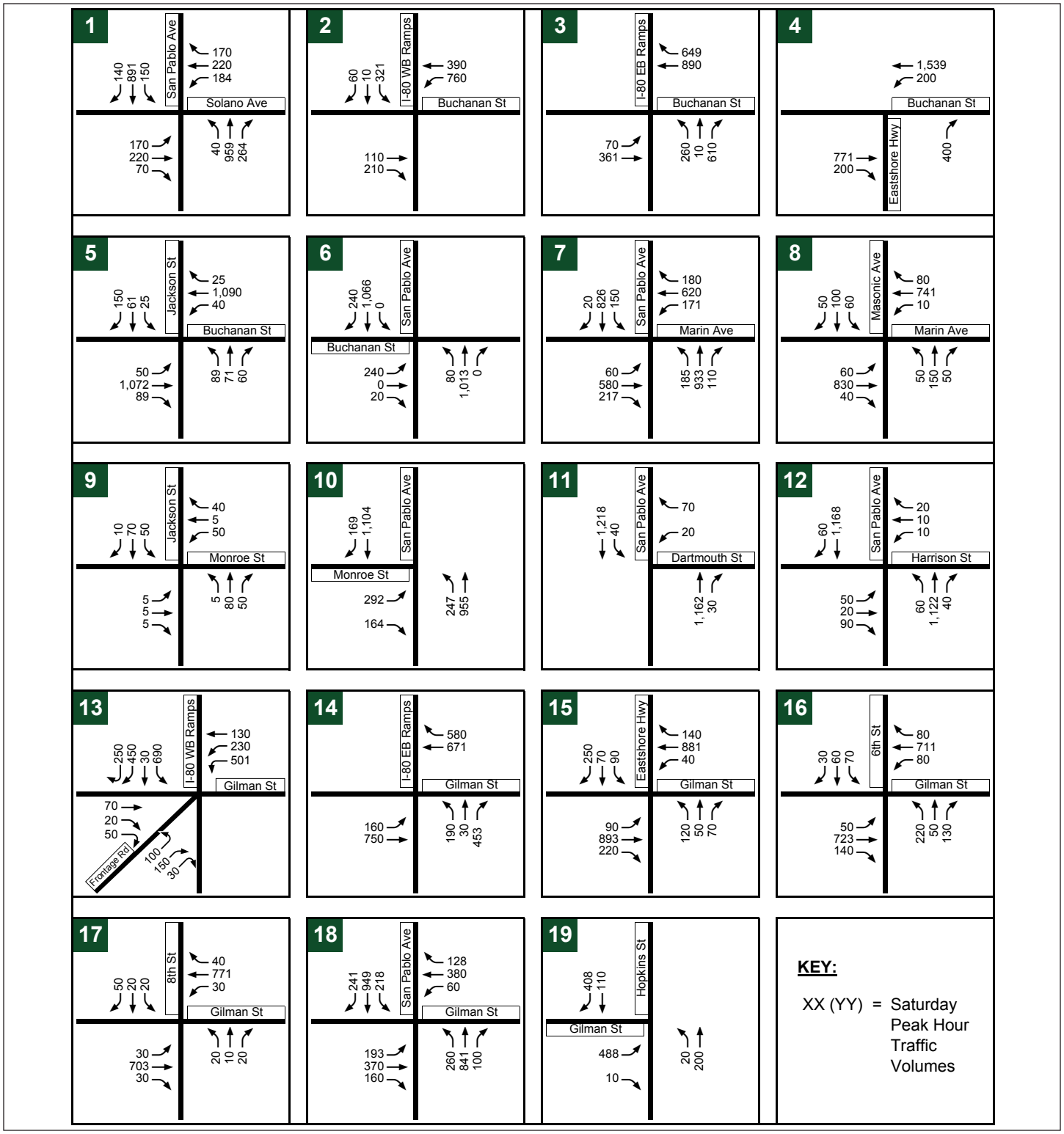

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FIGURE IV.A-13b

University Village at San Pablo Avenue Project EIR

Near Term (2015) Plus Project

Saturday Peak Hour Intersection Volumes

SOURCE: FEHR & PEERS, 2009.

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Near Term (2015) Plus Project Conditions as were identified and discussed in the Existing Plus Project Conditions.

- *Gilman Street/I-80 Westbound Ramps (#13) intersection*
- *Gilman Street/I-80 Eastbound Ramps (#14) intersection*
- *Gilman Street/Eastshore Highway (#15) intersection*
- *Gilman Street/San Pablo Avenue (#18) intersection*
- *Gilman Street/Hopkins Street (#19) intersection*

(4) Cumulative (2035) Plus Project Intersection Operations. To determine the intersection levels of service under Cumulative (2035) Plus Project conditions, the assigned project trips were added to the Cumulative (2035) No Project traffic volumes. The resulting Cumulative (2035) Plus Project intersection volumes are shown on Figures IV.A-14a and IV.14b. These volumes were used in LOS calculations to determine intersection operations under Cumulative (2035) Plus Project conditions. AM, PM and Saturday peak hour LOS under Cumulative (2035) Plus Project conditions are summarized in Table IV.A-9 along with the Cumulative (2035) No Project conditions for comparison. The calculation worksheets are provided in Appendix B.

In addition, peak hour volume warrant (Warrant 3) analysis for urban conditions was conducted at the unsignalized study intersections. The results of the traffic signal warrant analysis are shown in Table IV.A-10 and the signal warrant calculations are provided in Appendix B.

Based on the results, the following study intersection would operate at a deficient LOS under Cumulative (2035) Plus Project conditions but the project would not cause a significant impact:

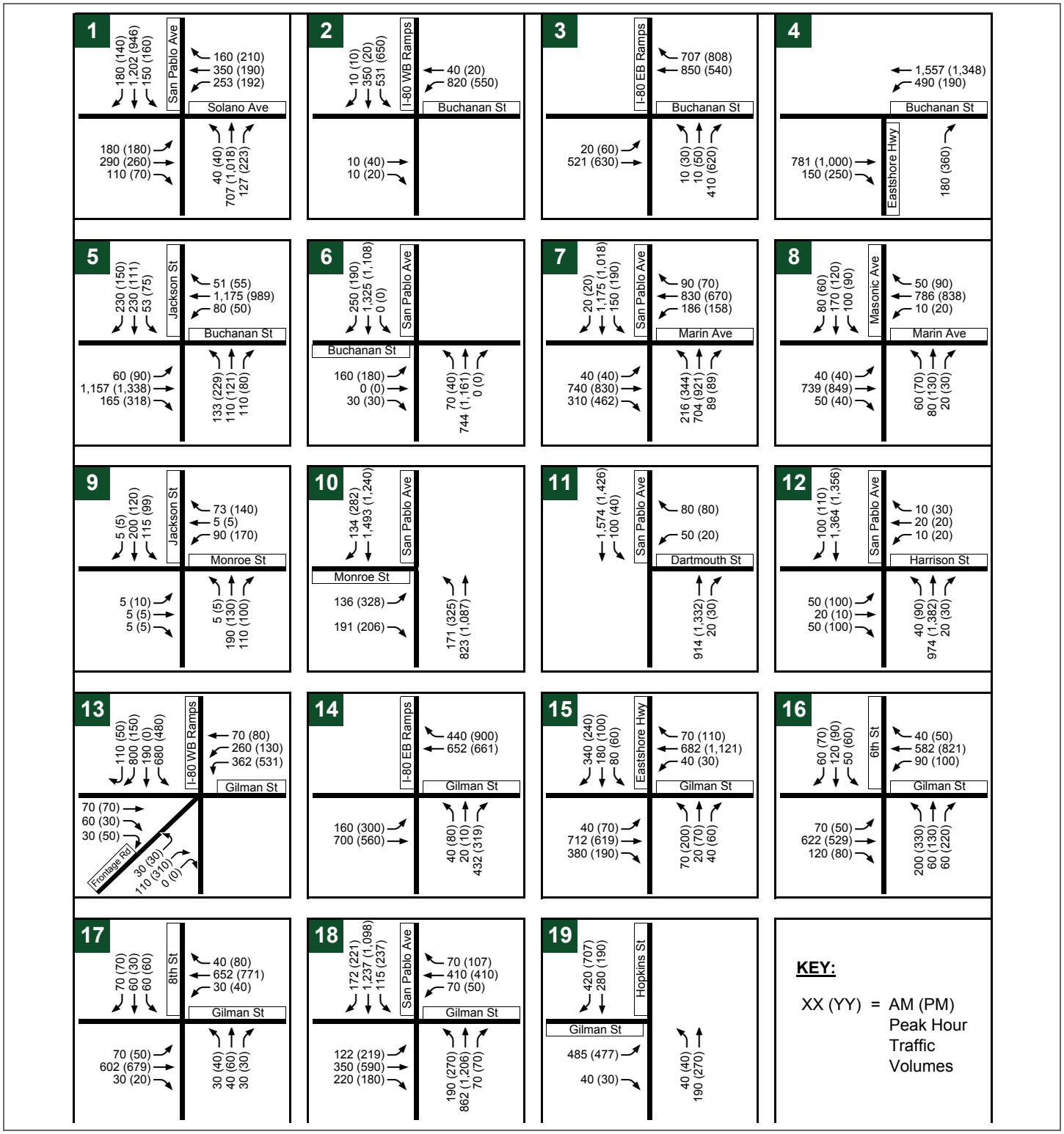
- Dartmouth Street/San Pablo Avenue (#13) would operate at LOS F in the westbound approach during the PM and Saturday peak hours. However, the intersection would not satisfy the peak hour signal warrant. Thus, the project would not cause a significant impact at this intersection.

The proposed project would result in the following significant impacts under Cumulative (2035) Plus Project conditions.

<u>Impact TRANS-8</u>: Completion of the proposed project would significantly affect operations of the Solano Avenue/San Pablo Avenue (#1) intersection under Cumulative (2035) Plus Project conditions. (S)

Traffic generated by the proposed project would contribute to LOS E operations at the Solano Avenue/San Pablo Avenue intersection and increase intersection average delay by more than two seconds during the Saturday peak hour.

> <u>Mitigation Measure TRANS-8</u>: No improvements are currently feasible at this intersection. This is due to the lack of available right-of-way at this location, presence of existing lights and utilities, and that Caltrans has jurisdiction over this intersection. Thus, the impact is considered significant and unavoidable. (SU)



LSA

FIGURE IV.A-14a

University Village at San Pablo Avenue Project EIR

Cumulative (2035) Plus Project
Peak Hour Intersection Volumes

SOURCE: FEHR & PEERS, 2009.

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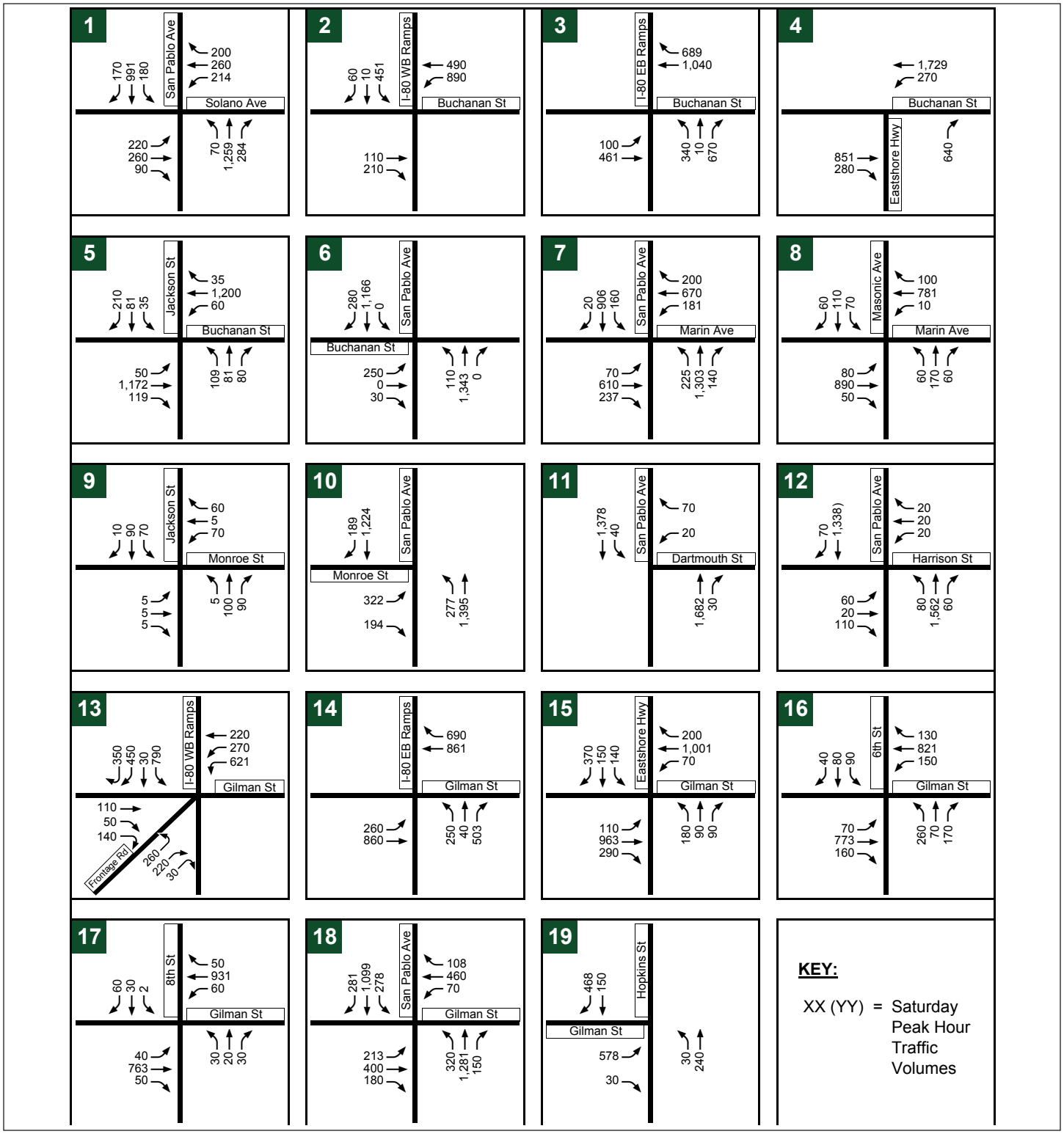

LSA

FIGURE IV.A-14b

University Village at San Pablo Avenue Project EIR

Cumulative (2035) Plus Project

Saturday Peak Hour Intersection Volumes

SOURCE: FEHR & PEERS, 2009.

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Impact TRANS-9: Completion of the proposed project would significantly affect operations of the Buchanan Street/Eastshore Highway (#4) intersection under Cumulative (2035) Plus Project conditions. (S)

Traffic generated by the proposed project would contribute to LOS F operations at the Buchanan Street/Eastshore Highway intersection during the Saturday peak hour. In addition, the intersection would meet the peak hour signal warrant regardless of the proposed project and no other routes are available.

> Mitigation Measure TRANS-9: The project applicant shall contribute its fair share to signalize this intersection and provide a left-turn from northbound Eastshore Highway to westbound Buchanan Street. Signal timing at the intersection shall be coordinated with adjacent signals along Buchanan Street. This mitigation measure would improve intersection operations to LOS B during the Saturday peak hour. Although this improvement would mitigate the impact to a less-than-significant level, the impact is considered significant and unavoidable because the City of Albany does not have jurisdiction over the mitigation measure. This mitigation measure would need to be approved by Caltrans. Caltrans currently has no plans to signalize this intersection. (SU)

Impact TRANS-10: Completion of the proposed project would significantly affect operations of the Harrison Street/San Pablo Avenue (#12) intersection under Cumulative (2035) Plus Project conditions. (S)

> Traffic generated by the proposed project would contribute to LOS F operations at the Harrison Street/San Pablo Avenue intersection during the AM, PM, and Saturday peak hours. In addition, the intersection would meet the peak hour signal warrant regardless of the proposed project.
>
> Mitigation Measure TRANS-10: The project applicant shall contribute its fair share to signalize this intersection. Signal timing at the intersection shall be coordinated with adjacent signals along San Pablo Avenue. This mitigation measure would improve intersection operations to LOS A during the AM, PM, and Saturday peak hours. Although this improvement would mitigate the impact to a less-than-significant level, the impact is considered significant and unavoidable because the City of Albany does not have jurisdiction over the mitigation measure. This mitigation measure would need to be implemented by City of Berkeley and approved by Caltrans. Neither the City of Berkeley nor Caltrans currently have any plans to signalize this intersection. (SU)

The following intersection would have a significant unavoidable impact in the Cumulative (2035) Plus Project Conditions. This intersection was also identified in the Near Term (2015) Plus Project Conditions as having a significant and unavoidable impact, and would have the same mitigation measures in the Cumulative (2035) Plus Project Conditions as were identified and described in the Near Term (2015) Plus Project Conditions.

- *Marin Avenue/San Pablo Avenue (#7) intersection*

The following intersections would have significant unavoidable impacts in the Cumulative (2035) Plus Project Conditions. These intersections were also identified in Existing Plus Project Conditions and the Near Term (2015) Plus Project Conditions as having significant and unavoidable impacts, and would have the same mitigation measures in the Cumulative (2035) Plus Project Conditions as were identified and discussed in the Existing Plus Project Conditions.

- *Gilman Street/I-80 Westbound Ramps (#13) intersection*
- *Gilman Street/I-80 Eastbound Ramps (#14) intersection*
- *Gilman Street/Eastshore Highway (#15) intersection*
- *Gilman Street/San Pablo Avenue (#18) intersection*
- *Gilman Street/Hopkins Street (#19) intersection*

(5) ACCMA MTS Roadway Analysis. This section considers the impact of the project on freeways, major arterials, and other major roadways in Alameda County in response to the notice of preparation (NOP) comments from the ACCMA. As requested in the NOP comment letter, the following freeways and surface streets were included in this analysis: I-80, I-580, San Pablo Avenue, Solano Avenue, Marin Avenue, and Buchanan Street. The analysis methodology and the results for 2015 and 2035 are described in this section.

Traffic Forecasts. The ACCMA model was used to forecast 2015 and 2035 traffic volumes on the MTS roadway system. The forecasts for the MTS system differ from the intersection forecasts previously discussed. The model land use database and the roadway network used to develop the intersection forecasts were modified to better reflect the areas surrounding the project site. In addition, the forecasted volumes directly output by the model were used in the MTS roadway analysis, whereas the intersection forecasts were developed using the "Furness" method based on the model output. Due to the differences in the land use data and future volume development, the results from the two analyses are not directly comparable.

The result of the ACCMA model were used to forecast the Without Project condition for 2015 and 2035. Project trips were manually distributed on the MTS roadway segments (including both freeways and surface streets) identified above using the trip distribution previously discussed. The distribution of project trips onto the MTS segments results in the Plus Project volumes for 2015 and 2035.

Analysis Methodology. Operations of the MTS freeway and surface street segments were assessed based on volume-to-capacity (v/c) ratios. For freeway segments, a per-lane capacity of 2,000 vehicles per hour (vph) was used. This capacity is consistent with 2007 ACCMA Congestion Management Program documents. For surface streets, a per-lane capacity of 800 vph was used. Roadway segments with a v/c ratio greater than 1.0 are assigned LOS F.

Analysis Results. The roadway segment AM and PM peak hour MTS roadway analyses under 2015 and 2035 conditions are summarized in Tables IV.A-16 through IV.A-19. The addition of project generated trips would result in the following impact.

<u>Impact TRANS-11</u>: Completion of the proposed project would significantly affect operations on segments of the CMP roadway network. (S)

As previously described, a project would have a significant impact if it would cause:

- Roadway segment to degrade from LOS E or better to LOS F *and* increase the volume-to-capacity ratio by more than 5 percent; or
- Increase the volume-to-capacity ratio by more than 5 percent for a roadway segment that would operate at LOS F without the project.

Based on the analysis summarized above and in Tables IV.A-16 through IV.A-19, the proposed project would cause significant impacts on the following CMP roadway segments:

- Northbound San Pablo Avenue between Gilman Street and Marin Avenue during the PM peak hour under Near Term (2015) Plus Project Conditions.
- Northbound San Pablo Avenue between Gilman Street and Solano Avenue during the PM peak hour under Cumulative (2035) Plus Project Conditions.
- Southbound San Pablo Avenue between Marin Avenue and Gilman Street during the PM peak hour under Cumulative (2035) Plus Project Conditions.

These results are consistent with the results of the intersection analysis previously presented which identified significant impacts at the intersections of San Pablo Avenue with Marin Avenue and Gilman Street under Near Term (2015) Plus Project Conditions and at the Solano Avenue/San Pablo Avenue intersection under Cumulative (2035) Plus Project Conditions.

> Mitigation Measure TRANS-11: Full mitigation of these impacts is not feasible as the constrained right-of-way along San Pablo Avenue does not allow widening of the roadway. Implement Mitigation Measures TRANS-5, TRANS-7, TRANS-8, and TRANS-10. These mitigation measures would reduce the magnitude of the project impact, but not to a less-than-significant level; the impact would remain significant and unavoidable. (SU)

(6) Site Access and Circulation Analysis. Fehr & Peers reviewed the site plan for vehicular, bicycle, and pedestrian access, circulation and safety. The review and recommendations for improvements are summarized in this section.

Vehicular access to the site would be provided by the following three driveways:

1. A driveway on San Pablo Avenue, about 220 feet north of Monroe Street would provide right-in/right-out access to Block A (Whole Foods Market and the 2,000 square-feet of additional retail space).
2. A driveway on Monroe Street, about 300 feet west of San Pablo Avenue would provide full access to and from Block A.
3. A driveway on Monroe Street, about 300 feet west of San Pablo Avenue and opposite the Whole Foods driveway would provide full access and from Block B (senior housing facility and 28,000 square-feet of retail space). This driveway is at the same location as the existing 10th Street and will be referred to as 10th Street in this analysis.

Table IV.A-16: CMP Designated System Impact Analysis – 2015 AM

Segment and Segment Limits		Capacity	No Project Conditions			With Project Conditions			Change in V/C	Impact?
			Volume	V/C	LOS	Volume	V/C	LOS		
Freeway Segments										
I-80										
University	Gilman	8,000	7,246	0.91	E	7,268	0.91	E	0.00	no
Gilman	Buchanan	9,000	7,115	0.79	D	7,115	0.79	D	0.00	no
Buchanan	Central	6,000	4,019	0.67	C	4,030	0.67	C	0.00	no
Central	Buchanan	6,000	6,389	1.06	**F**	6,410	1.07	**F**	0.00	no
Buchanan	Gilman	9,000	10,011	1.11	**F**	10,011	1.11	**F**	0.00	no
Gilman	University	8,000	8,646	1.08	**F**	8,658	1.08	**F**	0.00	no
I-580										
Buchanan	Central	4,000	3,686	0.92	E	3,695	0.92	E	0.00	no
Central	Buchanan	4,000	4,261	1.07	**F**	4,272	1.07	**F**	0.00	no
Arterials										
Gilman Street										
I-80	6th St	1,600	1,248	0.78	D	1,270	0.79	D	0.01	no
6th St	San Pablo	800	556	0.70	C	578	0.72	C	0.03	no
San Pablo	Santa Fe	800	382	0.48	B	387	0.48	B	0.01	no
Santa Fe	Hopkins	800	508	0.64	C	513	0.64	C	0.01	no
Hopkins	Santa Fe	800	154	0.19	A	164	0.21	A	0.01	no
Santa Fe	San Pablo	800	455	0.57	B	465	0.58	C	0.01	no
San Pablo	6th St	800	711	0.89	D	723	0.90	E	0.02	no
6th St	I-80	1,600	615	0.38	B	627	0.39	B	0.01	no
San Pablo Avenue										
Cedar	Gilman	1,600	943	0.59	C	975	0.61	C	0.02	no
Gilman	Monroe	1,600	709	0.44	B	773	0.48	B	0.04	no
Monroe	Marin	1,600	690	0.43	B	739	0.46	B	0.03	no
Marin	Solano	1,600	342	0.21	A	366	0.23	A	0.02	no
Solano	County Limit	1,600	432	0.27	A	449	0.28	A	0.01	no
County Limit	Solano	1,600	1,951	1.22	**F**	1,983	1.24	**F**	0.02	no
Solano	Marin	1,600	1,583	0.99	E	1,628	1.02	**F**	0.03	no
Marin	Monroe	1,600	1,903	1.19	**F**	1,960	1.23	**F**	0.04	no
Monroe	Gilman	1,600	1,900	1.19	**F**	1,934	1.21	**F**	0.02	no
Gilman	Cedar	1,600	1,949	1.22	**F**	1,966	1.23	**F**	0.01	no
Buchanan Street										
I-80	Jackson	1,600	682	0.43	B	714	0.45	B	0.02	no
Jackson	I-80	1,600	1,022	0.64	C	1,039	0.65	C	0.01	no
Marin Avenue										
Jackson	San Pablo	1,600	750	0.47	B	780	0.49	B	0.02	no
San Pablo	Santa Fe	800	810	1.01	**F**	819	1.02	**F**	0.01	no
Santa Fe	San Pablo	800	878	1.10	**F**	894	1.12	**F**	0.02	no
San Pablo	Jackson	1,600	869	0.54	B	885	0.55	B	0.01	no
Solano Avenue										
San Pablo	Santa Fe	800	436	0.55	B	443	0.55	B	0.01	no
Santa Fe	San Pablo	800	311	0.39	B	324	0.41	B	0.02	no

Source: Fehr & Peers, 2009.

Table IV.A-17: CMP Designated System Impact Analysis – 2015 PM

Segment and Segment Limits		Capacity	No Project Conditions			With Project Conditions			Change in V/C	Impact?
			Volume	V/C	LOS	Volume	V/C	LOS		
Freeway Segments										
I-80										
University	Gilman	8,000	9,110	1.14	**F**	9,149	1.14	**F**	0.00	no
Gilman	Buchanan	9,000	10,081	1.12	**F**	10,081	1.12	**F**	0.00	no
Buchanan	Central	6,000	6,253	1.04	**F**	6,291	1.05	**F**	0.01	no
Central	Buchanan	6,000	5,248	0.87	D	5,284	0.88	D	0.01	no
Buchanan	Gilman	9,000	8,286	0.92	E	8,286	0.92	E	0.00	no
Gilman	University	8,000	7,229	0.90	E	7,270	0.91	E	0.01	no
I-580										
Buchanan	Central	4,000	4,212	1.05	**F**	4,232	1.06	**F**	0.01	no
Central	Buchanan	4,000	4,011	1.00	**F**	4,031	1.01	**F**	0.00	no
Arterials										
Gilman Street										
I-80	6th St	1,600	1,236	0.77	D	1,275	0.80	D	0.02	no
6th St	San Pablo	800	875	1.09	**F**	914	1.14	**F**	0.05	no
San Pablo	Santa Fe	800	470	0.59	C	487	0.61	C	0.02	no
Santa Fe	Hopkins	800	247	0.31	A	264	0.33	A	0.02	no
Hopkins	Santa Fe	800	512	0.64	C	529	0.66	C	0.02	no
Santa Fe	San Pablo	800	439	0.55	B	456	0.57	B	0.02	no
San Pablo	6th St	800	458	0.57	B	499	0.62	C	0.05	no
6th St	I-80	1,600	1,114	0.70	C	1,155	0.72	C	0.03	no
San Pablo Avenue										
Cedar	Gilman	1,600	1,946	1.22	**F**	2,002	1.25	**F**	0.03	no
Gilman	Monroe	1,600	1,899	1.19	**F**	2,011	1.26	**F**	0.07	**yes**
Monroe	Marin	1,600	1,830	1.14	**F**	1,995	1.25	**F**	0.10	**yes**
Marin	Solano	1,600	1,424	0.89	D	1,505	0.94	E	0.05	no
Solano	County Limit	1,600	1,939	1.21	**F**	1,997	1.25	**F**	0.04	no
County Limit	Solano	1,600	1,063	0.66	C	1,119	0.70	C	0.03	no
Solano	Marin	1,600	725	0.45	B	803	0.50	B	0.05	no
Marin	Monroe	1,600	1,200	0.75	C	1,332	0.83	D	0.08	no
Monroe	Gilman	1,600	1,267	0.79	D	1,383	0.86	D	0.07	no
Gilman	Cedar	1,600	1,761	1.10	**F**	1,819	1.14	**F**	0.04	no
Buchanan Street										
I-80	Jackson	1,600	1,236	0.77	D	1,292	0.81	D	0.04	no
Jackson	I-80	1,600	1,114	0.70	C	1,172	0.73	C	0.04	no
Marin Avenue										
Jackson	San Pablo	1,600	1,147	0.72	C	1,199	0.75	C	0.03	no
San Pablo	Santa Fe	800	901	1.13	**F**	930	1.16	**F**	0.04	no
Santa Fe	San Pablo	800	880	1.10	**F**	908	1.14	**F**	0.03	no
San Pablo	Jackson	1,600	1,049	0.66	C	1,103	0.69	C	0.03	no
Solano Avenue										
San Pablo	Santa Fe	800	596	0.75	C	619	0.77	D	0.03	no
Santa Fe	San Pablo	800	557	0.70	C	579	0.72	C	0.03	no

Source: Fehr & Peers, 2009.

Table IV.A-18: CMP Designated System Impact Analysis – 2035 AM

Segment and Segment Limits		Capacity	No Project Conditions			With Project Conditions			Change in V/C	Impact?
			Volume	V/C	LOS	Volume	V/C	LOS		
Freeway Segments										
I-80										
University	Gilman	8,000	8,281	1.04	**F**	8,303	1.04	**F**	0.00	no
Gilman	Buchanan	9,000	8,607	0.96	E	8,607	0.96	E	0.00	no
Buchanan	Central	6,000	5,300	0.88	D	5,311	0.89	D	0.00	no
Central	Buchanan	6,000	6,964	1.16	**F**	6,985	1.16	**F**	0.00	no
Buchanan	Gilman	9,000	11,824	1.31	**F**	11,824	1.31	**F**	0.00	no
Gilman	University	8,000	10,295	1.29	**F**	10,307	1.29	**F**	0.00	no
I-580										
Buchanan	Central	4,000	3,891	0.97	E	3,900	0.98	E	0.00	no
Central	Buchanan	4,000	4,928	1.23	**F**	4,939	1.23	**F**	0.00	no
Arterials										
Gilman Street										
I-80	6th St	1,600	1,219	0.76	D	1,241	0.78	D	0.01	no
6th St	San Pablo	800	518	0.65	C	540	0.68	C	0.03	no
San Pablo	Santa Fe	800	425	0.53	B	430	0.54	B	0.01	no
Santa Fe	Hopkins	800	619	0.77	D	624	0.78	D	0.01	no
Hopkins	Santa Fe	800	300	0.38	B	310	0.39	B	0.01	no
Santa Fe	San Pablo	800	392	0.49	B	402	0.50	B	0.01	no
San Pablo	6th St	800	857	1.07	**F**	869	1.09	**F**	0.01	no
6th St	I-80	1,600	1,017	0.64	C	1,029	0.64	C	0.01	no
San Pablo Avenue										
Cedar	Gilman	1,600	1,845	1.15	**F**	1,877	1.17	**F**	0.02	no
Gilman	Monroe	1,600	1,411	0.88	D	1,475	0.92	E	0.04	no
Monroe	Marin	1,600	1,370	0.86	D	1,419	0.89	D	0.03	no
Marin	Solano	1,600	976	0.61	C	1,000	0.63	C	0.02	no
Solano	County Limit	1,600	1,210	0.76	D	1,227	0.77	D	0.01	no
County Limit	Solano	1,600	1,962	1.23	**F**	1,994	1.25	**F**	0.02	no
Solano	Marin	1,600	1,639	1.02	**F**	1,684	1.05	**F**	0.03	no
Marin	Monroe	1,600	1,872	1.17	**F**	1,929	1.21	**F**	0.04	no
Monroe	Gilman	1,600	1,926	1.20	**F**	1,960	1.23	**F**	0.02	no
Gilman	Cedar	1,600	1,920	1.20	**F**	1,937	1.21	**F**	0.01	no
Buchanan Street										
I-80	Jackson	1,600	923	0.58	B	955	0.60	C	0.02	no
Jackson	I-80	1,600	1,395	0.87	D	1,412	0.88	D	0.01	no
Marin Avenue										
Jackson	San Pablo	1,600	880	0.55	B	910	0.57	B	0.02	no
San Pablo	Santa Fe	800	902	1.13	**F**	911	1.14	**F**	0.01	no
Santa Fe	San Pablo	800	901	1.13	**F**	917	1.15	**F**	0.02	no
San Pablo	Jackson	1,600	1,081	0.68	C	1,097	0.69	C	0.01	no
Solano Avenue										
San Pablo	Santa Fe	800	598	0.75	C	605	0.76	D	0.01	no
Santa Fe	San Pablo	800	604	0.76	D	617	0.77	D	0.02	no

Source: Fehr & Peers, 2009.

Table IV.A-19: CMP Designated System Impact Analysis – 2035 PM

Segment and Segment Limits		Capacity	No Project Conditions			With Project Conditions			Change in V/C	Impact?
			Volume	V/C	LOS	Volume	V/C	LOS		
Freeway Segments										
I-80										
University	Gilman	8,000	10,550	1.32	**F**	10,589	1.32	**F**	0.00	no
Gilman	Buchanan	9,000	11,242	1.25	**F**	11,242	1.25	**F**	-	no
Buchanan	Central	6,000	6,761	1.13	**F**	6,799	1.13	**F**	0.01	no
Central	Buchanan	6,000	6,039	1.01	**F**	6,075	1.01	**F**	0.01	no
Buchanan	Gilman	9,000	9,557	1.06	**F**	9,557	1.06	**F**	-	no
Gilman	University	8,000	8,687	1.09	**F**	8,728	1.09	**F**	0.01	no
I-580										
Buchanan	Central	4,000	4,734	1.18	**F**	4,754	1.19	**F**	0.00	no
Central	Buchanan	4,000	4,431	1.11	**F**	4,451	1.11	**F**	0.00	no
Arterials										
Gilman Street										
I-80	6th St	1,600	1,231	0.77	D	1,270	0.79	D	0.02	no
6th St	San Pablo	800	956	1.20	**F**	995	1.24	**F**	0.05	no
San Pablo	Santa Fe	800	674	0.84	D	691	0.86	D	0.02	no
Santa Fe	Hopkins	800	514	0.64	C	531	0.66	C	0.02	no
Hopkins	Santa Fe	800	578	0.72	C	595	0.74	C	0.02	no
Santa Fe	San Pablo	800	576	0.72	C	593	0.74	C	0.02	no
San Pablo	6th St	800	701	0.88	D	742	0.93	E	0.05	no
6th St	I-80	1,600	1,213	0.76	D	1,254	0.78	D	0.03	no
San Pablo Avenue										
Cedar	Gilman	1,600	1,917	1.20	**F**	1,973	1.23	**F**	0.03	no
Gilman	Monroe	1,600	2,035	1.27	**F**	2,147	1.34	**F**	0.07	**yes**
Monroe	Marin	1,600	1,905	1.19	**F**	2,070	1.29	**F**	0.10	**yes**
Marin	Solano	1,600	1,848	1.16	**F**	1,929	1.21	**F**	0.05	**yes**
Solano	County Limit	1,600	1,952	1.22	**F**	2,010	1.26	**F**	0.04	no
County Limit	Solano	1,600	1,901	1.19	**F**	1,957	1.22	**F**	0.03	no
Solano	Marin	1,600	1,600	1.00	**F**	1,678	1.05	**F**	0.05	no
Marin	Monroe	1,600	1,842	1.15	**F**	1,974	1.23	**F**	0.08	**yes**
Monroe	Gilman	1,600	1,937	1.21	**F**	2,053	1.28	**F**	0.07	**yes**
Gilman	Cedar	1,600	1,994	1.25	**F**	2,052	1.28	**F**	0.04	no
Buchanan Street										
I-80	Jackson	1,600	1,616	1.01	**F**	1,672	1.05	**F**	0.03	no
Jackson	I-80	1,600	1,370	0.86	D	1,428	0.89	D	0.04	no
Marin Avenue										
Jackson	San Pablo	1,600	1,487	0.93	E	1,539	0.96	E	0.03	no
San Pablo	Santa Fe	800	964	1.21	**F**	993	1.24	**F**	0.04	no
Santa Fe	San Pablo	800	865	1.08	**F**	893	1.12	**F**	0.03	no
San Pablo	Jackson	1,600	1,196	0.75	C	1,250	0.78	D	0.03	no
Solano Avenue										
San Pablo	Santa Fe	800	718	0.90	D	741	0.93	E	0.03	no
Santa Fe	San Pablo	800	523	0.65	C	545	0.68	C	0.03	no

Source: Fehr & Peers, 2009.

Various aspects of vehicular access and circulation were analyzed and summarized below. The City of Albany Municipal Code, in addition to standard engineering practice, is the basis for this analysis.

Queuing at Monroe Street/San Pablo Avenue Intersection. Vehicle queuing was analyzed at the Monroe Street/San Pablo Avenue intersection during the PM and Saturday peak hours on both eastbound Monroe Street and the northbound left-turn lane into Monroe Street. As shown on the site plan, Monroe Street would provide angled parking on both sides of the street. Eastbound Monroe Street would provide a 60-foot right-turn pocket and about 100 feet of storage for the left-turn lane before interfering with the angled parking spaces. Based on the analysis, a storage space of about 80 feet for the right-turn lane and 120 feet for the left-turn lane is needed to accommodate average queues expected during peak hours. However, maximum peak hour queues would exceed these storage spaces and would intermittently block access to and from the angled parking spaces on Monroe Street.

As previously stated, the Monroe Street/San Pablo Avenue intersection would operate at acceptable LOS D or better during the peak hours with the currently proposed amount of vehicle queuing space on eastbound Monroe Street. Thus, the signal at Monroe Street/San Pablo Avenue intersection would provide adequate green time for eastbound Monroe Street to clear estimated queues at the end of each signal cycle, and queues would not build-up during the peak hour.

In order to accommodate the estimated maximum queues on Monroe Street without interfering with parking maneuvers, most angled parking spaces along eastbound Monroe Street would need to be eliminated. Thus, providing adequate queuing space along eastbound Monroe Street must be balanced with the need to provide adequate parking supply. One option would be to convert the proposed bulb-out east of the diagonal parking spaces on eastbound Monroe Street from a curb to striping. If excessive peak hour queuing is observed, then parking at some of the parking spaces along eastbound Monroe Street can be prohibited during the peak commute times to accommodate queues.

Peak hour queuing on the left-turn pocket on northbound San Pablo Avenue at the Monroe Street/San Pablo Avenue intersection was also analyzed. The 120 foot pocket would accommodate the average peak hour queues expected. However, maximum queues may occasionally spill out of the pocket. The signal at Monroe Street/San Pablo Avenue intersection would provide adequate green time for queues on the northbound left-turn movement to clear at the end of each signal cycle. Thus, queues would not build-up during the peak hour.

Throat Depths. Throat depth refers to the length of continuous curb extending for a project driveway into the project site before a curb break is provided. The continuous curb prevents vehicle queues at the driveway from obstructing internal site circulation. At low volume turn-restricted driveways, a throat depth of approximately 50 to 100 feet (two to four vehicles) is generally sufficient. About 115 feet is provided at the Whole Foods driveway on San Pablo Avenue, which would be sufficient.

At the Monroe Street/10th Street intersection, about 100 feet of throat depth is proposed on the northbound approach and about 40 feet is proposed on the southbound approach. Vehicle queues on the southbound Whole Foods Market driveway may extend longer than 40 feet during peak periods, creating a conflict with the parking spaces provided on the west side of the Whole Foods Market. It is recommended that these parking spaces be designated for employee parking which has lower turnover

than customer parking to minimize potential conflicts between queuing vehicles on the southbound driveway and vehicles maneuvering in or out of the adjacent parking spaces.

Drive Aisles. The surface parking lot contains circulation roadways. All parking aisles are at least 24 feet wide, sufficient to accommodate two-way vehicle circulation.

Dead-End Drive Aisles. Dead-end drive aisles are parking aisles that are obstructed at one end, thereby reducing the navigation through the site. No dead-end drive aisles are shown on the project site plan. A sufficient turnaround is provided at the south end of 10th Street on Block B.

Internal Conflicts. The project site plan was reviewed for potential internal conflicts. Internal conflicts arise at locations where it is not clear which vehicle has the right-of-way. Although traffic control devices (i.e., traffic signs) are not shown on the site plan, stop signs should be installed at the following locations to clearly designate the vehicular right-of-way:

- All four approaches of the Monroe Street/10th Street intersection
- The southbound parking aisle in the Whole Foods Market surface lot, west of the San Pablo Avenue driveway, opposite the main building entrance
- The Whole Foods Market garage exit
- The Whole Foods Market driveway on San Pablo Avenue

Delivery Vehicle Access. Regular deliveries in large semi-trucks in addition to smaller delivery vehicles are expected at the site. The project site plan proposes the Whole Foods Market loading dock on the west side of the building and accessed on 10th Street about 70 feet north of Monroe Street. Incoming delivery vehicles would access the Whole Foods Market by turning onto Monroe Street from San Pablo Avenue, followed by turning right at 10th Street and backing into the loading dock on the west side of the building. Outgoing delivery vehicles would turn left out of the loading dock and turn left to travel eastbound on Monroe Street to San Pablo Avenue.

Larger trucks would have difficulty maneuvering to back into the Whole Foods Market loading dock. They would need to use the adjacent parking spaces along the west boundary of the site to complete their backing maneuvers. It is recommended that large truck deliveries be scheduled during non-peak times and use of these parking spaces be prohibited during scheduled delivery times.

The site plan shows no loading dock facilities for Block B. The retail uses in Block B are not expected to require large semi-truck deliveries. Thus, they are not expected to need loading docks. It is recommended that two parking spaces adjacent to Block B on southbound San Pablo Avenue be designated as loading spaces during non-peak hours (e.g., 10:00 a.m. to noon on weekdays) and that large deliveries for these tenants be scheduled during these times.

Parking Stall Dimensions. City of Albany requires that standard 90-degree-angle parking stalls be at least 18 feet long by 9 feet wide, with 24-foot-wide drive aisles. Off-street parking stalls throughout the site meet this criterion.

In addition, Monroe Street along project frontage would provide back-in angled parking on both sides of the street. Similar to parallel parking spaces, vehicles would back-in to these spaces and leave head

first. The main advantages of back-in angled parking is that they allow direct access to vehicle trunks from the curb instead of the roadway and drivers have better view of on-coming traffic and bicycles when leaving the parking space. Considering that vehicles may have difficulty backing into the angled parking spaces, it is recommended that they be wider than normal angled parking spaces to better accommodate backing vehicles. It is recommended that the back-in angled parking spaces have a minimum width of 9.5 feet. In addition, since most people are not familiar with back-in angled parking, these parking spaces should be clearly signed to show how they should be used. In order to reduce potential driver confusion, the angled parking spaces on Monroe Street west of 10th Street should also be converted to back-in spaces so that all angled parking spaces along Monroe Street are uniform.

Recommendation TRANS-1: The site plan recommendations described above and highlighted on Figure IV.A-15 are summarized below. These recommendations should be considered as the final project site is refined, but are not required mitigation measures that would be needed in order to eliminate significant adverse impacts.

- Convert the proposed bulb-out east of the diagonal parking spaces on eastbound Monroe Street about 80 feet west of San Pablo Avenue from a curb to striping. If excessive peak hour queuing is observed, then diagonal parking along Monroe Street could be prohibited during the peak periods to accommodate queues.
- Designate the parking spaces located directly behind the Whole Foods Market on the west side of the project site as employee parking only to minimize potential conflicts during peak periods between queued vehicles on 10th Street and vehicles accessing the parking spaces.
- Install stop signs at the following locations:
  - All four approaches of the Monroe Street/10th Street intersection
  - The southbound parking aisle in the Whole Foods Market surface lot, west of the San Pablo Avenue driveway, opposite the main building entrance
  - The Whole Foods Market garage exit
  - The Whole Foods Market driveway on San Pablo Avenue
- Restrict large truck deliveries for Whole Foods Market to a few hours during non-peak periods and prohibit parking at the designated spaces along 10th Street opposite the loading docks during the scheduled delivery periods.
- Designate two of the on-street parking spaces along San Pablo Avenue adjacent to Block B as loading zone during designated non-peak hours, and allow on-street parking at other times.
- The back-in angled parking spaces along Monroe Street should have a minimum width of 9.5 feet.
- Since most drivers are not familiar with back-in angled parking, these spaces along Monroe Street should be clearly signed (as illustrated) to show how they should be used.
- Consider converting the angled parking spaces on Monroe Street west of 10th Street to back-in parking spaces in order to reduce driver confusion.

(7) Pedestrian and Bicycle Access and Circulation Analysis. Access and circulation for pedestrians and bicycles were reviewed based on the project site plan.

Pedestrian Access and Circulation. Currently sidewalks are provided along San Pablo Avenue and Monroe Street. The proposed project would maintain the existing sidewalks and widen them in certain areas to provide additional landscaping and space for street furniture such as outdoor seating areas. Both project blocks would also be surrounded by sidewalks. The Whole Foods Market would be served by entrances on San Pablo Avenue and on the surface parking lot north of the building. The retail components of Block B are expected to be generally accessed through entrances on San Pablo Avenue. The senior housing component of Block B would be accessed through a main entrance on 10th Street just south of Monroe Street adjacent to a designated drop-off zone.

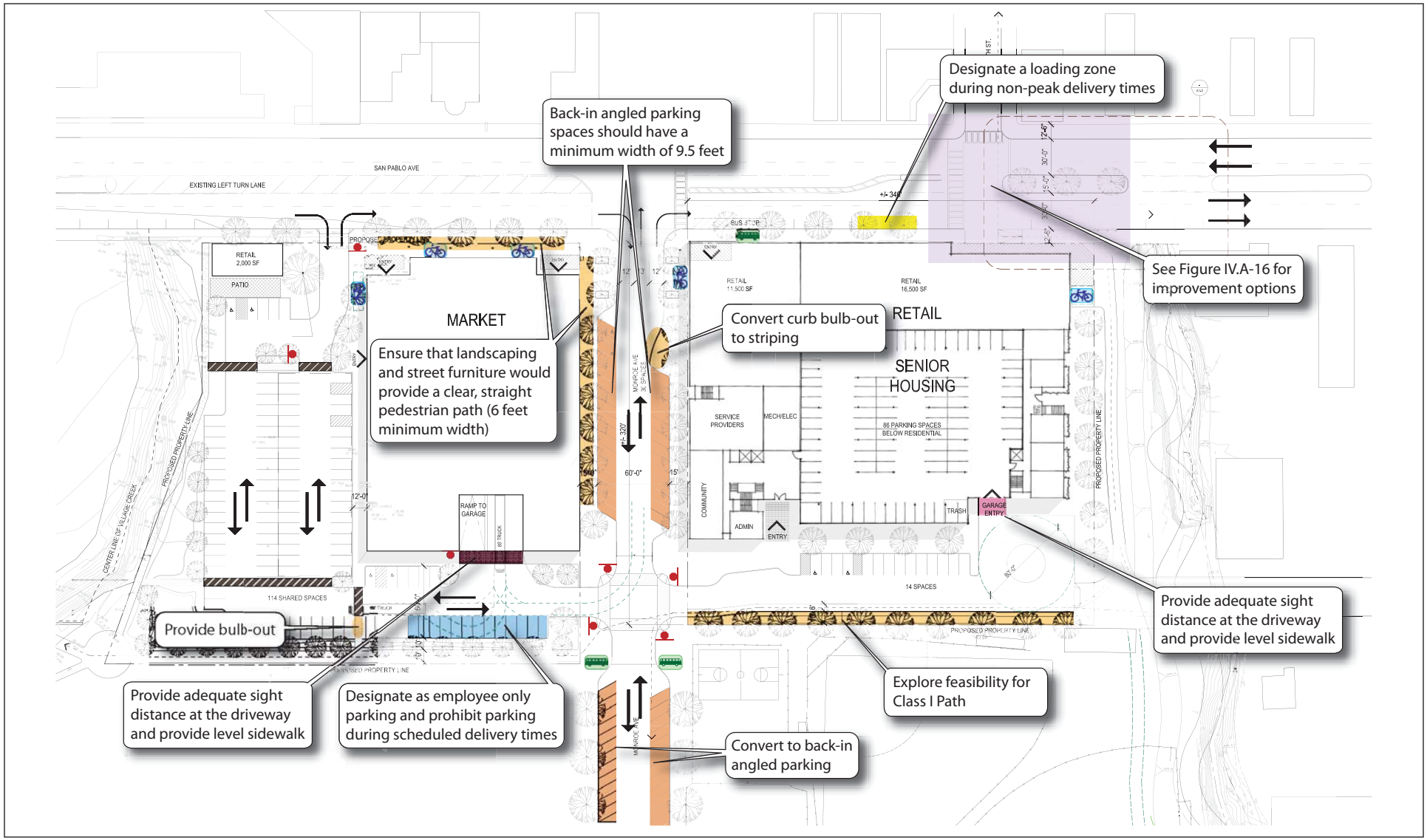
Consistent with the *Albany Bicycle Master Plan*, the proposed project would complete the segment of the Class I bicycle/pedestrian path along Codornices Creek adjacent to the south boundary of the project between 10th Street and San Pablo Avenue. The City anticipates that this bicycle/pedestrian path would eventually be extended further west to 6th Street.

The proposed project would also complete a six-foot wide path along the north boundary of the project adjacent to the Village Creek. This path would connect with a proposed Class I bicycle/pedestrian path along the west boundary of the project site. North of Monroe Street, this path would be on the west side of the Whole Foods surface parking lot and would eventually continue further north through the Gill Tract and connect with the planned bikeway along Buchanan Street/Marin Avenue. South of Monroe Street, the path would convert to a Class II bike lane and a sidewalk along the west side of Block B that would connect with the Codornices Creek path. Thus pedestrians would need to cross two approaches of the Monroe Street/10th Street intersection to travel between the Class I path north of Monroe Street and the sidewalk adjacent to Block B south of Monroe Street.

In addition, the future bridge over Codornices Creek would continue to provide pedestrian access along 10th Street between Albany and Berkeley.

High-visibility crosswalks (laddered striping or patterned pavement) are proposed on the west and south approaches of the San Pablo Avenue/Monroe Street intersection and north and east approaches of the San Pablo Avenue/Dartmouth Street intersections. The Monroe Street/10th Street intersection would provide crosswalks on all approaches and bulb-outs on all four corners. Bulb-outs are defined as curb extensions at intersections that reduce the curb to curb roadway width, which improves pedestrian safety by reducing the crossing distance and increasing visibility. Crosswalks are also proposed throughout the Whole Foods Market surface parking lot. These crosswalks would direct customers from their vehicles to the store and also connect the paths along Village Creek and the west side of the site to the Whole Foods Market.

The nearest bus stops to the project site are on San Pablo Avenue just south of Monroe Street for southbound buses and just north of Monroe Street for northbound buses. Additional bus stops are also provided on Monroe Street west of 10th Street. Currently, a bus shelter is provided for the stop on southbound San Pablo Avenue. However, no other amenities are currently provided for the other bus stops that would serve the project site. The proposed project site plan does not identify any additional amenities at the bus stops.



LSA

FIGURE IV.A-15

LEGEND

= Stop Sign

= Raised Crosswalk

= Bus Shelter

= Bicycle Parking Rack

NOT TO SCALE

University Village at San Pablo Avenue Project EIR

Site Plan Improvement Recommendations

SOURCE: FEHR & PEERS, JUNE, 2009.

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Back of IV.A15

Bicycle Access and Circulation. Currently, no specific bicycle facilities are provided within or surrounding the site. The *Albany Bicycle Master Plan* identifies a planned Class I path along Codornices Creek on the southern boundary of the project site, Class II bicycle lanes along Jackson Street, and a Class III bicycle route on Dartmouth Street, east of San Pablo Avenue.

The project would connect the Codornices Creek Class I path to a San Pablo Avenue crossing. The Codornices Creek path would eventually be extended further west to 6th Street. East of San Pablo Avenue, the path would continue as a Class III bike route along Dartmouth Street and connect with the rest of the bicycle network in Albany and Berkeley. Codornices Creek and Dartmouth Street are offset by about 100 feet across San Pablo Avenue. No direct connections are currently planned between the Codornices Creek path and Dartmouth Street.

The project would provide a seven foot wide Class II bike lane along the west side of 10th Street between Codornices Creek and Monroe Street. This proposed Class II bike lane would only accommodate southbound bicycles. In order to better accommodate bicycles and pedestrians traveling along the path proposed north of Monroe Street and 10th Street south of Codornices Creek and to reduce potential conflicts with vehicles, the feasibility of providing a Class I pedestrian and bicycle path along the west boundary of the project adjacent to the playing fields between Monroe Street and Codornices Creek should be explored. Alternatively, considering the low vehicular volumes expected on this segment of 10th Street, the southbound Class II bicycle lane should be converted to a Class III bike route in order to accommodate bicycles traveling in both direction and reduce potential bicycle confusion.

North of Monroe Street, a ten-foot wide Class I path is proposed along the western project boundary, west of the Whole Foods surface parking lot. This path would eventually be extended through the Gill Tract and connect with the proposed bikeway along Marine Avenue.

Recommendation TRANS-2: The following recommendations, shown on Figure IV.A-15, should be considered to improve pedestrian and bicycle circulation and access through the project site:

- Convert the three crosswalks identified in the Whole Foods Market surface lot to raised crosswalks. Raised crosswalks provide pedestrians with a level street crossing that increases their visibility to approaching motorists. Raised crosswalks would also reduce vehicle speeds through the parking lot.
- Convert the parking space at the west end of the crosswalk in the west side of the Whole Foods Market surface parking lot to a bulb-out to facilitate pedestrian access between the Whole Foods Market and the trail at the west boundary of the site.
- Ensure that additional landscaping and street furniture such as outdoor seating or bicycle racks provided on San Pablo Avenue and Monroe Street sidewalks along the project frontage would provide a clear straight pedestrian path with a minimum width of six feet.
- Provide appropriate signage to direct pedestrians in and out of the two garages. Prohibit pedestrians from the Whole Foods Market garage entrance.
- To the extent feasible, provide adequate sight distance at the two garage entrances. End the ramps before the sidewalk so that the sidewalk remains level and vehicles do not encroach on the sidewalk. Landscaping near the garage entrances should be maintained so that adequate sight distance is maintained. If adequate sight distance can not be provided, consider installing pedestrian warning lights to alert pedestrians to exiting vehicles at driveways with limited sight

distance. Considering the proximity of residential uses, installation of loud audible warning devices is not recommended.

- Continue to provide a shelter structure at the bus stop on southbound San Pablo Avenue south of Monroe Street.
- Identify bus stop locations on Monroe Street west of 10th Street. Lengthen the proposed bulb-outs on Monroe Street to accommodate buses and provide bus shelters.
- Explore the feasibility of providing a Class I pedestrian and bicycle path along the west boundary of the project adjacent to the playing fields between Monroe Street and Codornices Creek. This would provide a continuous path for pedestrians and bicycles traveling along the proposed path north of Monroe Street and 10th Street south of Monroe Street.
- If the above option is not feasible, then convert the Class II bicycle lane on 10th Street to Class III bicycle route to reduce cyclist confusion.

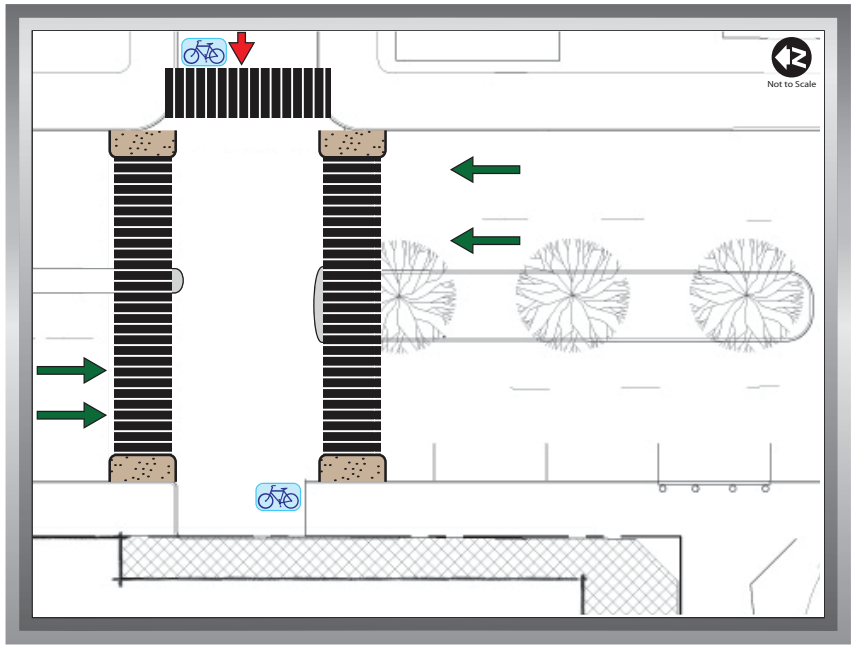
Impact TRANS-12: Completion of the proposed Class I bicycle and pedestrian path along Codornices Creek will have an adverse impact on bicycle and pedestrian safety at San Pablo Avenue. (S)

The *Albany Bicycle Master Plan* includes a Class I bicycle and pedestrian path along Codornices Creek between 6th Street and San Pablo Avenue. The proposed project would complete the segment of the path along its south frontage between 10th Street and San Pablo Avenue. East of San Pablo Avenue, the path would continue as a Class III bicycle route along Dartmouth Street, about 100 feet north of Codornices Creek. Currently, there are no independent improvements planned to allow for bicycles and pedestrians to safely cross San Pablo Avenue between Dartmouth Street and Codornices Creek. However, the crossing will be improved as part of the proposed project.

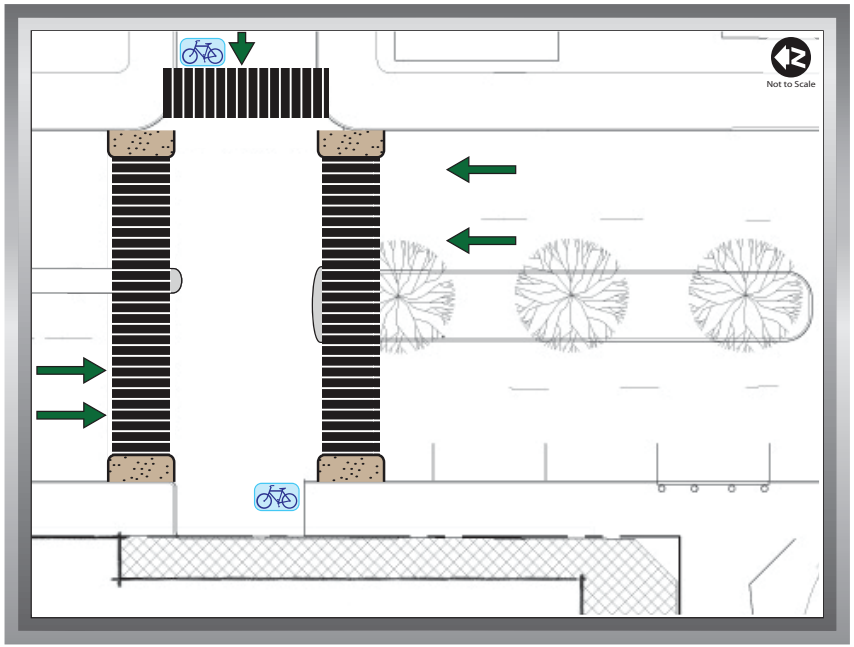
Mitigation Measure TRANS-12: Implement any one of the following four improvements as shown on Figures IV.A-16a and IV.A-16b to improve pedestrian and bicycle access across San Pablo Avenue between the proposed Class I path along Codornices Creek and Dartmouth Street:

1. Install a high-intensity activated crosswalk (HAWK) traffic signal on San Pablo Avenue at Dartmouth Street. HAWK signals operate by using traffic and pedestrian/bicycle signal heads, but they are only activated when the pedestrian push buttons or bicycle loop detectors are triggered. Therefore when bicyclists and/or pedestrians desire to cross San Pablo Avenue at Dartmouth Street, they would activate the HAWK signal, stopping northbound and southbound traffic on San Pablo Avenue, allowing for bicyclists/ pedestrians to cross safely. When not activated, the HAWK signal rests on all dark. In addition, widen the sidewalk on west side of San Pablo Avenue between Codornices Creek and Dartmouth Street to accommodate both pedestrians and bicycles, install bicycle detector loops on the Dartmouth Street approach, and coordinate the HAWK signal with the existing signals along San Pablo Avenue in order to minimize vehicle delay. Since HAWK signals have not been officially approved for use in California, consider installing an interim traffic signal designed to accommodate conversion to a HAWK.
2. Signalize the San Pablo Avenue/Dartmouth Street intersection and provide pedestrian countdown signal and high-visibility crosswalk on both north and south approaches of San Pablo Avenue. Coordinate signal timing parameters with adjacent signals along San Pablo Avenue. In addition, install bicycle detector loops on the Dartmouth Street approach and

OPTION 1: *Install a High-Intensity Activated Crosswalk (HAWK)*



OPTION 2: *Signalize the Intersection*



Sample Photographs of HAWK Signal

LSA

FIGURE IV.A-16a

NOT TO SCALE

LEGEND

= Bulb-out

= Crosswalk

= Bicycle Loop Detector

= Vehicle Movements Controlled by Signal

= Vehicle Movement **NOT** Controlled by Signal

University Village at San Pablo Avenue Project EIR

Conceptual Crossing Options on San Pablo Avenue at Dartmouth Street

SOURCE: FEHR & PEERS, JUNE, 2009.

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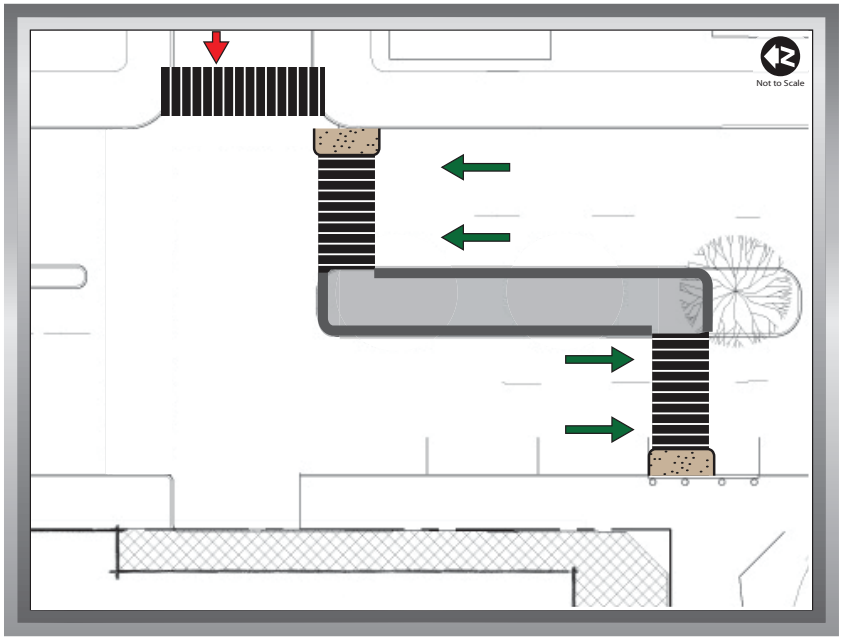
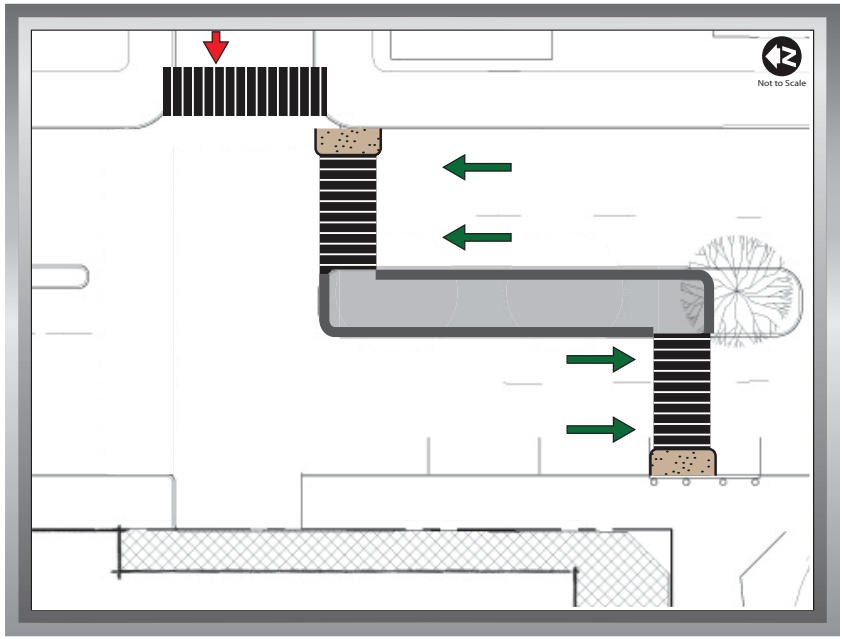
OPTION 3: *Install a Two-Stage Signalized Crossing*



OPTION 4: *Install a Two-Stage Unsignalized Crossing with Overhead Beacons or Stutter Flashing Lights*



Sample Photographs of Overhead Beacon and Stutter Flashing Lights

LSA

NOT TO SCALE

LEGEND

= Bulb-out

= Crosswalk

= Vehicle Movements Controlled by Signal, Beacon or Flashing Light

= Vehicle Movement **NOT** Controlled by Signal, Beacon or Flashing Light

FIGURE IV.A-16b

University Village at San Pablo Avenue Project EIR

Conceptual Crossing Options on San Pablo Avenue at Dartmouth Street

SOURCE: FEHR & PEERS, JUNE, 2009.

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coordinate the signal with the existing signals along San Pablo Avenue. Widen the sidewalk on west side of San Pablo Avenue between Codornices Creek and Dartmouth Street to accommodate both pedestrians and bicycles.

3. Install a two-stage signalized crossing with a six-foot wide median refuge on San Pablo Avenue between Codornices Creek and Dartmouth Street. Provide a crosswalk and a signal on southbound San Pablo Avenue opposite Codornices Creek path to allow pedestrians and bicycles to cross southbound San Pablo Avenue. Provide a crosswalk and a signal on northbound San Pablo Avenue at Dartmouth Street to allow pedestrians and bicycles to cross northbound San Pablo Avenue. A path in the median would connect the two signalized crosswalks. The main advantage of the two-stage signalized crossings is that each of the signals can be individually coordinated with adjacent signals along San Pablo Avenue.
4. Provide a two-stage unsignalized crossing with a median refuge on San Pablo Avenue. This option would be similar to the previous option except the crossings would not be signalized. However, other safety features such as stutter flashing lights would be required. Since stutter flashing lights have not been officially approved for use in California, consider installing overhead beacons as an interim measure. The overhead beacons should be designed for easy conversion to stutter flashing lights when appropriate.

Any of the four improvement options would mitigate the impact to less-than-significant level. However, San Pablo Avenue is a Caltrans facility, and the lead agency cannot ensure that Caltrans approval of the mitigation measure would be granted. As such, this impact is considered significant and unavoidable. (SU)

Under all four options, consider eliminating parking spaces along San Pablo Avenue to provide bulb-outs at the marked crosswalks to reduce crossing distance and improve visibility of pedestrians and bicycles crossing San Pablo Avenue.

All four options would enhance pedestrian and bicycle access and circulation; however, they would also affect vehicular flow along San Pablo Avenue. Option 2, the signalization of the Dartmouth Street/San Pablo Avenue intersection, would have the most affect on vehicular flow along San Pablo Avenue as it would result in more vehicular stoppage than the other three options. Thus, traffic operations under this option are analyzed in more detail.

Traffic operations under Option 2 were completed using SimTraffic, a companion software to Synchro used for modeling and simulating traffic operations based on the behavior of individual drivers in a network. The software accounts for physical features of the transportation system, traffic signal operations, traffic flow conditions, pedestrian flow, and driver behavior characteristics to estimate travel delays and other performance measures that describe traffic operations. Microsimulation programs, such as SimTraffic, incorporate the element of randomness inherent in traffic flow. Therefore, in order to average out the random fluctuations and obtain a statistically more valid result, a microsimulation model is run a number of times and the average of the runs is reported. For this study, the SimTraffic files were each run a total of five times.

The proposed signal at Dartmouth Street/San Pablo Avenue intersection would be about 250 feet south of the existing signal at Monroe Street/San Pablo Avenue intersection. Considering the close proximity of the two signals and their potential effect on each other, SimTraffic would provide a more

accurate analysis of traffic conditions than Synchro. The analysis assumes that the proposed signal at Dartmouth Street would be coordinated with adjacent signals along San Pablo Avenue.

As shown in Table IV.A-20, the Monroe Street/San Pablo Avenue intersection would operate at LOS C and the Dartmouth Street/San Pablo Avenue intersections would operate at LOS A during the AM, PM and Saturday peak hours if Option 2 is implemented.

In addition, queue lengths at both intersections were also estimated to ensure that the proposed new signal would not result in vehicular queues spilling back into upstream intersections. As shown in Table IV.A-21, the proposed signal would not cause average queues along San Pablo to spill back into upstream intersections. However, the 95th percentile queues at both Monroe Street and Dartmouth Street would exceed the available storage capacity, indicating that queues along San Pablo Avenue may spill back into upstream intersections a few times during the peak hours. However, the queues would clear at the end of each signal cycle and would not build-up during the peak hour.

Table IV.A-20: Peak Hour Intersection Level of Service under Option 2 (Signalize Dartmouth Street/San Pablo Avenue intersection) [a]

Intersection		Control	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
			Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
10.	Monroe Street/San Pablo Avenue	Signal	29	C	28	C	30	C
11.	Dartmouth Street/San Pablo Avenue	Signal	6	A	7	A	5	A

[a] Delay and corresponding LOS calculated based on average of five SimTraffic model runs using the projected volumes under Existing Plus Project conditions.
Source: Fehr & Peers, 2009.

Table IV.A-21: Queuing under Option 2 (Signalize Dartmouth Street/San Pablo Avenue intersection) [a]

Intersection		Direction	Queue Storage Space [b] (feet)	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
				Average Queue (feet)	95th Percentile Queue (feet)	Average Queue (feet)	95th Percentile Queue (feet)	Average Queue (feet)	95th Percentile Queue (feet)
10.	Monroe Street/ San Pablo Avenue	Northbound	250	80	210	140	**280**	130	**260**
11.	Dartmouth Street/ San Pablo Avenue	Northbound	520	40	130	110	260	90	200
		Southbound	250	110	**270**	90	210	30	100

Bold indicates queue exceeding available storage space.
[a] Average and 95th Percentile queues calculated based on average of five SimTraffic model runs using the projected volumes under Existing Plus Project conditions.
[b] Queuing space available before traffic spills back into upstream intersection.
Source: Fehr & Peers, 2009.

Since Option 2 is the most disruptive option to traffic flow, traffic operations along San Pablo Avenue would be better than described above if any of the other three options are implemented.

(8) Transit Impact Analysis. Potential impacts of the proposed project on transit ridership and bus operations are discussed in this section.

Table IV.A-22: Estimated Project Transit Ridership

	AM Peak Hour	PM Peak Hour	Saturday Peak Hour
AC Transit	7	15	15

Source : Fehr & Peers based on current mode splits observed at the Whole Foods Market in Berkeley and current residential mode split in the City of Albany.

Transit Ridership. Transit trips generated by the proposed project were estimated using two sources: (1) the transit mode choice summary derived from the existing Whole Foods Market in Berkeley (Table IV.A-12) for the commercial component of the project; and (2) the City of Albany's overall residential mode split based on census data for the residential component of the project. Transit mode share for the proposed project is estimated at about one percent for the commercial component of the site and eight percent for the residential component of the project. As shown in Table IV.A-22, the proposed project is estimated to generate 7 transit trips during the AM peak hour and 15 transit trips during the PM and Saturday peak hours. Since the nearest BART stations are about 1.5 miles away, it is estimated that all transit riders would use AC Transit buses.

As shown in Table IV.A-4, Route 52L in the southbound direction currently has the highest maximum load factor of the bus routes directly serving the site. Conservatively assuming that the peak hour transit trips generated by the proposed project would all use the Route 52L in the southbound direction, the proposed project would add about 2.5 additional riders to each of the southbound Route 52L buses. This would increase the maximum load factor on Route 52L from 74 percent to 80 percent. Thus, the maximum load factors on buses operating in the project vicinity would continue to be below their capacity and the proposed project would not have a significant impact on bus ridership.

AC Transit Bus Operations. The proposed project would affect bus operations if traffic congestion caused by the additional vehicular traffic generated by the proposed project, and mitigation measures implemented by the proposed project, would result in increased travel times for buses. Excessive increases in bus travel times may require additional buses to be used.

The intersections operations analysis completed for the project was used to estimate bus travel times in the vicinity of the project. Table IV.A-23 summarizes the estimated travel times on San Pablo Avenue between Buchanan Street and Solano Avenue with and without the proposed project. The proposed project is expected to increase bus travel times by less than one minute along this segment of San Pablo Avenue. Thus, the proposed project is not expected to cause excessive delays to bus travel times and would not have a significant impact on AC Transit bus travel times.

Table IV.A-23: Travel Times along San Pablo Avenue (With and Without Project)

Peak Hour	Direction	Existing No Project (Minutes)	Existing Plus Project (Minutes)
AM Peak Hour	Northbound	3.5	3.6
	Southbound	3.6	3.8
PM Peak Hour	Northbound	3.9	4.4
	Southbound	3.7	4.0
Saturday Peak Hour	Northbound	3.7	3.9
	Southbound	3.8	4.7

Source: Fehr & Peers based on the results of the Synchro analysis.

(9) Consistency with Local and Regional Policies and Programs Supporting Alternative Transportation. A summary of applicable policies and plans is provided on pages 84 through 86 of this document. A detailed discussion of the project's potential impacts on pedestrian, bicycle and transit access and circulation was provided in previous sections. Consistent with the *Albany Bicycle Master Plan*'s planned bicycle network, the project would connect the Codornices Creek path to the San Pablo Avenue crossing. In addition, the proposed project would provide additional amenities throughout the site to accommodate bicycles, pedestrians and buses.

The proposed project would not alter roadways or prevent the implementation of planned improvements and it would be consistent with local and regional policies and programs supporting alternative transportation. Thus, the proposed project would not cause a significant impact by conflicting with adopted policies, plans, or programs supporting alternative transportation.

(10) Emergency Access. Factors such as proximity to fire stations, number of access points, and roadway width determine whether a project provides sufficient emergency access. The City of Albany's fire station is located on Marin Avenue between San Pablo Avenue and Buchanan Street, approximately a quarter of a mile from the project site. These facilities are currently undergoing renovations, and the fire station is temporarily located on Monroe Street, adjacent to the project site. Emergency vehicles can access the project site along the project site frontage on San Pablo Avenue, Monroe Street, and 10th Street, as well as the project parking lot. The internal project roadways propose at least 24-foot drive aisles, which would be adequate for emergency vehicle access. Thus, the proposed project would provide sufficient emergency access. In addition, the turnaround on the south end of the 10th Street would be sized to comply with the California Fire code.

(11) Parking Demand Analysis. The on-street parking supply, the parking supply provided by the project, and the estimated parking demand generated by the project are summarized in this section.

Parking Supply. Based on analysis of the project site plan the project proposes 326 off-street parking spaces. Block A (Whole Foods Market) would provide 226 spaces with 112 spaces in a surface parking lot and 114 spaces in an underground parking garage. Block B (senior housing and retail) would provide 100 parking spaces with 86 spaces in a garage and 14 surface spaces on 10th Street. In addition, the project would provide approximately 30 back-in diagonal spaces on both sides of Monroe Street along the project frontage. However, the number of parking spaces on Monroe Street may be reduced to facilitate turning movements into San Pablo Avenue.

As described on page 62, on-street parking is currently available on both sides of San Pablo Avenue along the project frontage, on Monroe Street between San Pablo Avenue and Jackson Street, and on 10th Street. San Pablo Avenue provides parallel parking spaces on both sides of the street that are mostly limited to 90 minutes of parking and are currently about 20 percent occupied on typical weekdays. Monroe Street currently provides diagonal parking on both sides of the street that are about 30 percent occupied on typical weekdays. Tenth Street south of Monroe Street currently provides 45 perpendicular parking spaces on the east side of the roadway that are generally unoccupied on typical weekdays. Signs along Monroe Street and 10th Street restrict parking to University Village parking permit holders only. Since adjacent University Village uses have been demolished, these parking restrictions may no longer be necessary. The parking spaces along Monroe

Street and 10th Street are at or near capacity when there are events at the Little League fields located on the west side of 10th Street.

Parking Demand. Peak weekday and Saturday parking demand rates published in ITE's *Parking Generation* (3rd Edition), were used to estimate peak parking demands for the proposed project. The estimated parking demand generated by the proposed project is summarized in Table IV.A-24.

Table IV.A-24: Project Parking Demand Estimate

Use	Size	Weekdays			Saturday		
		Demand	On-Site Supply	Surplus (Deficit)	Demand	On-Site Supply	Surplus (Deficit)
BlockA							
Whole Foods [a]	55 ksf	156			156		
Retail [b]	2 ksf	6			6		
Block A Subtotal		*162*	*226*	*64*	*162*	*226*	*64*
BlockB							
Retail [b]	28 ksf	85			83		
Senior Housing [c]	175 units	88			88		
Block B Subtotal		*173*	*100*	*(73)*	*171*	*100*	*(71)*
Total		***335***	***326***	***(9)***	***333***	***326***	***(7)***

[a] Parking demand based on ITE *Parking Generation*, (3rd Edition) 85th percentile rate of 2.83 spaces per KSF for urban supermarket (Land Use Code 850) on weekdays. ITE does not provide Saturday parking demand rates. Since Saturday trip generation is similar to weekday trip generation (see Table IV.A-11), the same parking demand rate is used to estimate Saturday parking demand.

[b] Parking demand based on ITE *Parking Generation*, (3rd Edition) average rate of 3.02 spaces per KSF for shopping center (Land Use Code 820) on non-December Fridays and average rate of 2.97 spaces per KSF on non-December Saturdays.

[c] Parking demand based on ITE *Parking Generation*, (3rd Edition) peak rate of 0.50 spaces per unit for Senior Adult Housing-Attached (Land Use Code 252) on weekdays and peak rate of 0.50 spaces per unit on Saturdays.

Source: Fehr & Peers and *Parking Generation* (3rd Edition), ITE

Block A (Whole Foods and 2,000 square feet of retail) is estimated to generate a typical peak parking demand of about 162 spaces on both weekdays and Saturdays, resulting in a surplus of 64 spaces in the Block A parking facilities. Block B (senior housing and retail) is estimated to generate a typical peak parking demand of about 173 parking spaces on weekdays and 171 parking spaces on Saturdays, resulting in a parking deficit of 73 spaces on weekdays and 71 spaces on Saturdays. This analysis is somewhat conservative in that it does not account for the higher than average non-automobile mode share (i.e., transit, pedestrian, and bicycle) in the area and internalization between the Whole Foods Market and other retail spaces (internalization is defined as using two or more uses during the same trip without reparking a vehicle).

The estimated overall parking demand (Blocks A and B combined) would exceed the on-site project parking supply by nine spaces on weekdays and seven spaces on Saturdays. Based on current parking conditions on Monroe Street and San Pablo Avenue, the on-street parking spaces could accommodate the estimated on-site parking deficit. In order to accommodate most of the estimated parking demand within on-site parking facilities, the majority of on-site parking spaces should be shared by all users and not be assigned to specific uses.

As previously stated, the parking spaces along Monroe Street and 10th Street are at or near capacity during events at the playing fields on the west side of 10th Street. Thus, there may be a parking shortage at the project parking facilities and the surrounding streets when events at the playing fields coincide with peak parking demand at the project.

Recommendation TRANS-3: Parking demand generated by the proposed project would be accommodated by the project parking supply and available on-street parking spaces. Thus, the proposed project would not have a significant impact on parking. However, the following strategies should be implemented to reduce the project's parking demand, better manage the available parking supply, and reduce the number of vehicles circulating for available parking spaces:

- The majority of on-site parking spaces should be shared by all site users and not be assigned to specific users.
- The diagonal on-street parking spaces on Monroe Avenue between 10th Street and San Pablo Avenue should be limited to one hour of parking.
- Implement an automated parking space counting system into the overall design and construction of the two parking garages in Blocks A and B. Electronic changeable message signs should be installed at the entrance to both garages and on Monroe Street to inform drivers of the number of available spaces at each garage. This would maximize utilization of both parking garages, reduce excessive vehicle circulation, and discourage parking in surrounding residential neighborhoods.
- The University should identify appropriate off-street parking supply for the playing fields so that adequate parking supply is available when events at the playing fields coincide with peak parking demand at the proposed project.

Bicycle Parking. Bicycle parking can be categorized as short term or long term as described below:

- Short-term bicycle parking generally consists of bicycle racks. Bicycle racks are low-cost devices that provide a location to secure a bicycle. Ideally, bicyclists can lock both their frame and wheels. Bicycle racks should be in highly visible areas secured to the ground, preferably within 50 feet of a main entrance to a building or facility. Short-term bicycle parking is commonly used for short trips, when cyclists are planning to leave their bicycles for up to a few hours.
- Long-term bicycle parking generally consists of bicycle lockers or cages. Bicycle lockers are covered storage units that can be locked individually, providing secure parking for one bicycle. Bicycle cages are secure areas with limited-access doors. Both are designed to provide bicyclists with a high level of security so that they feel comfortable leaving their bicycles for long periods of time. They are appropriate for employees and residents of large buildings.

The current project site plan shows bicycle racks near the entrance of the Whole Foods Market adjacent to the surface parking lot and bike racks south of the retail component of Building B. No other bicycle parking is shown on the site plan.

It is recommended that bicycle parking be provided at the following rates:

- Commercial components: one short-term bicycle parking space per 2,500 square feet and one long-term bicycle parking space per 4,000 square-feet.

- Senior housing components: one short-term bicycle parking space per 10 residential units and one long-term bicycle parking space per five residential units.

Recommendation TRANS-4: Modify the project site plan to provide the following bicycle parking:

- Whole Foods Market: 22 short-term bicycle parking spaces and 14 long-term parking spaces
- Other Retail: 12 short-term bicycle parking spaces and 8 long-term parking spaces
- Senior Housing: 18 short-term bicycle parking spaces and 36 long-term parking spaces

Overall, the site should provide 52 short-term bicycle parking spaces and 58 long-term bicycle parking spaces. The short-term bicycle spaces should be provided in the form of bicycle racks located near the building entrances in highly visible areas. The long-term bicycle parking spaces can be provided in bicycle cages in both parking garages. After the opening of the project, the bicycle parking demand should be monitored and if needed, additional bicycle parking should be added. In addition, the Whole Foods site should also provide shower and locker facilities to further encourage bicycling by employees.

(12) Construction Period Impact Analysis. The construction of the proposed project may temporarily affect vehicular, pedestrian, and bicycle circulation in the vicinity of the project. Potential traffic impacts that may occur during the construction period are described below:

- Truck Traffic: Construction projects generate truck traffic for a variety of purposes throughout the construction schedule, including excavation, material deliveries, concrete pours, etc. The excavation portion of a construction project typically generates the highest daily and peak hour truck volumes. The specific number of excavation truck trips per day is directly related to the amount of material to be removed from or imported to the site, the project schedule, and other site factors that may limit the frequency of truck trips. Construction trucks are expected to use the Buchanan Street interchange to access the project site.
- Construction Worker Trips and Parking: The construction workforce will generate primarily auto and a few transit commute trips. Most construction worker commute trips are expected to occur during non-peak hours. Parking for construction workers is expected to be accommodated within the project site.
- Construction Staging: The construction staging area is expected to be accommodated on the project site.
- Temporary Traffic Detours and Lane Closures: Construction projects may periodically require traffic detours to allow heavy equipment movements or to facilitate construction activities directly adjacent to the street. The detours may temporarily affect traffic circulation, as well as re-direct pedestrian and bicycle traffic.

Impact TRANS-13: Construction activities associated with the proposed project will have temporary adverse impacts on vehicular, bicycle, and pedestrian circulation and access. (S)

Mitigation Measure TRANS-13: Prior to start of construction, the prime contractor shall prepare a Construction Traffic Management Plan which shall include the following items:

- Proposed truck routes to be used, consistent with the City's truck route map. All trucks shall use the Buchanan Street Interchange to access the project site from the freeways.

- Construction hours, including limits on the number of truck trips during the AM and PM peak traffic periods (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.), if conditions demonstrate the need.
- Proposed employee parking plan (number of spaces and planned locations) to be accommodated within the site.
- Proposed construction equipment and materials staging areas, showing minimal conflicts with traffic, pedestrian and bicycle circulation patterns.
- Expected traffic detours needed, planned duration, and traffic control plans including potential sidewalk closures and plans to accommodate vehicular, pedestrian and bicycle detours.

The Construction Traffic Management Plan shall be approved by City of Albany staff prior to start of construction. (LTS)

B. AIR QUALITY

This section describes the existing air quality setting in the vicinity of the site and analyzes the potential impacts using methodologies and assumptions recommended in the air quality impact assessment guidelines of the Bay Area Air Quality Management District (BAAQMD).[1] In keeping with these guidelines, this chapter describes existing air quality, impacts of future traffic on local carbon monoxide levels and impacts of land use related vehicular emissions that have regional effects. Mitigation measures to reduce or eliminate potentially significant air quality impacts are identified, where appropriate. Air quality modeling results are included in Appendix C.

1. Setting

The following discussion provides an overview of existing air quality conditions in the region and the Albany area. Ambient air quality standards and the regulatory framework relating to air quality are summarized. Climate, air quality conditions, and typical air pollutant types and sources are also described.

a. Air Quality Standards, Regulatory Framework and Attainment Status. Air quality standards, the regulatory framework, and State and federal attainment status are discussed below.

(1) Air Quality Standards. Both the State and federal governments have established health-based Ambient Air Quality Standards for six air pollutants: carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb), and suspended particulate matter (PM). In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride and visibility reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

In addition to primary and secondary Ambient Air Quality Standards, the State of California has established a set of episode criteria for O_3, CO, NO_2, SO_2, and PM. These criteria refer to episode levels representing periods of short-term exposure to air pollutants that actually threaten public health. Health effects are progressively more severe as pollutant levels increase from Stage One to Stage Three.

California Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS) for the criteria air pollutants are listed in Table IV.B-1. Health effects of these criteria pollutants are described in Table IV.B-2.

(2) Regulatory Framework. The BAAQMD is primarily responsible for regulating air pollution emissions from stationary sources (e.g., factories) and indirect sources (e.g., traffic associated with new development), as well as for monitoring ambient pollutant concentrations. The BAAQMD's jurisdiction encompasses seven counties—Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara and Napa—and portions of Solano and Sonoma counties. The California Air Resources Board (CARB) and the U.S. Environmental Protection Agency (EPA) regulate direct emissions from motor vehicles.

[1] Bay Area Air Quality Management District, 1999. *BAAQMD CEQA Guidelines.*

Table IV.B-1: State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [a]		Federal Standards [b]		
		Concentration [c]	Method [d]	Primary [c,e]	Secondary [c,f]	Method [g]
Ozone (O_3)	1-Hour	0.09 ppm (180 μg/m^3)	Ultraviolet Photometry	No federal standard	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.07 ppm (137 μg/m^3)		0.075 ppm (147 μg/m^3)		
Respirable Particulate Matter (PM_{10})	24-Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 μg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 μg/m^3		–		
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	No Separate State Standard		35 μg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 μg/m^3	Gravimetric or Beta Attenuation	15 μg/m^3		
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		–		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.03 ppm (56 μg/m^3)	Gas Phase Chemiluminescence	0.053 ppm (100 μg/m^3)	Same as Primary Standard	Gas Phase Chemilumin-escence
	1-Hour	0.18 ppm (338 μg/m^3)		–		
Lead	Rolling 3-Month Average	–	Atomic Absorption	0.15 μg/m^3	Same as Primary Standard	High-Volume Sampler and Atomic Absorption
	30-day average	1.5 μg/m^3		–		
	Calendar Quarter	–		1.5 μg/m^3		
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	–	Ultraviolet Fluorescence	0.030 ppm (80 μg/m^3)	–	Spectrophoto-metry (Pararosaniline Method)
	24-Hour	0.04 ppm (105 μg/m^3)		0.14 ppm (365 μg/m^3)	–	
	3-Hour	–		–	0.5 ppm (1300 μg/m^3)	
	1-Hour	0.25 ppm (655 μg/m^3)		–	–	
Visibility-Reducing Particles	8-Hour	Extinction coefficient of 0.23 per kilometer - visibility of 10 miles or more (0.07–30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		**No Federal Standards**		
Sulfates	24-Hour	25 μg/m^3	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 μg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride [h]	24-Hour	0.01 ppm (26 μg/m^3)	Gas Chromatography			

Source: CARB, 2008.
Notes continued on next page.

[a] California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM_{10}, $PM_{2.5}$, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 μg/m3 is equal to or less than one. For $PM_{2.5}$, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact EPA for further clarification and current federal policies.

[c] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[d] Any equivalent procedure which can be shown to the satisfaction of the CARB to give equivalent results at or near the level of the air quality standard may be used.

[e] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[f] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[g] Reference method as described by the EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the EPA.

[h] The CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Table IV.B-2: Health Effects of Air Pollutants

Pollutant	Health Effects	Examples of Sources
Suspended Particulate Matter ($PM_{2.5}$ and PM_{10})	• Reduced lung function • Aggravation of the effects of gaseous pollutants • Aggravation of respiratory and cardio respiratory diseases • Increased cough and chest discomfort • Soiling • Reduced visibility	• Stationary combustion of solid fuels • Construction activities • Industrial processes • Atmospheric chemical reactions
Ozone (O_3)	• Breathing difficulties • Lung damage	• Formed by chemical reactions of air pollutants in the presence of sunlight; common sources are motor vehicles, industries, and consumer products
Carbon Monoxide (CO)	• Chest pain in heart patients • Headaches, nausea • Reduced mental alertness • Death at very high levels	• Any source that burns fuel such as cars, trucks, construction and farming equipment, and residential heaters and stoves
Lead (Pb)	• Organ damage • Neurological and reproductive disorders • High blood pressure	• Metals processing • Fuel combustion • Waste disposal
Nitrogen Dioxide (NO_2)	• Lung damage	• See carbon monoxide sources
Toxic Air Contaminants	• Cancer • Chronic eye, lung, or skin irritation • Neurological and reproductive disorders	• Cars and trucks, especially diesels • Industrial sources such as chrome platers • Neighborhood businesses such as dry cleaners and service stations • Building materials and products

Source: CARB and EPA, 2005.

Federal Clean Air Act. The Federal 1970 Clean Air Act authorized the establishment of national health-based air quality standards and also set deadlines for their attainment. The Federal Clean Air Act Amendments of 1990 changed deadlines for attaining NAAQS as well as the remedial actions required for areas of the nation that exceed the standards. Under the Clean Air Act, State and local agencies in areas that exceed the NAAQS are required to develop State Implementation Plans to show how they will achieve O_3 standards by specific dates.

The Clean Air Act requires that projects receiving federal funds demonstrate conformity to the approved State Implementation Plan and local air quality attainment plan for the region. Conformity with the State Implementation Plan requirements would satisfy the Clean Air Act requirements.

Bay Area Clean Air Plan. BAAQMD, along with the other regional agencies (i.e., Association of Bay Area Governments and the Metropolitan Transportation Commission), has prepared an Ozone Attainment Plan to address the 1-hour NAAQS for ozone. Although the EPA revoked the 1-hour NAAQS, commitments made in the Ozone Attainment Plan, along with emissions budgets, remain valid until the region develops an attainment demonstration/maintenance plan for the 8-hour NAAQS for ozone. The region will be required to submit a maintenance plan and demonstration of attainment with a request for redesignation to EPA when the 8-hour ozone NAAQS is met. A Carbon Monoxide Maintenance Plan was approved in 1998 by EPA, which demonstrated how NAAQS for CO standard would be maintained.

Air quality plans addressing the California Clean Air Act are developed every three years. The plans are meant to demonstrate progress toward meeting the more stringent 1-hour ozone CAAQS. The latest plan, which was adopted in January 2006, is called the *Bay Area 2005 Ozone Strategy*. This plan includes a comprehensive strategy to reduce emissions from stationary, area, and mobile sources. The plan indicates how the region would make progress toward attaining the stricter State air quality standards, as mandated by the California Clean Air Act. The plan is designed to achieve a region-wide reduction of ozone precursor pollutants through the expeditious implementation of all feasible measures. The plan proposes expanded implementation of transportation control measures (TCMs) and programs such as Spare the Air.

The clean air planning efforts for ozone will also reduce particulate matter (PM_{10} and $PM_{2.5}$), since a substantial amount of this air pollutant comes from combustion emissions such as vehicle exhaust. BAAQMD adopts and enforces rules to reduce particulate matter emissions and develops public outreach programs to educate the public to reduce PM_{10} and $PM_{2.5}$ emissions. Senate Bill (SB) 656 requires further action by CARB and air districts to reduce public exposure to PM_{10} and $PM_{2.5}$. Efforts identified by BAAQMD in response to SB 656 are primarily targeted reductions in wood smoke emissions and adoption of new rules to further reduce NO_x and particulate matter from internal combustion engines and reduce particulate matter from commercial charbroiling activities. NO_x emissions contribute to ammonium nitrate formation that resides in the atmosphere as particulate matter, so a reduction in NO_x emissions would also reduce wintertime $PM_{2.5}$ levels. The Bay Area experiences the highest PM_{10} and $PM_{2.5}$ in the winter when wood smoke and ammonium nitrate contributions to particulate matter are highest.

(3) Attainment Status Designations. The California Air Resources Board is required to designate areas of the State as attainment, nonattainment or unclassified for any State standard. An "attainment" designation for an area signifies that pollutant concentrations did not violate pollutant

standards. A "nonattainment" designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. An "unclassified" designation signifies that data does not support either an attainment or nonattainment status. The California Clear Air Act divides districts into moderate, serious and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The EPA designates areas for O_3, CO, and NO_2 as either "does not meet the primary standards," or "cannot be classified" or "better than national standards." For SO_2, areas are designated as "does not meet the primary standards," "does not meet the secondary standards," "cannot be classified" or "better than national standards." In 1991, new nonattainment designations were assigned to areas that had previously been classified as Group I, II, or III for PM_{10} based on the likelihood that they would violate national PM_{10} standards. All other areas are designated "unclassified."

Table IV.B-3 provides a summary of the attainment status for the San Francisco Bay Area with respect to national and State ambient air quality standards.

b. Existing Climate and Air Quality. The following provides a discussion of the regional air quality, local climate and air quality in Albany.

(1) Regional Air Quality. The City of Albany is located in the San Francisco Bay Area, a large shallow air basin ringed by hills that taper into a number of sheltered valleys around the perimeter. Two primary atmospheric outlets exist. One is through the strait known as the Golden Gate, a direct outlet to the Pacific Ocean. The second extends to the northeast, along the west delta region of the Sacramento and San Joaquin Rivers.

The City of Albany is within the jurisdiction of the BAAQMD, which regulates air quality in the San Francisco Bay Area. Air quality conditions in the San Francisco Bay Area have improved significantly since the BAAQMD was created in 1955. Ambient concentrations of air pollutants and the number of days during which the region exceeds air quality standards have fallen dramatically. Exceedances of air quality standards occur primarily during meteorological conditions conducive to high pollution levels, such as cold, windless winter nights or hot, sunny summer afternoons.

Ozone levels, measured by peak concentrations and the number of days over the State 1-hour standard, have declined substantially as a result of aggressive programs by the BAAQMD and other regional, State and federal agencies. The reduction of peak concentrations represents progress in improving public health; however, the Bay Area still exceeds the State standard for one-hour ozone. Levels of PM_{10} in the Bay Area have exceeded State standards at least three times per year the last three years. As such, the Bay Area is considered a nonattainment area for PM_{10} relative to the State standards, but is considered an unclassified area according to the federal standard. The Bay Area has been designated as an attainment area for federal standards, but is a nonattainment area for $PM_{2.5}$ under State standards.

Table IV.B-3: Bay Area Attainment Status

Pollutant	Averaging Time	California Standards [a]		National Standards [b]	
		Concentration	Attainment Status	Concentration[c]	Attainment Status
Ozone (O_3)	8-Hour	0.07 ppm (137 $\mu g/m^3$)	Nonattainment [h]	0.075 ppm	Nonattainment [d]
	1-Hour	0.09 ppm (180 $\mu g/m^3$)	Nonattainment	Not Applicable	Not Applicable [e]
Carbon Monoxide (CO)	8-Hour	9 ppm (10 mg/m^3)	Attainment	9 ppm (10 mg/m^3)	Attainment [f]
	1-Hour	20 ppm (23 mg/m^3)	Attainment	35 ppm (40 mg/m^3)	Attainment
Nitrogen Dioxide (NO_2)	Annual Mean	0.030 ppm (56 $\mu g/m^3$)	Attainment	0.053 ppm (100 $\mu g/m^3$)	Attainment
	1-Hour	0.18 ppm (339 $\mu g/m^3$)	Attainment	Not Applicable	Not Applicable
Suspended Particulate Matter (PM_{10})	Annual Mean	20 $\mu g/m^3$	Nonattainment [g]		
	24-Hour	50 $\mu g/m^3$	Nonattainment	150 $\mu g/m^3$	Unclassified
Suspended Particulate Matter ($PM_{2.5}$)	Annual Mean	12 $\mu g/m^3$	Nonattainment [g]	15 $\mu g/m^3$	Attainment
	24-Hour	Not Applicable	Not Applicable	35 $\mu g/m^3$ [i]	Nonattainmnet
Sulfur Dioxide (SO_2)	Annual Mean	Not Applicable	Not Applicable	0.03 ppm (80 $\mu g/m^3$)	Attainment
	24-Hour	0.04 ppm (105 $\mu g/m^3$)	Attainment	0.14 ppm (365 $\mu g/m^3$)	Attainment
	1-Hour	0.25 ppm (655 $\mu g/m^3$)	Attainment	Not Applicable	Not Applicable

Notes: Lead (Pb) is not listed in the above table because it has been in attainment since the 1980s.
ppm = parts per million
mg/m^3 = milligrams per cubic meter
$\mu g/m^3$ = micrograms per cubic meter

[a] California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, suspended particulate matter - PM_{10}, and visibility reducing particles are values that are not to be exceeded. The standards for sulfates, Lake Tahoe carbon monoxide, lead, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour or 24-hour average (i.e., all standards except for lead and the PM_{10} annual standard), then some measurements may be excluded. In particular, measurements are excluded that CARB determines would occur less than once per year on the average. The Lake Tahoe CO standard is 6.0 ppm, a level one-half the national standard and two-thirds the state standard.

[b] National standards other than for ozone, particulates and those based on annual averages are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent three-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour ozone standard is attained when the 3-year average of the 4th highest daily concentrations is 0.075 ppm (75 ppb) or less. The 24-hour PM_{10} standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than 150 g/m^3. The 24-hour $PM_{2.5}$ standard is attained when the 3-year average of 98th percentiles is less than 35 g/m^3. Except for the national particulate standards, annual standards are met if the annual average falls below the standard at every site. The national annual particulate standard for PM_{10} is met if the 3-year average falls below the standard at every site. The annual $PM_{2.5}$ standard is met if the 3-year average of annual averages spatially-averaged across officially designed clusters of sites falls below the standard.

[c] National air quality standards are set by EPA at levels determined to be protective of public health with an adequate margin of safety.

[d] In June 2004, the Bay Area was designated as a marginal nonattainment area of the national 8-hour ozone standard. EPA lowered the national 8-hour ozone standard from 0.80 to 0.75 ppm (i.e., 75 ppb) effective May 27, 2008. EPA will issue final designations based upon the new 0.75 ppm ozone standard by March 2010.

[e] The national 1-hour ozone standard was revoked by EPA on June 15, 2005.

[f] In April 1998, the Bay Area was redesignated to attainment for the national 8-hour carbon monoxide standard.

[g] In June 2002, CARB established new annual standards for $PM_{2.5}$ and PM_{10}.

[h] The 8-hour CA ozone standard was approved by the Air Resources Board on April 28, 2005 and became effective on May 17, 2006.

[i] EPA lowered the 24-hour $PM_{2.5}$ standard from 65 $\mu g/m^3$ to 35 $\mu g/m^3$ in 2006. EPA issued attainment status designations for the 35 g/m^3 standard on December 22, 2008. EPA has designated the Bay Area as nonattainment for the 35 ug/m^3 $PM_{2.5}$ standard. The EPA designation will be effective 90 days after publication of the regulation in the Federal Register. President Obama has ordered a freeze on all pending federal rules; therefore, the effective date of the designation is unknown at this time.

Source: Bay Area Air Quality Management District, 2009. Bay Area Attainment Status.

At the State level, the region is considered serious non-attainment status for ground level ozone and non-attainment status for PM_{10}. California ambient air quality standards are more stringent than the national ambient air quality standards.

Levels of PM_{10} in the Bay Area currently exceed California Clean Air Act standards and, therefore, the area is considered a nonattainment area for this pollutant relative to the State standards. PM_{10} levels monitored at the San Pablo – Rumrill Boulevard station (closest monitoring station with PM_{10} data) exceeded the State's standard 3 times in 2006, 2 times in 2007 and once in 2008. The Bay Area is an unclassified area for the federal PM_{10} standard. The federal standard was not exceeded at this monitoring station in the past 3 years.

No exceedances of the State or federal CO standards have been recorded at any of the region's monitoring stations since 1991. The Bay Area is currently considered a maintenance area for State and federal CO standards.

The BAAQMD's Bay Area 1991, 1994, 1997, 2000 and 2005 Clean Air Plans contain district-wide control measures to reduce CO and O_3 precursor emissions. The State standards for these pollutants are more stringent than the national standards. Exceedances of air quality standards occur primarily during meteorological conditions conducive to high pollution levels, such as cold, windless winter nights or hot, sunny summer afternoons.

(2) Local Climate and Air Quality. Air quality is a function of both local climate and local sources of air pollution. Air quality is the balance of the natural dispersal capacity of the atmosphere and emissions of air pollutants from human uses of the environment. Two meteorological factors affect air quality in Albany: wind and temperature. Winds affect the direction of transport of any air pollution emissions and wind also controls the volume of air into which pollution is mixed in a given period of time. While winds govern horizontal mixing processes, temperature inversions determine the vertical mixing depth of air pollutants.

Winds in the City of Albany area display several characteristic regimes. During the day, especially in summer, winds are from the southwest and west as air is funneled through the Golden Gate and then disperses across the entire Bay Area. At night, especially in winter, the land becomes cooler than the ocean and an offshore wind often develops, blowing from the Central Valley toward the ocean.

Often, the daytime onshore flow of marine air is capped by a massive dome of warm air that acts like a giant lid over the region. As the clean ocean air moves inland, pollutants are continually added from below without any dilution from above. As the marine layer collects in inland valleys of the basin and undergoes photochemical transformations under abundant sunlight, it creates unhealthful levels of smog (mainly ozone).

A different type of inversion typically forms at night as cool air pools in low elevations while the air aloft remains warm. Shallow radiation inversions are formed (especially in winter) which trap pollutants near intensive traffic sources, such as freeways, shopping centers, etc., and form localized violations of clean air standards called "hot spots." Although inversions are found during all seasons of the year, the summertime regional capping inversion and the localized winter radiation inversions are, by far, the most dominant.

Pollutant monitoring results for the years 2006 to 2008 at the Berkeley ambient air quality monitoring station indicate that air quality in the project area has generally been good. Table IV.B-4 summarizes the last three years of published data from this monitoring station. As indicated, 3 exceedances of the State PM_{10} standard in 2006 were recorded, 2 exceedances in 2007 were recorded and one exceedance in 2008 was recorded. There has been one exceedance of the federal $PM_{2.5}$ standard in 2006, 2007 and 2008. CO, O_3, NO_2, and SO_2 standards were not exceeded in the project area during the three-year period.

The amount of a given air pollutant in the atmosphere is determined by the amount of pollutant released and the atmosphere's ability to transport and/or dilute that pollutant. The major determinants of transport and dilution are wind, atmospheric stability, terrain and for photochemical pollutants, sunshine.

c. Air Quality Issues. Five key air quality issues—CO hotspots, vehicle emissions, fugitive dust, odors, and construction equipment exhaust—are described below.

(1) Local Carbon Monoxide Hotspots. Local air quality is most affected by CO emissions from motor vehicles. CO is typically the pollutant of greatest concern because it is created in abundance by motor vehicles and it does not readily disperse into the air. Because CO does not readily disperse, areas of vehicle congestion can create "pockets" of high CO concentration called "hot spots." These pockets have the potential to exceed the State 1-hour standard of 20 ppm and/or the 8-hour standard of 9.0 ppm.

While CO transport is limited, it does disperse with distance from the source under normal meteorological conditions. However, under certain extreme meteorological conditions, CO concentrations near congested roadways or intersections may reach unhealthful levels affecting local sensitive receptors (e.g., residents, schoolchildren, the elderly, hospital patients, etc). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service or with extremely high traffic volumes. In areas with high ambient background CO concentration, modeling is recommended to determine a project's effect on local CO levels.

(2) Vehicle Emissions. Long-term air emission impacts are those associated with changes in automobile travel within the City. Mobile source emissions would result from vehicle trips associated with increased vehicular travel. As is true throughout much of the United States, motor vehicle use is projected to increase substantially in the region. The BAAQMD, local jurisdictions, and other parties responsible for protecting public health and welfare will continue to seek ways of minimizing the air quality impacts of growth and development in order to avoid further exceedances of the standards.

(3) Fugitive Dust. Fugitive dust emissions are generally associated with demolition, land clearing, exposure of soils to the air, and cut and fill operations. Dust generated during construction varies substantially on a project-by-project basis, depending on the level of activity, the specific operations and weather conditions.

Construction emissions can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions, and other factors. There are a number of feasible control measures that can be reasonably implemented to significantly reduce

Table IV.B-4: Ambient Air Quality at the Sixth Street, Berkeley Monitoring Station

Pollutant	Standard	2006	2007	2008
Carbon Monoxide (CO)				
Maximum 1 hour concentration (ppm)		2.9[c]	2.9[d]	2.1
Number of days exceeded:	State: > 20 ppm	0	0	0
	Federal: > 35 ppm	0	0	0
Maximum 8 hour concentration (ppm)		1.8	1.6	1.7
Number of days exceeded:	State: > 9 ppm	0	0	0
	Federal: > 9 ppm	0	0	0
Ozone (O_3)				
Maximum 1 hour concentration (ppm)		0.088	0.038	0.053
Number of days exceeded:	State: > 0.09 ppm	0	0	0
Maximum 8 hour concentration (ppm)		0.066	0.032	0.049
Number of days exceeded:	State: > 0.07 ppm	ND	ND	ND
	Federal: > 0.08 ppm	0	0	0
Coarse Particulates (PM_{10}) [a]				
Maximum 24 hour concentration ($\mu g/m^3$)		58	54	42
Number of days exceeded:	State: > 50 $\mu g/m^3$	3	2	1
	Federal: > 150 $\mu g/m^3$	0	0	0
Annual arithmetic average concentration ($\mu g/m^3$)		21	20	20
Exceeded for the year:	State: > 20 $\mu g/m^3$	Yes	No	No
	Federal: > 50 $\mu g/m^3$	No	No	No
Fine Particulates ($PM_{2.5}$) [b]				
Maximum 24 hour concentration ($\mu g/m^3$)		60	47	60
Number of days exceeded:	Federal: > 35 $\mu g/m^3$	1	1	1
Annual arithmetic average concentration ($\mu g/m^3$)		10.0	8.7	10.2
Exceeded for the year:	State: > 12 $\mu g/m^3$	No	No	No
	Federal: > 15 $\mu g/m^3$	No	No	No
Nitrogen Dioxide (NO_2)				
Maximum 1 hour concentration (ppm)		0.063	0.047	0.055
Number of days exceeded:	State: > 0.25 ppm	0	0	0
Annual arithmetic average concentration (ppm)		0.015	0.014	0.014
Exceeded for the year:	Federal: > 0.053 ppm	No	No	No
Sulfur Dioxide (SO_2) [a]				
Maximum 1 hour concentration (ppm)		0.017	0.017	0.018
Number of days exceeded:	State: > 0.25 ppm	0	0	0
Maximum 3 hour concentration (ppm)		0.012	0.012	0.012
Number of days exceeded:	Federal: > 0.5 ppm	0	0	0
Maximum 24 hour concentration (ppm)		0.005	0.005	0.004
Number of days exceeded:	State: > 0.04 ppm	0	0	0
	Federal: > 0.14 ppm	0	0	0
Annual arithmetic average concentration (ppm)		0.002	0.002	0.001
Exceeded for the year:	Federal: > 0.030 ppm	No	No	No

Notes: ppm = parts per million
$\mu g/m^3$ = micrograms per cubic meter
ND = No data. There was insufficient (or no) data to determine the value.
[a] 1865 Rumrill Boulevard San Pablo, CA is the closest monitoring station with PM_{10} and SO_2 data.
[b] 2956 Treat Boulevard Concord, CA is the closest monitoring station with $PM_{2.5}$ data.
[c] 40733 Chapel Way Fremont, CA is the closest monitoring station with 1-hour CO data for 2006.
[d] 9925 International Blvd, Oakland, CA is the closest monitoring station with 1-hour CO data for 2007
Source: CARB and EPA, 2009

PM_{10} emissions from construction. Rather than attempting to provide detailed quantification of anticipated construction emissions from projects, the BAAQMD suggests the following:

> "The determination of significance with respect to construction emissions should be based on a consideration of the control measures to be implemented. From the Districts' [BAAQMD] perspective, quantification of emissions is not necessary, although a lead agency may elect to do so. If all of the control measures indicated as appropriate, depending on the size of the project are implemented, then air pollution from emissions from construction activities would be considered a less-than-significant impact."[2]

(4) Odors. During construction, the various diesel powered vehicles that would be used would create localized odors. These odors would be temporary and are not likely to be noticeable for extended periods of time beyond the construction area.

(5) Construction Equipment Exhaust. Construction activities cause combustion emissions from utility engines, heavy-duty construction vehicles, equipment hauling materials to and from construction sites and motor vehicles transporting construction crews. Exhaust emissions from construction activities vary daily as construction activity levels change. The use of construction equipment results in localized exhaust emissions.

d. Relevant Policies. The following policies from the Conservation, Recreation & Open Space Element and the Circulation Element of the City of Albany General Plan that specifically address air quality are applicable to the proposed project.

- CROS 4.1: Coordinate with Caltrans and MTC to monitor air quality impacts of improvements to Interstate 80 and 580 to assure that Albany's air quality will not be allowed to deteriorate any further.
- CROS 4.4: Continue to cooperate in local, subregional and regional efforts to implement the Clean Air Plan and meet State Air Quality Standards.
- CIRC 4.1: Monitor existing and proposed transit service for responsiveness to residents' and employers' needs.
- CIRC 4.3: Continue to work with the City's Trip Reduction Ordinance and continue to develop programs and incentives for the use of carpools, staggered work hours, bicycling, walking and the increased use of public transit for residents and employees in the community.
- CIRC 4.5: Increase pedestrian travel throughout the City by connecting major pathway systems such as BART linear park to other City, regional, and State Parks, and other community facilities.
- CIRC 4.7: Assure that sidewalks, pathways and trails used by pedestrians are safe and provide unhindered access for all.
- CIRC 6.1: Develop a plan for bike routes for Albany, linking existing bike paths and routes in Berkeley and El Cerrito. Implement this plan as part of the City's overall road maintenance and traffic sign program within the annual capital projects budget, as well as through specific transportation funding.
- CIRC 6.2: Work to obtain funding sources to develop the Bay Trail in Albany and along the entire East Bay Shoreline corridor as an alternative, parallel route to I-80.

2. Impacts and Mitigation Measures

This section analyzes air quality impacts that could result from implementation of the proposed project. The subsection begins with the criteria of significance, which establish the threshold for

[2] Bay Area Air Quality Management District, 1996. *BAAQMD CEQA Guidelines Assessing the Air Quality Impacts of Projects and Plans*. April. (Amended in December 1999.)

determining whether an impact is significant. The latter part of this subsection presents the impacts associated with the proposed project, and recommends mitigation measures as appropriate.

a. Criteria of Significance. The proposed project would result in a significant impact on air quality if it would:

- Violate any ambient air quality standard or contribute substantially to an existing or projected air quality violation;
- Violate the District's air quality standards or contribute substantially to an existing or projected air quality violation by:
  - Contributing to CO concentrations exceeding the State ambient air quality standards of 9 ppm averaged over 8 hours and 20 ppm for 1 hour; or
  - Generating criteria air pollutant emissions of ROG, NO_x, or PM_{10} in excess of 15 tons per year, or 80 pounds per day.
- Frequently expose members of the public to objectionable odors;
- Conflict with or obstruct implementation of an applicable air quality plan;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations;
- Result in a cumulative air quality impact. Projects that would individually have a significant air quality impact due to project operations would also result in a cumulative air quality impact. For projects that do not individually have significant operational air quality impacts, a cumulative impact would result if the project would cause the City's General Plan to conflict with the Clean Air Plan (CAP) or, if the City's General Plan is already inconsistent with the Clean Air Plan and the project would combine with other reasonably foreseeable future projects to either: 1) exceed the BAAQMD individual operational thresholds of significance, or 2) exceed the CAP population and vehicle miles traveled (VMT) assumptions for growth in the City or County.

b. Less-than-Significant Air Quality Impacts. The project would result in the following less-than-significant air quality impacts.

(1) Odor Emissions. Heavy-duty equipment in the project area during construction would emit odors. However, the construction activity would be short-term and would cease to occur after construction is completed. There are no other known odor sources in the project vicinity that would impact sensitive receptors. Therefore, project-related odor impacts would be considered a less-than-significant impact.

(2) Toxic Air Contaminants. The implementation of the proposed project would not result in any new sources of Toxic Air Contaminants (TACs), and the project land uses would not be located near any existing major sources of TACs. In 2005, the CARB released a document stating that new sensitive land uses such as residences, should not be located within 500 feet of a freeway or urban roads with more than 100,000 vehicles/day.[3] San Pablo Avenue is adjacent to the project site and carries approximately 25,000 vehicles per day and the project is located more than 2,860 feet

[3] California Air Resources Board, 2005. *Air Quality and Land Use Handbook: A Community Health Perspective.* April.

west of Interstate 80 (I-80). Therefore would the project's location would not pose an elevated toxic risk to future residents of the project site. The project would not have the potential to expose sensitive receptors or the general public to substantial levels of TACs and would be deemed to have a less-than-significant impact.

(3) Operational Emissions–CO Analysis. Vehicular traffic associated with the proposed project would emit carbon monoxide (CO) into the air along roadway segments and near intersections. As previously described, because CO does not readily disperse, areas of vehicle congestion can create pockets of high CO concentrations, called "hot spots." Typically, high CO concentrations are associated with roadways or intersections operating at deficient levels of service (LOS) or with extremely high traffic volumes. An analysis of the potential CO hotspots was performed for intersections within the vicinity of the project site.

Table IV.B-5 lists the 1-hour and 8-hour CO concentrations for the existing (year 2008) conditions without and with the project at fifteen intersections in the project study area. Table IV.B-6 lists the Near-Term (2015) conditions without and with the project. Table IV.B-7 lists the Cumulative (2035) Conditions without and with the project.

Based on the methodology suggested by the EPA and the California Department of Transportation, the second highest CO concentrations monitored at the nearest air monitoring station in the past 2 years (in this case 2.9 ppm for the 1-hour period and 1.8 ppm for the 8-hour period) were used as the background CO concentrations. Emission factors for study scenarios were obtained from the latest confirmed California ARB data.

Table IV.B-5 shows that 1-hour and 8-hour CO concentrations for all background conditions without and with the project would be below the federal and State CO standards. The 1-hour CO levels range from 3.3 to 5.1 ppm, much lower than the State CO standard of 20 ppm. The 8-hour CO levels range from 2.1 to 3.3 ppm, also much lower than the State and federal standard of 9 ppm.

Table IV.B-6 shows that all Near-Term (2015) Conditions 1-hour and 8-hour CO concentrations with the project would be below the federal and State CO standards. The 1-hour CO levels range from 3.2 to 4.2 ppm, which are much lower then the State standard of 20 ppm. The 8-hour CO levels would range from 2.0 to 2.7 ppm, which are much lower than the State standard of 9 ppm.

Table IV.B-7 shows that all Cumulative (2035) Conditions 1-hour and 8-hour CO concentrations with the project would be below the federal and State CO standards. The 1-hour CO levels range from 2.9 to 3.2 ppm, which are much lower then the State standard of 20 ppm. The 8-hour CO levels would range from 1.8 ppm to 2.0 ppm, which are much lower than the State standard of 9 ppm.

Table IV.B-5: CO Concentrations for Existing No Project and Existing Plus Project Conditions (Year 2008)

Intersection	Receptor Distance to Road Centerline (Meters)	Project Related Increase 1-Hour/8-Hour (ppm)	Without/ With Project 1-Hour CO Concentration (ppm)	Without/ With Project 8-Hour CO Concentration (ppm)	Exceeds State Standards?	
					1-Hour	8-Hour
San Pablo Avenue/Solano Avenue	17	0.0 / 0.0	4.5 / 4.5	2.9 / 2.9	No	No
	17	-0.1 / -0.1	4.4 / 4.3	2.9 / 2.8	No	No
	16	-0.1 / -0.1	4.3 / 4.2	2.8 / 2.7	No	No
	16	-0.1 / -0.1	4.2 / 4.1	2.7 / 2.6	No	No
Eastshore Highway/Buchanan Street	14	0.1 / 0.0	4.7 / 4.8	3.1 / 3.1	No	No
	14	0.0 / 0.0	4.6 / 4.6	3.0 / 3.0	No	No
	14	0.1 / 0.1	4.5 / 4.6	2.9 / 3.0	No	No
	12	0.1 / 0.1	4.5 / 4.6	2.9 / 3.0	No	No
Jackson Street/Buchanan Street	17	0.1 / 0.1	4.9 / 5.0	3.2 / 3.3	No	No
	17	0.0 / 0.0	4.8 / 4.8	3.1 / 3.1	No	No
	16	0.1 / 0.1	4.6 / 4.7	3.0 / 3.1	No	No
	16	0.0 / 0.0	4.5 / 4.5	2.9 / 2.9	No	No
San Pablo Avenue/Buchanan Street	14	0.1 / 0.0	4.4 / 4.5	2.9 / 2.9	No	No
	14	0.2 / 0.1	4.3 / 4.5	2.8 / 2.9	No	No
	14	0.1 / 0.1	4.2 / 4.3	2.7 / 2.8	No	No
	12	0.1 / 0.1	4.2 / 4.3	2.7 / 2.8	No	No
San Pablo Avenue/Marin Avenue	17	0.2 / 0.1	4.9 / 5.1	3.2 / 3.3	No	No
	17	0.2 / 0.1	4.7 / 4.9	3.1 / 3.2	No	No
	17	0.2 / 0.1	4.7 / 4.9	3.1 / 3.2	No	No
	17	0.1 / 0.0	4.7 / 4.8	3.1 / 3.1	No	No
Masonic Avenue/Marin Avenue	14	0.0 / 0.0	4.3 / 4.3	2.8 / 2.8	No	No
	14	0.0 / 0.0	4.3 / 4.3	2.8 / 2.8	No	No
	14	0.0 / 0.0	4.2 / 4.2	2.7 / 2.7	No	No
	14	0.0 / 0.0	4.2 / 4.2	2.7 / 2.7	No	No
Jackson Street/Monroe Street	8	0.0 / 0.0	3.4 / 3.4	2.2 / 2.2	No	No
	8	0.0 / 0.0	3.4 / 3.4	2.2 / 2.2	No	No
	8	0.0 / 0.0	3.3 / 3.3	2.1 / 2.1	No	No
	8	0.0 / 0.0	3.3 / 3.3	2.1 / 2.1	No	No
San Pablo Avenue/Monroe Street	14	0.3 / 0.2	4.5 / 4.8	2.9 / 3.1	No	No
	14	0.4 / 0.3	4.3 / 4.7	2.8 / 3.1	No	No
	14	0.4 / 0.3	4.3 / 4.7	2.8 / 3.1	No	No
	13	0.3 / 0.2	4.3 / 4.6	2.8 / 3.0	No	No
San Pablo Avenue/Dartmouth Street	14	0.2 / 0.1	4.3 / 4.5	2.8 / 2.9	No	No
	14	0.1 / 0.1	4.3 / 4.4	2.8 / 2.9	No	No
	14	0.1 / 0.1	4.3 / 4.4	2.8 / 2.9	No	No
	13	0.2 / 0.2	4.2 / 4.4	2.7 / 2.9	No	No
San Pablo Avenue/Harrison Street	17	0.1 / 0.0	4.4 / 4.5	2.9 / 2.9	No	No
	17	0.2 / 0.1	4.3 / 4.5	2.8 / 2.9	No	No
	16	0.2 / 0.2	4.2 / 4.4	2.7 / 2.9	No	No
	13	0.1 / 0.1	4.2 / 4.3	2.7 / 2.8	No	No
Eastshore Highway/Gilman Street	11	0.0 / 0.0	4.2 / 4.2	2.7 / 2.7	No	No
	11	0.0 / 0.0	4.2 / 4.2	2.7 / 2.7	No	No
	10	0.0 / 0.0	4.1 / 4.1	2.6 / 2.6	No	No
	10	0.1 / 0.0	4.0 / 4.1	2.6 / 2.6	No	No
6th Street/Gilman Street	14	0.0 / 0.0	4.0 / 4.0	2.6 / 2.6	No	No
	14	0.1 / 0.1	3.9 / 4.0	2.5 / 2.6	No	No
	14	0.0 / 0.0	3.9 / 3.9	2.5 / 2.5	No	No
	14	0.0 / 0.0	3.9 / 3.9	2.5 / 2.5	No	No

Table IV.B-5 *Continued*

Intersection	Receptor Distance to Road Centerline (Meters)	Project Related Increase 1-Hour/8-Hour (ppm)	Without/ With Project 1-Hour CO Concentration (ppm)	Without/ With Project 8-Hour CO Concentration (ppm)	Exceeds State Standards?	
					1-Hour	8-Hour
8th Street/Gilman Street	14	0.0 / 0.0	3.9 / 3.9	2.5 / 2.5	No	No
	14	0.1 / 0.1	3.8 / 3.9	2.4 / 2.5	No	No
	14	0.1 / 0.1	3.8 / 3.9	2.4 / 2.5	No	No
	14	0.0 / 0.0	3.8 / 3.8	2.4 / 2.4	No	No
San Pablo Avenue/Gilman Street	17	0.0 / 0.0	4.9 / 4.9	3.2 / 3.2	No	No
	17	0.2 / 0.1	4.7 / 4.9	3.1 / 3.2	No	No
	16	0.1 / 0.0	4.7 / 4.8	3.1 / 3.1	No	No
	16	0.1 / 0.1	4.5 / 4.6	2.9 / 3.0	No	No
Hopkins Street/Gilman Street	10	0.0 / 0.0	4.6 / 4.6	3.0 / 3.0	No	No
	10	0.1 / 0.1	4.5 / 4.6	2.9 / 3.0	No	No
	10	0.0 / 0.0	4.5 / 4.5	2.9 / 2.9	No	No
	7	0.1 / 0.1	4.3 / 4.4	2.8 / 2.9	No	No

Notes:
Includes Alameda County ambient 1-hour CO concentration of 2.9 ppm and ambient 8-hour CO concentration of 1.8 ppm.
The State 1-hour standard is 20 ppm and the 8-hour standard is 9 ppm.
Source: LSA Associates, Inc., 2009.

Table IV.B-6: CO Concentrations for Near-Term (2015) No Project and Project Conditions

Intersection	Receptor Distance to Road Centerline (Meters)	Project Related Increase 1-Hour/8-Hour (ppm)	Without/ With Project 1-Hour CO Concentration (ppm)	Without/ With Project 8-Hour CO Concentration (ppm)	Exceeds State Standards?	
					1-Hour	8-Hour
San Pablo Avenue/Solano Avenue	17	0.0 / 0.0	3.9 / 3.9	2.5 / 2.5	No	No
	17	0.1 / 0.1	3.8 / 3.9	2.4 / 2.5	No	No
	17	0.0 / 0.0	3.8 / 3.8	2.4 / 2.4	No	No
	16	0.1 / 0.0	3.7 / 3.8	2.4 / 2.4	No	No
Eastshore Highway/Buchanan Street	14	0.0 / 0.0	4.0 / 4.0	2.6 / 2.6	No	No
	14	0.0 / 0.0	4.0 / 4.0	2.6 / 2.6	No	No
	14	0.0 / 0.0	3.9 / 3.9	2.5 / 2.5	No	No
	12	0.0 / 0.0	3.9 / 3.9	2.5 / 2.5	No	No
Jackson Street/Buchanan Street	17	0.0 / 0.0	4.2 / 4.2	2.7 / 2.7	No	No
	17	0.0 / 0.0	4.1 / 4.1	2.6 / 2.6	No	No
	16	0.0 / 0.0	4.0 / 4.0	2.6 / 2.6	No	No
	16	0.0 / 0.0	3.9 / 3.9	2.5 / 2.5	No	No
San Pablo Avenue/Buchanan Street	14	0.1 / 0.1	3.8 / 3.9	2.4 / 2.5	No	No
	14	0.0 / 0.0	3.8 / 3.8	2.4 / 2.4	No	No
	14	0.1 / 0.0	3.7 / 3.8	2.4 / 2.4	No	No
	12	0.0 / 0.0	3.7 / 3.7	2.4 / 2.4	No	No
San Pablo Avenue/Marin Avenue	17	0.1 / 0.1	4.1 / 4.2	2.6 / 2.7	No	No
	17	0.1 / 0.0	4.0 / 4.1	2.6 / 2.6	No	No
	17	0.1 / 0.0	4.0 / 4.1	2.6 / 2.6	No	No
	17	0.0 / 0.0	4.0 / 4.0	2.6 / 2.6	No	No
Masonic Avenue/Marin Avenue	14	0.0 / 0.0	3.7 / 3.7	2.4 / 2.4	No	No
	14	0.0 / 0.0	3.7 / 3.7	2.4 / 2.4	No	No
	14	0.0 / 0.0	3.7 / 3.7	2.4 / 2.4	No	No
	14	0.0 / 0.0	3.7 / 3.7	2.4 / 2.4	No	No

Table IV.C-6 *Continued*

Intersection	Receptor Distance to Road Centerline (Meters)	Project Related Increase 1-Hour/8-Hour (ppm)	Without/ With Project 1-Hour CO Concentration (ppm)	Without/ With Project 8-Hour CO Concentration (ppm)	Exceeds State Standards?	
					1-Hour	8-Hour
Jackson Street/Monroe Street	8	0.0 / 0.0	3.3 / 3.3	2.1 / 2.1	No	No
	8	0.1 / 0.1	3.2 / 3.3	2.0 / 2.1	No	No
	8	0.0 / 0.0	3.2 / 3.2	2.0 / 2.0	No	No
	8	0.0 / 0.0	3.2 / 3.2	2.0 / 2.0	No	No
San Pablo Avenue/Monroe Street	14	0.2 / 0.1	3.9 / 4.1	2.5 / 2.6	No	No
	14	0.2 / 0.2	3.8 / 4.0	2.4 / 2.6	No	No
	14	0.2 / 0.2	3.8 / 4.0	2.4 / 2.6	No	No
	13	0.2 / 0.2	3.8 / 4.0	2.4 / 2.6	No	No
San Pablo Avenue/Dartmouth Street	14	0.2 / 0.2	3.8 / 4.0	2.4 / 2.6	No	No
	14	0.1 / 0.1	3.8 / 3.9	2.4 / 2.5	No	No
	14	0.1 / 0.1	3.8 / 3.9	2.4 / 2.5	No	No
	13	0.1 / 0.1	3.8 / 3.9	2.4 / 2.5	No	No
San Pablo Avenue/Harrison Street	17	0.1 / 0.1	3.8 / 3.9	2.4 / 2.5	No	No
	17	0.1 / 0.1	3.8 / 3.9	2.4 / 2.5	No	No
	16	0.1 / 0.1	3.8 / 3.9	2.4 / 2.5	No	No
	13	0.0 / 0.0	3.8 / 3.8	2.4 / 2.4	No	No
Eastshore Highway/Gilman Street	14	0.0 / 0.0	3.7 / 3.7	2.4 / 2.4	No	No
	11	0.0 / 0.0	3.7 / 3.7	2.4 / 2.4	No	No
	11	0.1 / 0.1	3.6 / 3.7	2.3 / 2.4	No	No
	10	0.0 / 0.0	3.6 / 3.6	2.3 / 2.3	No	No
6th Street/Gilman Street	14	0.0 / 0.0	3.6 / 3.6	2.3 / 2.3	No	No
	14	0.0 / 0.0	3.6 / 3.6	2.3 / 2.3	No	No
	14	0.0 / 0.0	3.6 / 3.6	2.3 / 2.3	No	No
	14	0.0 / 0.0	3.6 / 3.6	2.3 / 2.3	No	No
8th Street/Gilman Street	14	0.0 / 0.0	3.5 / 3.5	2.2 / 2.2	No	No
	14	0.0 / 0.0	3.5 / 3.5	2.2 / 2.2	No	No
	14	0.0 / 0.0	3.5 / 3.5	2.2 / 2.2	No	No
	14	0.1 / 0.0	3.4 / 3.5	2.2 / 2.2	No	No
San Pablo Avenue/Gilman Street	17	0.1 / 0.1	4.1 / 4.2	2.6 / 2.7	No	No
	17	0.1 / 0.0	4.0 / 4.1	2.6 / 2.6	No	No
	16	0.1 / 0.0	4.0 / 4.1	2.6 / 2.6	No	No
	16	0.1 / 0.1	3.9 / 4.0	2.5 / 2.6	No	No
Hopkins Street/Gilman Street	10	0.0 / 0.0	3.9 / 3.9	2.5 / 2.5	No	No
	10	0.0 / 0.0	3.9 / 3.9	2.5 / 2.5	No	No
	10	0.1 / 0.1	3.8 / 3.9	2.4 / 2.5	No	No
	7	0.1 / 0.0	3.7 / 3.8	2.4 / 2.4	No	No

Notes:
Includes Alameda County ambient 1-hour CO concentration of 2.9 ppm and ambient 8-hour CO concentration of 1.8 ppm.
The State 1-hour standard is 20 ppm and the 8-hour standard is 9 ppm.
Source: LSA Associates, Inc., 2009.

Table IV.B-7: CO Concentrations for Cumulative (2035) No Project and Project Conditions

Intersection	Receptor Distance to Road Centerline (Meters)	Project Related Increase 1-hour/8-hour (ppm)	Without/ With Project 1-Hour CO Concentration (ppm)	Without/ With Project 8-Hour CO Concentration (ppm)	Exceeds State Standards	
					1-Hour	8-Hour
San Pablo Avenue/Solano Avenue	17	0.1 / 0.0	3.1 / 3.2	1.9 / 2.0	No	No
	17	0.0 / -0.1	3.1 / 3.1	1.9 / 1.9	No	No
	16	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No
	16	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No
Eastshore Highway/Buchanan Street	14	0.0 / 0.0	3.2 / 3.2	2.0 / 2.0	No	No
	14	0.0 / 0.0	3.2 / 3.2	2.0 / 2.0	No	No
	14	0.1 / 0.0	3.1 / 3.2	1.9 / 2.0	No	No
	12	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No
Jackson Street/Buchanan Street	17	0.0 / 0.0	3.2 / 3.2	2.0 / 2.0	No	No
	17	0.0 / 0.0	3.2 / 3.2	2.0 / 2.0	No	No
	16	0.0 / 0.0	3.2 / 3.2	2.0 / 2.0	No	No
	16	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No
San Pablo Avenue/Buchanan Street	14	0.0 / -0.1	3.2 / 3.2	2.0 / 2.0	No	No
	14	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No
	14	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No
	12	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No
San Pablo Avenue/Marin Avenue	17	0.0 / -0.1	3.2 / 3.2	2.0 / 2.0	No	No
	17	0.0 / 0.0	3.2 / 3.2	2.0 / 2.0	No	No
	17	0.0 / 0.0	3.2 / 3.2	2.0 / 2.0	No	No
	17	0.0 / 0.0	3.2 / 3.2	2.0 / 2.0	No	No
Masonic Avenue/Marin Avenue	14	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No
	14	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No
	14	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No
	14	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No
Jackson Street/Monroe Street	8	0.0 / 0.0	2.9 / 2.9	1.8 / 1.8	No	No
	8	0.0 / -0.1	2.9 / 2.9	1.8 / 1.8	No	No
	8	0.0 / 0.0	2.9 / 2.9	1.8 / 1.8	No	No
	8	0.0 / 0.0	2.9 / 2.9	1.8 / 1.8	No	No
San Pablo Avenue/Monroe Street	14	0.0 / -0.1	3.2 / 3.2	2.0 / 2.0	No	No
	14	0.1 / -0.2	3.1 / 3.2	1.9 / 2.0	No	No
	14	0.1 / -0.2	3.1 / 3.2	1.9 / 2.0	No	No
	13	0.1 / -0.2	3.1 / 3.2	1.9 / 2.0	No	No
San Pablo Avenue/Dartmouth Street	14	0.1 / -0.2	3.1 / 3.2	1.9 / 2.0	No	No
	14	0.1 / -0.1	3.1 / 3.2	1.9 / 2.0	No	No
	14	0.1 / -0.1	3.1 / 3.2	1.9 / 2.0	No	No
	13	0.0 / -0.1	3.1 / 3.1	1.9 / 1.9	No	No
San Pablo Avenue/Harrison Street	17	0.0 / -0.1	3.1 / 3.1	1.9 / 1.9	No	No
	16	0.0 / -0.1	3.1 / 3.1	1.9 / 1.9	No	No
	14	0.0 / -0.1	3.1 / 3.1	1.9 / 1.9	No	No
	13	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No
Eastshore Highway/Gilman Street	16	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No
	14	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No
	11	0.0 / -0.1	3.1 / 3.1	1.9 / 1.9	No	No
	10	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No
6th Street/Gilman Street	14	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No
	14	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No
	14	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No
	14	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No

Table IV.C-7 *Continued*

Intersection	Receptor Distance to Road Centerline (Meters)	Project Related Increase 1-hour/8-hour (ppm)	Without/ With Project 1-Hour CO Concentration (ppm)	Without/ With Project 8-Hour CO Concentration (ppm)	Exceeds State Standards	
					1-Hour	8-Hour
8th Street/Gilman Street	14	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No
	14	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No
	14	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No
	14	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No
San Pablo Avenue/Gilman Street	17	0.0 / -0.1	3.2 / 3.2	2.0 / 2.0	No	No
	17	0.0 / 0.0	3.2 / 3.2	2.0 / 2.0	No	No
	16	0.0 / 0.0	3.2 / 3.2	2.0 / 2.0	No	No
	16	0.0 / -0.1	3.2 / 3.2	2.0 / 2.0	No	No
Hopkins Street/Gilman Street	10	0.0 / 0.0	3.2 / 3.2	2.0 / 2.0	No	No
	10	0.0 / 0.0	3.2 / 3.2	2.0 / 2.0	No	No
	10	0.0 / -0.1	3.1 / 3.1	1.9 / 1.9	No	No
	10	0.0 / 0.0	3.1 / 3.1	1.9 / 1.9	No	No

Notes:
Includes Alameda County ambient 1-hour CO concentration of 2.9 ppm and ambient 8-hour CO concentration of 1.8 ppm.
The State 1-hour standard is 20 ppm and the 8-hour standard is 9 ppm.
Source: LSA Associates, Inc., 2009.

(5) Operational Emissions–Regional Emissions. Long-term air emission impacts would be those associated with changes in usage of the project site. Mobile source emissions would result from vehicle trips associated with the proposed project. The URBEMIS 2007 computer program was used to calculate long-term mobile source emissions associated with the proposed project and is included in Appendix C.

The daily emission increase associated with project operational vehicular trip generation is identified in Table IV.B-8 for reactive organic gases (ROG) and nitrogen oxides (NOx) (two precursors of ozone) as well as particle matter (PM_{10} and $PM_{2.5}$). The BAAQMD has established thresholds of significance for ozone precursors and PM_{10} of 80 pounds per day. A significance threshold for $PM_{2.5}$ has not been established. Proposed project emissions, as shown in Table IV.B-8, would not exceed these thresholds of significance for ROG, NOx, and PM_{10}, and therefore, the proposed project would not have a significant effect on regional air quality.

Table IV.B-8: Project Regional Emissions in Pounds per Day

	ROG	NOx	PM_{10}	$PM_{2.5}$
Project Operational Emissions	50.02	49.69	58.07	11.10
BAAQMD Significance Threshold	80.0	80.0	80.0	NA
Exceed?	**No**	**No**	**No**	**NA**

Source: LSA Associates, Inc. 2009.

(6) Clean Air Plan (CAP) Consistency. The 2005 Ozone Attainment Plan, as discussed above, is the relevant regional air quality plan. The BAAQMD uses the CAP to evaluate a project's potential cumulative air quality impacts. The BAAQMD CEQA Guidelines state that "for any project that does not individually have significant operational air quality impacts, the determination of significant cumulative impacts should be based on an evaluation of the consistency of the project with the local general plan and the general plan with the regional air quality plan." The BAAQMD Guidelines present the following elements for evaluation of consistency between the General Plan and the CAP:

- General plan population projections are consistent with CAP and ABAG projections;
- Rate of increase in vehicle miles traveled (VMT) does not exceed rate of increase in population;
- General plan implements CAP transportation control measures; and
- General plan provides buffer zones around sources of odors, toxics and accidental releases.

The BAAQMD has prepared the 2005 Ozone Strategy for the San Francisco Bay Area as a roadmap to show how the region will continue to make progress toward meeting the State 1-hour ozone standard as expeditiously as practicable, and how the region will reduce transport of ozone and ozone precursors to neighboring areas.

The proposed project includes the development of a 55,000 square-foot grocery store, 30,000 square-feet of retail, 100 senior living residential units and 75 assisted living residential units. The City of Albany General Plan designates the project site as Residential/Commercial (RC) and the proposed project would be consistent with this designation.

The Smart Growth Project, endorsed by the BAAQMD, the Metropolitan Transportation Commission (MTC), and the Association of Bay Area Governments (ABAG), has found that communities can promote transit, walking, and cycling by encouraging compact, infill development providing a mix of uses of moderate or high densities. Future residents of the project site would be located near access to transit and the proposed project would also provide pedestrian/bicycle route connections. Increasing the amount of housing within the Bay Area to accommodate the region's growth and slow the movement of Bay Area residents to neighboring counties for more affordable housing is among the key principles of the Smart Growth Project vision.[4] Because the average growth in employment in the Bay Area is projected to be 1.3 percent a year between 2000 and 2030 and the population growth only an average of 0.7 percent a year, providing more housing in areas, such as Albany which are closer to the urban centers of the Bay Area will help to reduce VMT since employees will be closer to the centers of employment. Therefore, the current land use designations would be consistent with the strategies being developed in the CAP to bring the Basin into compliance with national and State air quality standards.

In this way, the proposed project is consistent with growth anticipated under the City's General Plan and falls within the population projections prepared by ABAG. The City of Albany's General Plan is in general conformance with the CAP and conforms to the Smart Growth Project objectives. As shown in Table IV.B-8, regional emissions from the proposed project would individually be less than significant. The project would not expose sensitive receptors to objectionable odors, toxics, or accidental releases of hazardous materials. Therefore, the project would have a less-than-significant cumulative impact.

c. Significant Air Quality Impacts. The proposed project would result in the following significant impact related to air quality.

<u>Impact AIR-1</u>: Demolition and construction period activities would generate dust and exhaust, and organic emissions from vehicles. (S)

[4] MTC, 2005. *Transportation 2030 Plan for the San Francisco Bay Area*. February.

The demolition of existing structures, the breaking up of cement pads and existing foundations, and the excavation of soil and site preparation grading have the potential to generate air pollutants. In addition, substantial dust could be emitted by the loading of debris and soil into trucks for disposal. After site preparation, construction dust could continue to affect local air quality during construction of the project. Construction activities would generate exhaust emissions from vehicles/equipment and fugitive particulate matter emissions that would affect local air quality.

The BAAQMD does not require the quantification of anticipated construction emissions from projects. According to the BAAQMD, the determination of significance with respect to construction emissions is based on the consideration of the control measures to be implemented. For informational purposes, construction emissions were estimated using the URBEMIS2007 model for the proposed project. Unmitigated construction emissions are shown in Table IV.B-9.

Table IV.B-9: Project Construction Emissions in Pounds per Day

	ROG	NOx	PM_{10}	$PM_{2.5}$
First Year Construction	8.1	49.6	200.6	84.0
Second Year Construction	303.4	34.7	2.6	2.2

Source: LSA Associates, Inc. 2009.

Implementation of the following two-part mitigation measure would reduce construction period air quality impacts to a less-than-significant level.

> Mitigation Measure AIR-1a: Consistent with guidance from the BAAQMD, the project applicant shall require contractors to include dust control measures in construction specifications for the project.
>
> Demolition. The following controls shall be implemented during demolition:
>
> - Water during demolition of structures and break-up of pavement to control dust generation;
> - Cover all trucks hauling demolition debris from the site; and
> - Use dust-proof chutes to load debris into trucks whenever feasible.
>
> Construction. The following controls shall be implemented during construction:
>
> - Water all active construction areas at least twice daily and more often during windy periods; active areas adjacent to existing sensitive land uses shall be kept damp at all times, or shall be treated with non-toxic stabilizers to control dust;
> - Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard;
> - Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites;
> - Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites;
> - Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets;
> - Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more);

- Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.)
- Limit traffic speeds on unpaved roads to 15 mph;
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways;
- Replant vegetation in disturbed areas as quickly as possible;
- Install wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the site;
- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph;
- Route any temporary haul roads to the soil stockpile area away from existing sensitive receptors to the extent feasible. Any temporary haul roads shall be surfaced with gravel and regularly watered to control dust or treated with an appropriate dust suppressant;
- Utilize water sprays to control dust when material is being added or removed from the stockpile. When the stockpile is undisturbed for more than 1 week, the storage pile shall be treated with a dust suppressant or crusting agent to eliminate blown dust generation; and
- All neighboring properties located within 500 feet of property lines of a construction area shall be provided with the name and phone number of a designated construction operation control coordinator who will respond to complaints within 24 hours by suspending all dust producing activities or providing additional personnel or equipment for dust control deemed necessary. The phone number of the BAAQMD pollution complaints contact shall also be provided. The dust control coordinator shall be on-call during construction hours. The coordinator shall keep a log of complaints received and remedial action taken in response.

Mitigation Measure AIR-1b: The project applicant shall require contractors to include emissions control measures in construction specifications for the project:

- Alternative powered construction equipment (i.e., CNG, biodiesel, electric) shall be utilized when feasible;
- Idling time of diesel powered construction equipment shall be limited to 3 minutes;
- Heavy-duty (>50 horsepower) off-road vehicles shall achieve a project-wide fleet average of 40 percent NO_x reduction and 45 percent particulate reduction compared to the most recent CARB fleet average.
- Add-on control devices shall be used such as diesel oxidation catalysts or particulate filters;
- Construction equipment shall be located away from sensitive receptors, such as fresh air intakes to buildings, air conditioners and operable windows; and
- The operating hours of heavy duty equipment and/or the amount of equipment in use shall be minimized. (LTS)

According to the BAAQMD, if control measures of the type set forth above are implemented, then air pollution from emissions from construction activities would be considered less-than-significant.

d. Pollutants and Public Health. Despite great progress in air quality improvement, approximately 146 million people nationwide lived in counties with pollution levels above the national standards in 2002. Out of the 230 nonattainment areas identified during the 1990 Clean Air Act Amendment designation process, 124 areas remain under nonattainment status or designation today. In these nonattainment areas, however, the severity of air pollution episodes has decreased. Air quality in the San Francisco Bay Area Air Basin in the past 20 years has improved steadily and dramatically, even with the substantial increase in population and vehicles and other sources.

As shown in Table IV.B-2, long-term exposure to elevated levels of criteria pollutants could result in potential health effects. However, as stated in the thresholds of significance, emission thresholds established by the air district are used to manage total regional emissions within an air basin, based on the air basin attainment status for criteria pollutants. These emission thresholds were established for individual projects that would contribute to regional emissions and pollutant concentrations that may affect or delay the projected attainment target year for certain criteria pollutants.

Because of the conservative nature of the thresholds and the basin-wide context of individual project emissions, there is no direct correlation of a single project to localized health effects. One individual project does not necessarily result in adverse health effects for residents in the project vicinity.

Based on the above discussion, the potential for an individual project to significantly deteriorate regional air quality or contribute to significant health risk is small, especially when the emission thresholds are not exceeded by the project. Because of the overall improvement trend in air quality in the air basin, it is unlikely the regional air quality or health risk would worsen from the current condition due to emissions from an individual project.

C. GLOBAL CLIMATE CHANGE

CEQA requires that lead agencies consider the reasonably foreseeable adverse environmental effects of projects considered for approval. Global climate change can be considered an "effect on the environment" and an individual project or plan's incremental contribution to global climate change can have a cumulatively significant impact.

Cumulative impacts are the collective impacts of one or more past, present, or future projects, that when combined, result in adverse changes to the environment. Climate change is a global environmental problem in which: (a) any given development project contributes only a small portion of any net increase in GHGs and (b) global growth is continuing to contribute large amounts of GHGs across the world. No individual project would result in a measurable impact on global climate change, or an environmental impact resulting from global climate change. Therefore, this section addresses climate change primarily as a cumulative impact.

This section begins by providing general background information on climate change and meteorology. It then discusses the regulatory framework for global climate change, provides data on the existing global climate setting, and evaluates potential global greenhouse gas emissions associated with the proposed project. This section also discusses and evaluates the potential impacts of climate change on the University Village project in the City of Albany. The information and analysis provided in this report rely primarily on the Climate Action Team 2006 Final Report, Intergovernmental Panel on Climate Change (IPCC) Assessment Reports, various California Air Resources Board (CARB) staff reports, and other related global climate change documents that provide background information on the impacts of greenhouse gas emissions.

1. Setting

The following discussion provides an overview of the geographical and climate setting of City of Albany; global climate change, its causes, and its potential effects; and emission sources and inventories. The regulatory framework relating to global climate change is also summarized.

a. Geographic and Climate Setting. The City of Albany is located in the San Francisco Bay Area, a large shallow air basin ringed by hills that taper into a number of sheltered valleys around the perimeter. Two primary atmospheric outlets exist. One is through the strait known as the Golden Gate, a direct outlet to the Pacific Ocean. The second extends to the northeast, along the west delta region of the Sacramento and San Joaquin Rivers.

Winds in the City of Albany area display several characteristic regimes. During the day, especially in summer, winds are from the southwest and west as air is funneled through the Golden Gate and then disperses across the entire Bay Area. At night, especially in winter, the land becomes cooler than the ocean and an offshore wind often develops, blowing from the Central Valley toward the ocean.

Often, the daytime onshore flow of marine air is capped by a massive dome of warm air that acts like a giant lid over the region. As the clean ocean air moves inland, pollutants are continually added from below without any dilution from above.

b. Global Climate Change Background. A description of global climate change and its sources are provided below.

Global climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other significant changes in climate (such as precipitation or wind) that last for an extended period of time. The term "global climate change" is often used interchangeably with the term "global warming," but "global climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising temperatures. Global surface temperatures have risen by 0.74°C ± 0.18°C over the last 100 years (1906 to 2005). The rate of warming over the last 50 years is almost double that over the last 100 years.[1] The prevailing scientific opinion on climate change is that most of the warming observed over the last 50 years is attributable to human activities. The increased amounts of carbon dioxide (CO_2) and other GHGs are the primary causes of the human-induced component of warming. GHGs are released by the burning of fossil fuels, land clearing, agriculture, and other activities, and lead to an increase in the greenhouse effect.[2]

GHGs are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced global climate change are:[3]

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur Hexafluoride (SF_6)

Over the last 200 years, human activities have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere, and enhancing the natural greenhouse effect, which is believed to be causing global warming. While manmade GHGs include naturally-occurring GHGs such as CO_2, methane, and N_2O, some gases, like HFCs, PFCs, and SF_6 are completely new to the atmosphere.

Certain other gases, such as water vapor, are short-lived in the atmosphere. Others remain in the atmosphere for significant periods of time, contributing to climate change in the long term. Water vapor is excluded from the list of GHGs above because it is short-lived in the atmosphere and its

[1] Intergovernmental Panel on Climate Change (IPCC), 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC.*

[2] The temperature on Earth is regulated by a system commonly known as the "greenhouse effect." Just as the glass in a greenhouse lets heat from sunlight in and reduce the amount of heat that escapes, greenhouse gases like carbon dioxide, methane, and nitrous oxide in the atmosphere keep the Earth at a relatively even temperature. Without the greenhouse effect, the Earth would be a frozen globe; thus, although an excess of greenhouse gas results in global warming, the *naturally occurring* greenhouse effect is necessary to keep our planet at a comfortable temperature.

[3] The greenhouse gases listed are consistent with the definition in Assembly Bill (AB) 32 (Government Code 38505), as discussed later in this section.

atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation. For the purposes of this EIR, the term "GHGs" will refer collectively to the gases listed above only.

These gases vary considerably in terms of Global Warming Potential (GWP), which is a concept developed to compare the ability of each greenhouse gas to trap heat in the atmosphere relative to another gas. The global warming potential is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time that the gas remains in the atmosphere ("atmospheric lifetime"). The GWP of each gas is measured relative to carbon dioxide, the most abundant GHG. The definition of GWP for a particular greenhouse gas is the ratio of heat trapped by one unit mass of the greenhouse gas to the ratio of heat trapped by one unit mass of CO_2 over a specified time period. GHG emissions are typically measured in terms of pounds or tons of "CO_2 equivalents" (CO_2eq). Table IV.C-1 shows the GWPs for each type of GHG. For example, sulfur hexafluoride is 22,800 times more potent at contributing to global warming than carbon dioxide. The following discussion summarizes the characteristics of the six primary GHGs.

Table IV.C-1: Global Warming Potential of Greenhouse Gases

Gas	Atmospheric Lifetime (Years)	Global Warming Potential (100-year Time Horizon)
Carbon Dioxide	50-200	1
Methane	12	25
Nitrous Oxide	114	298
HFC-23	270	14,800
HFC-134a	14	1,430
HFC-152a	1.4	124
PFC: Tetrafluoromethane (CF_4)	50,000	7,390
PFC: Hexafluoromethane (C_2F_6)	10,000	12,200
Sulfur Hexafluoride (SF_6)	3,200	22,800

Source: IPCC, 2007. *Climate Change 2007: The Physical Science Basis*. Contribution of Working Group I to the Fourth Assessment Report of the IPCC.

Carbon Dioxide (CO_2). In the atmosphere, carbon generally exists in its oxidized form, as CO_2. Natural sources of CO_2 include the respiration (breathing) of humans, animals and plants, volcanic outgassing, decomposition of organic matter and evaporation from the oceans. Human-caused sources of CO_2 include the combustion of fossil fuels and wood, waste incineration, mineral production, and deforestation. The Earth maintains a natural carbon balance and when concentrations of CO_2 are upset, the system gradually returns to its natural state through the natural processes. Natural changes to the carbon cycle work slowly, especially compared to the rapid rate at which humans are adding CO_2 to the atmosphere. Natural removal processes, such as photosynthesis by land- and ocean-dwelling plant species, cannot keep pace with this extra input of man-made CO_2, and consequently, the gas is building up in the atmosphere. The concentration of CO_2 in the atmosphere has risen about 30 percent since the late 1800s.[4]

In 2002, CO_2 emissions from fossil fuel combustion accounted for approximately 98 percent of man-made CO_2 emissions and approximately 84 percent of California's overall GHG emissions (CO_2eq). The transportation sector accounted for California's largest portion of CO_2 emissions, with gasoline

[4] California Environmental Protection Agency. 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature*. March.

consumption making up the greatest portion of these emissions. Electricity generation was California's second largest category of GHG emissions.

Methane (CH_4). Methane is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources include wetlands, termites, and oceans. Anthropogenic sources include rice cultivation, livestock, landfills and waste treatment, biomass burning, and fossil fuel combustion (burning of coal, oil, natural gas, etc.). Decomposition occurring in landfills accounts for the majority of human-generated CH_4 emissions in California, followed by enteric fermentation (emissions from the digestive processes of livestock).[5] Agricultural processes such as manure management and rice cultivation are also significant sources of manmade CH_4 in California. Methane accounted for approximately 6 percent of gross climate change emissions (CO_2eq) in California in 2002.[6]

It is estimated that over 60 percent of global methane emissions are related to human-related activities.[7] As with CO_2, the major removal process of atmospheric methane – a chemical breakdown in the atmosphere – cannot keep pace with source emissions, and methane concentrations in the atmosphere are increasing.

Nitrous Oxide (N_2O). Nitrous oxide is produced naturally by a wide variety of biological sources, particularly microbial action in soils and water. Tropical soils and oceans account for the majority of natural source emissions. Nitrous oxide is a product of the reaction that occurs between nitrogen and oxygen during fuel combustion. Both mobile and stationary combustion emit N_2O, and the quantity emitted varies according to the type of fuel, technology, and pollution control device used, as well as maintenance and operating practices. Agricultural soil management and fossil fuel combustion are the primary sources of human-generated N_2O emissions in California. Nitrous oxide emissions accounted for nearly 7 percent of man-made GHG emissions (CO_2eq) in California in 2002.

Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulfur Hexafluoride (SF_6). HFCs are primarily used as substitutes for ozone-depleting substances regulated under the Montreal Protocol.[8] PFCs and SF_6 are emitted from various industrial processes, including aluminum smelting, semiconductor manufacturing, electric power transmission and distribution, and magnesium casting. There is no aluminum or magnesium production in California; however, the rapid growth in the semiconductor industry, which is active in California, leads to greater use of PFCs. HFCs, PFCs, and SF_6 accounted for about 3.5 percent of man-made GHG emissions (CO_2eq) in California in 2002.[9]

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[5] California Air Resources Board, Greenhouse Gas Inventory Data - 1990 to 2004. http://www.arb.ca.gov/cc/inventory/data/data.htm. Accessed November 2008.

[6] Ibid.

[7] IPCC, 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC.

[8] The Montreal Protocol is an international treaty that was approved on January 1, 1989, and was designated to protect the ozone layer by phasing out the production of several groups of halogenated hydrocarbons believed to be responsible for ozone depletion.

[9] California Environmental Protection Agency. 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature*. March.

Temperature Increase. The latest projections, based on state-of-the art climate models, indicate that temperatures in California are expected to rise 3 to 10.5°F by the end of the century.[10] Because GHGs persist for a long time in the atmosphere (see Table IV.C-1), accumulate over time, and are generally well-mixed, their impact on the atmosphere cannot be tied to a specific point of emission.

Climate change refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from:

- Natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun
- Natural processes within the climate system (e.g., changes in ocean circulation and reduction in sunlight from the addition of GHGs and other gases to the atmosphere from volcanic eruptions)
- Human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g., from deforestation, reforestation, urbanization, and desertification)

The primary effect of global climate change has been a rise in the average global tropospheric[11] temperature of 0.2°C per decade, determined from meteorological measurements worldwide between 1990 and 2005. Climate change modeling shows that further warming could occur, which would induce additional changes in the global climate system during the current century. Changes to the global climate system, ecosystems, and the environment of California could include, but are not limited to:

- The loss of sea ice and mountain snow pack, resulting in higher sea levels and higher sea surface evaporation rates with a corresponding increase in tropospheric water vapor due to the atmosphere's ability to hold more water vapor at higher temperatures;
- Rise in global average sea level primarily due to thermal expansion and melting of glaciers and ice caps in the Greenland and Antarctic ice sheets;
- Changes in weather that include widespread changes in precipitation, ocean salinity, and wind patterns, and more energetic aspects of extreme weather, including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones;
- Decline of the Sierra Nevada snowpack, which accounts for a significant amount of the surface water storage in California, by 70 percent to as much as 90 percent over the next 100 years;
- Increase in the number of days conducive to ozone formation by 25 to 85 percent (depending on the future temperature scenario) in high ozone areas of Los Angeles and the San Joaquin Valley by the end of the 21st century; and
- High potential for erosion of California's coastlines and seawater intrusion into the Delta and levee systems due to the rise in sea level.

c. Emissions Sources and Inventories. An emissions inventory that identifies and quantifies the primary human-generated sources and sinks of GHGs is a well-recognized and useful tool for

[10] California Climate Change Center, 2006. *Our Changing Climate. Assessing the Risks to California.* July.

[11] The troposphere is the zone of the atmosphere characterized by water vapor, weather, winds, and decreasing temperature with increasing altitude.

addressing climate change. This section summarizes the latest information on global, United States, California, and local GHG emission inventories.

(1) Global Emissions. Worldwide emissions of GHGs in 2004 were 27 billion metric tons of CO_2eq per year.[12] Global estimates are based on country inventories developed as part of programs of the United Nations Framework Convention on Climate Change (UNFCCC).

(2) U.S. Emissions. In 2004, the United States emitted about 7.3 billion metric tons of CO_2eq or about 25 tons/year/person. Of the four major sectors nationwide – residential, commercial, industrial and transportation – transportation accounts for the highest amount of GHG emissions (approximately 35 to 40 percent); these emissions are entirely generated from direct fossil fuel combustion. Between 1990 and 2006, total U.S. GHG emissions rose approximately 14.7 percent.[13]

(3) State of California Emissions. According to CARB emission inventory estimates, California emitted approximately 480 million metric tons[14] of CO_2eq emissions in 2004.[15] This large number is due primarily to the sheer size of California compared to other States. By contrast, California has the fourth lowest per-capita carbon dioxide emission rate from fossil fuel combustion in the country, due to the success of its energy efficiency and renewable energy programs and commitments that have lowered the State's GHG emissions rate of growth by more than half of what it would have been otherwise.[16]

The California EPA Climate Action Team stated in its March 2006 report that the composition of gross climate change pollutant emissions in California in 2002 (expressed in terms of CO_2eq) was as follows:

- Carbon dioxide (CO_2) accounted for 83.3 percent;
- Methane (CH_4) accounted for 6.4 percent;
- Nitrous oxide (N_2O) accounted for 6.8 percent; and
- Fluorinated gases (HFCs, PFC, and SF_6) accounted for 3.5 percent.[17]

[12] Combined total of Annex I and Non-Annex I Country CO_2eq emissions. United Nations Framework Convention on Climate Change (UNFCCC), 2007. *Greenhouse Gas Inventory Data*. Information available at http://unfccc.int/ghg_data/ghg_data_unfccc/time_series_annex_i/items/3814.php and http://maindb.unfccc.int/library/view_pdf.pl?url=http://unfccc.int/resource/docs/2005/sbi/eng/18a02.pdf.

[13] U.S. Environmental Protection Agency (EPA). 2008. The U.S. Greenhouse Gas Emissions and Sinks: Fast Facts. http://www.epa.gov/climatechange/emissions/downloads/2008_GHG_Fast_Facts.pdf.

[14] A metric ton is equivalent to approximately 1.1 tons.

[15] California Air Resources Board, Greenhouse Gas Inventory Data - 1990 to 2004. http://www.arb.ca.gov/cc/inventory/data/data.htm. Accessed November 2008.

[16] California Energy Commission (CEC), 2007. Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004 - Final Staff Report, publication # CEC-600-2006-013-SF, Sacramento, CA, December 22, 2006; and January 23, 2007 update to that report.

[17] California Environmental Protection Agency, 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature*. March.

The CARB estimates that transportation is the source of approximately 38 percent of the State's GHG emissions in 2004, followed by electricity generation (both in-State and out-of-State) at 23 percent, and industrial sources at 20 percent. The remaining sources of GHG emissions are residential and commercial activities at 9 percent, agriculture at 6 percent, high global warming potential gases at 3 percent, and recycling and waste at 1 percent.[18]

CARB is responsible for developing the California Greenhouse Gas Emission Inventory. This inventory estimates the amount of GHGs emitted to and removed from the atmosphere by human activities within the State of California and supports the AB 32 Climate Change Program. CARB's current GHG emission inventory covers the years 1990-2004 and is based on fuel use, equipment activity, industrial processes, and other relevant data (e.g., housing, landfill activity, agricultural lands, etc.). The emission inventory estimates are based on the actual amount of all fuels combusted in the State, which accounts for over 85 percent of the GHG emissions within California.

CARB staff has projected 2020 unregulated GHG emissions, which represent the emissions that would be expected to occur in the absence of any GHG reduction actions. CARB staff estimates the State-wide 2020 unregulated GHG emissions will be 596 million metric tons (MMT) of CO_2eq. GHG emissions in 2020 from the transportation and electricity sectors as a whole are expected to increase, but remain at approximately 38 percent and 23 percent of total CO_2eq emissions, respectively. The industrial sector consists of large stationary sources of GHG emissions and the percentage of the total 2020 emissions is projected to be 17 percent of total CO_2eq emissions. The remaining sources of GHG emissions in 2020 are high global warming potential gases at 8 percent, residential and commercial activities at 8 percent, agriculture at 5 percent, and recycling and waste at 1 percent.[19]

(4) Bay Area Emissions. The Bay Area Air Quality Management District (BAAQMD) established a climate protection program in 2005 to acknowledge the link between climate change and air quality. The Air District regularly prepares inventories of criteria and toxic air pollutants to support planning, regulatory and other programs. The most recent emissions inventory estimates greenhouse gas emissions produced by the San Francisco Bay Area in 2007.[20] The inventory updates the Air District's previous GHG emission inventory for base year 2002, which was published November 2006.

In 2007, 102.6 million metric tons of CO_2eq of greenhouse gases were emitted by the San Francisco Bay Area. Fossil fuel consumption in the transportation sector was the single largest source of the San Francisco Bay Area's greenhouse gas emissions in 2007. The transportation sector, including on-road motor vehicles, locomotives, ships and boats, and aircraft, contributed over 40 percent of greenhouse gas emissions in the Bay Area. The industrial and commercial sector (excluding electricity and agriculture) was the second largest contributor with 34 percent of total GHG emissions. Energy production activities such as electricity generation and co-generation were the third largest contributor with approximately 15 percent of the total GHG emissions. Off-road equipment such as

[18] California Air Resources Board (CARB), 2008. http://www.climatechange.ca.gov/inventory/index.html. September.

[19] Ibid.

[20] Bay Area Air Quality Management District, 2008. *Source Inventory of Bay Area Greenhouse Gas Emissions.* December.

construction, industrial, commercial, and lawn and garden equipment contributed 3 percent of GHG emissions.

(5) City of Albany Emissions. In 2006, the City of Albany joined ICLEI – Local Governments for Sustainability (formerly the International Council for Local Environmental Initiatives). ICLEI works with local governments to help them reduce their greenhouse gas emissions, and therefore, their impact on global climate change. The City of Albany is also a participating member in the Alameda County Climate Protection project (ACCPP). The project was launched by ICLEI in partnership with the Alameda County Waste Management Authority & Recycling Boards (StopWaste.org) and the Alameda County Conference of Mayors. ICLEI and StopWaste.org assisted the City to conduct a baseline Greenhouse Gas Emissions Inventory to set a community-wide emissions reduction target.

In 2004, the base year for the community-wide inventory (i.e., an inventory of those emissions related to all activities that occur within the City of Albany geographic boundary), the City of Albany emitted approximately 83,429 of CO_2eq emissions. The transportation sector contributed 42 percent, the residential sector emitted 29 percent, and the commercial/industrial sector emitted 29 percent. The City of Albany's municipal operations (i.e., local government activities) generated 966 tons of CO_2eq emissions, or approximately 1 percent of the City's total.

The next step in this program is to develop a Climate Action Plan (CAP) that consists of policies and measures that, when implemented, will enable the City to meet its target for greenhouse gas emission reductions. Several climate protection measures and policies are either in place or in the planning stages. The City of Albany has received grant funding from the Bay Area Air Quality Management District (BAAQMD) to develop the CAP.

d. Regulatory Framework. The regulatory framework and other governmental activities addressing GHG emissions and global climate change are discussed in this section.

(1) Federal Regulations. There are no adopted federal regulations for GHG emissions. In February 2002, the United States government announced a comprehensive strategy to reduce the GHG intensity[21] of the American economy by 18 percent over the 10-year period from 2002 to 2012. This strategy has three basic components: (1) slowing the growth of emissions, (2) strengthening science, technology and institutions, and (3) enhancing international cooperation.[22]

To meet this goal, the federal multiagency Climate Change Science Program (CCSP) was established to investigate natural and human-induced changes in the Earth's global environmental system; to monitor, understand, and predict global change; and to provide a sound scientific basis for national and international decision-making. The federal government established the multi-agency Climate Change Technology Program (CCTP) to accelerate the development and deployment of key technologies which offer great promise to reduce GHG emissions. The CCTP works closely with CCSP to make further progress in understanding and addressing global climate change. The United States Environmental Protection Agency's (EPA's) primary role in CCSP is evaluating the potential

[21] GHG intensity measures the ratio of GHG emissions to economic output.

[22] Environmental Protection Agency. 2008. Climate Change: Basic Information. www.epa.gov/climatechange/basicinfo.html.

consequences of climate variability and the effects on air quality, water quality, ecosystems, and human health in the United States.

Currently there are no adopted federal regulations to control global climate change. However, recent court cases may change the voluntary approach to address global climate change and greenhouse gas emissions. On April 2, 2007, the United States Supreme Court ruled that the EPA has the authority to regulate CO_2 emissions under the federal Clean Air Act (CAA).

Over a decade ago, most countries joined an international treaty, the United Nations Framework Convention on Climate Change (UNFCCC), to begin to consider what can be done to reduce global warming and to cope with the physical and socioeconomic effects of climate change. More recently, a number of nations have ratified an amendment to the treaty: the Kyoto Protocol, which has a more powerful effect on its signatories. Because the Kyoto Protocol will affect virtually all major sectors of the economy, it is considered to be the most far-reaching agreement on the environment and sustainable development ever adopted. Most of the world's countries eventually agreed to the Protocol, but some nations (including the United States) chose not to ratify it.

As of July 2008, 182 countries have ratified the Kyoto Protocol. Participating nations are separated into Annex 1 countries (i.e., industrialized nations) and Non-Annex 1 countries (i.e., developing nations) that have different requirements for GHG reductions. The goal of the Protocol is to achieve overall emissions reduction targets for six GHGs by 2012. The six GHGs regulated under the Protocol are CO_2, CH_4, N_2O, sulfur hexafluoride, hydrofluorocarbons, and perfluorocarbons. Each nation must reduce GHG emissions by a certain percentage below 1990 levels (e.g., 8 percent reduction for the European Union, 6 percent reduction for Japan). The average reduction target for nations participating in the Kyoto Protocol is approximately 5 percent below 1990 levels.

(2) State Regulations. In 1967, the California Legislature passed the Mulford-Carrell Act, which combined two Department of Health bureaus, the Bureau of Air Sanitation and the Motor Vehicle Pollution Control Board, to establish the CARB. Since its formation, the CARB has worked with the public, the business sector, and local governments to find solutions to California's air pollution problems.

In a response to the transportation sector's significant contribution to California's CO_2 emissions, Assembly Bill 1493 (AB 1493, Pavley) was enacted on July 22, 2002. AB 1493 requires CARB to set GHG emission standards for passenger vehicles and light duty trucks (and other vehicles whose primary use is noncommercial personal transportation in the State) manufactured in 2009 and all subsequent model years. In setting these standards, the CARB considered cost effectiveness, technological feasibility, and economic impacts. CARB adopted the standards in September 2004. When fully phased-in, the near-term (2009 to 2012) standards would result in a reduction in GHG emissions of approximately 22 percent compared to the emissions from the 2002 fleet, while the mid-term (2013 to 2016) standards would result in a reduction of approximately 30 percent. To set its own GHG emissions limits on motor vehicles, California must receive a waiver from the EPA. However, in December 2007, the EPA denied the request from California for the waiver. In January 2008, the California Attorney General filed a petition for review of the EPA's decision in the Ninth Circuit Court of Appeals; however, no decision on that petition has been published as of January 2009. On

January 26, 2009, the President issued an Executive Memorandum directing the EPA to reassess its decision to deny the waiver and to initiate any appropriate action.[23]

In June 2005, Governor Schwarzenegger established California's GHG emissions reduction targets in Executive Order S-3-05. The Executive Order established the following goals for the State of California: GHG emissions should be reduced to 2000 levels by 2010; GHG emissions should be reduced to 1990 levels by 2020; and GHG emissions should be reduced to 80 percent below 1990 levels by 2050.

California's major initiative for reducing GHG emissions is outlined in Assembly Bill 32 (AB 32), the "Global Warming Solutions Act," passed by the California State legislature on August 31, 2006. This effort aims at reducing GHG emissions to 1990 levels by 2020. The CARB has established the level of GHG emissions in 1990 at 427 million metric tons (MMT) of CO_2eq. The emissions target of 427 MMT requires the reduction of 169 MMT from the State's projected business-as-usual 2020 emissions of 596 MMT. AB 32 requires CARB to prepare a Scoping Plan that outlines the main State strategies for meeting the 2020 deadline and to reduce GHGs that contribute to global climate change. The Scoping Plan was approved by CARB on December 11, 2008, and includes measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures.[24] Emission reductions that are projected to result from the recommended measures in the Scoping Plan are expected to total 174 MMT of CO_2eq, which would allow California to attain the emissions goal of 427 MMT of CO_2eq by 2020. The Scoping Plan includes a range of GHG reduction actions that may include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system. The Scoping Plan, even after Board approval, remains a recommendation. The measures in the Scoping Plan will not be binding until after they are adopted through the normal rulemaking process. The CARB rulemaking process includes preparation and release of each of the draft measures, public input through workshops and a public comment period, followed by a CARB Board hearing and rule adoption.

In addition to reducing GHG emissions to 1990 levels by 2020, AB 32 directed CARB and the newly created Climate Action Team (CAT) [25] to identify a list of "discrete early action GHG reduction measures" that can be adopted and made enforceable by January 1, 2010. On January 18, 2007, Governor Schwarzenegger signed Executive Order S-1-07, further solidifying California's dedication to reducing GHGs by setting a new Low Carbon Fuel Standard. The Executive Order sets a target to reduce the carbon intensity of California transportation fuels by at least 10 percent by 2020 and directs CARB to consider the Low Carbon Fuel Standard as a discrete early action measure.

In June 2007 CARB approved a list of 37 early action measures, including three discrete early action measures (Low Carbon Fuel Standard, Restrictions on High Global Warming Potential Refrigerants,

[23] Obama, President Barack. 2009. Memorandum for the Administrator of the Environmental Protection Agency. State of California Request for Waiver Under 42 U.S.C. 7543(b), the Clean Air Act. January 26.

[24] California Air Resources Board. 2008. *Climate Change Proposed Scoping Plan: a framework for change.* October.

[25] CAT is a consortium of representatives from State agencies who have been charged with coordinating and implementing GHG emission reduction programs that fall outside of CARB's jurisdiction.

and Landfill Methane Capture).[26] Discrete early action measures are measures that are required to be adopted as regulations and made effective no later than January 1, 2010, the date established by Health and Safety Code (HSC) Section 38560.5. The CARB adopted additional early action measures in October 2007 that tripled the number of discrete early action measures. These measures relate to truck efficiency, port electrification, reduction of perfluorocarbons from the semiconductor industry, reduction of propellants in consumer products, proper tire inflation, and sulfur hexafluoride (SF_6) reductions from the non-electricity sector. The combination of early action measures is estimated to reduce State-wide GHG emissions by nearly 16 MMT.[27]

To assist public agencies in the mitigation of GHG emissions or analyzing the effects of GHGs under CEQA, including the effects associated with transportation and energy consumption, Senate Bill 97 (Chapter 185, 2007) requires the Governor's Office of Planning and Research (OPR) to develop CEQA guidelines on how to minimize and mitigate a project's GHG emissions. OPR is required to prepare, develop, and transmit these guidelines on or before July 1, 2009 and the Resources Agency is required to certify and adopt them by January 1, 2010. Preliminary guidance released by OPR in June 2008 suggests that global climate change analyses in CEQA documents should be conducted for all projects that release GHGs, and that mitigation measures to reduce emissions should be incorporated into projects, to the extent feasible. On January 13, 2009, OPR transmitted proposed CEQA guideline amendments to the Resources Agency, which may be refined through a public process currently underway at the time this document was drafted. The proposed amendments encourage lead agencies to consider many factors in performing a CEQA analysis, but preserve the discretion granted by CEQA to lead agencies in making their own determinations.

SB 375, signed into law on October 1, 2008, is intended to enhance CARB's ability to reach AB 32 goals by directing CARB to develop regional GHG emissions reduction targets to be achieved within the automobile and light truck sectors for 2020 and 2035. CARB will work with California's 18 metropolitan planning organizations to align their regional transportation, housing, and land use plans and prepare a "Sustainable Communities Strategy" to reduce the number of vehicle miles traveled in their respective regions and demonstrate the region's ability to attain its greenhouse gas reduction targets.

Additionally, SB 375 provides incentives for creating attractive, walkable, and sustainable communities and revitalizing existing communities. The bill exempts home builders from certain CEQA requirements if they build projects consistent with the new sustainable community strategies. It will also encourage the development of more alternative transportation options, to promote healthy lifestyles and reduce traffic congestion.

(3) Local Policies. While the City of Albany General Plan does not include policies that specifically address global climate change, the following goals and policies would be expected to reduce GHG emissions.

[26] California Air Resources Board. 2007. *Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California Recommended for Board Consideration*. October.

[27] California Air Resources Board. 2007. "CARB approves tripling of early action measures required under AB 32". News Release 07-46. http://www.arb.ca.gov/newsrel/nr102507.htm. October 25.

- Goal CIRC 4: Support public transit, and other means to reduce reliance on the automobile as the primary means of transportation.
- Policy CIRC 4.1: Monitor existing and proposed transit service for responsiveness to residents' and employers needs.
- Policy CIRC 4.3: Continue to work with the City's Trip Reduction Ordinance and continue to develop programs and incentives for the use of carpools, staggered work hours, bicycling, walking and the increased use of public transit for residents and employees in the community.
- Policy CIRC 4.5: Increase pedestrian travel throughout the City by connecting major pathway systems such as the BART linear park to other City, regional, and State Parks, and other community facilities.
- Policy CIRC 4.7: Assure that sidewalks, pathways and trails used by pedestrians are safe and provide unhindered access for all.
- Goal CIRC 6: Improve and enhance the City's bicycle route and path system.
- Policy CIRC 6.1: Develop a plan for bike routes for Albany linking existing bike paths and routes in Berkeley and El Cerrito. Implement this plan as part of the City's overall road maintenance and traffic sign program within the annual capital projects budget, as well as through specific transportation funding.
- Policy CIRC 6.2: Work to obtain funding sources to develop the Bay Trail in Albany and along the entire East Bay Shoreline corridor as an alternative, parallel route to 1-80.
- Program HE 2.1.3: Enact a density bonus ordinance consistent with State law requirements.
- Goal CROS 2: Increase street tree planting throughout Albany to beautify the City and to help purify the air.
- Policy CROS 2.1: Develop and implement a comprehensive street tree planting program for City residential and commercial streets, including establishing priorities, setting time schedules, and developing a comprehensive maintenance program.
- Goal CROS 4: Strive to maintain and improve the quality of Albany's natural environment and cultural resources, and natural resources in general.
- Policy CROS 4.1: Coordinate with CalTrans and MTC to monitor air quality impacts of improvements to Interstates 80 and 580 to assure that Albany's air quality will not be allowed to deteriorate any further.
- Policy CROS 4.3: Promote preservation of trees and other vegetation by requiring an inventory of significant site vegetation prior to development application review.
- Policy CROS 4.4: Continue to cooperate in local, sub-regional and regional efforts to implement the Clean Air Plan and meet State Air Quality Standards.
- Policy CROS 4.5: Require tree preservation measures during site design and construction.
- Policy CROS 4.6: Develop a comprehensive water conservation policy for City facilities and new development, including requirements for drought-resistant landscaping, water-conserving fixtures, and continue to support EBMUD public information campaigns to reduce water consumption.
- Policy CROS 6.3: Develop a plan for bikeways for Albany, linking existing bike paths in Berkeley and El Cerrito. Implement this plan as part of the City's overall road maintenance and traffic signs program within the annual capital projects budget, as well as through specific transportation funding (refer to Circulation Element.)
- Policy CROS 6.4: Increase non-automobile public access routes throughout the City by connecting major pathway systems such as the BART linear park to other City, regional and State Parks.

2. Impacts and Mitigation Measures

This section evaluates significant impacts to global climate change that could result from implementation of the proposed project. Mitigation measures are identified as appropriate.

a. Significance Criteria. The recommended approach for GHG analysis included in OPR's June 2008 release is to: (1) identify and quantify GHG emissions, (2) assess the significance of the impact on climate change, and (3) if significant, identify alternatives and/or mitigation measures to reduce the impact below significance.[28] Neither the CEQA statute nor Guidelines prescribe thresholds of significance or a particular methodology for performing an impact analysis; as with most environmental topics, significance criteria are left to the judgment and discretion of the lead agency.

In April 2009, proposed *CEQA Guideline* amendments released by OPR included the following direction regarding determination of significant impacts from GHG emissions (Section 15064.4):

(a) The determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in section 15064. A lead agency should make a good-faith effort, based on available information, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project. A lead agency shall have discretion to determine, in the context of a particular project, whether to:

> (1) Use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use. The lead agency has discretion to select the model it considers most appropriate provided it supports its decision with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use; or
>
> (2) Rely on a qualitative analysis or performance based standards.

(b) A lead agency may consider the following when assessing the significance of impacts from greenhouse gas emissions on the environment:

> (1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting.
>
> (2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
>
> (3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

CEQA Guidelines Section 15064(b) provides that the "determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data," and further, states that an

[28] California, State of, 2008. Governor's Office of Planning and Research. *CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review*. June 19.

"ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting."

Some policy makers and regulators suggest that a zero emissions threshold would be appropriate when evaluating GHGs and their potential effect on climate change. Such a rule appears inconsistent with the State's approach to mitigation of climate change impacts. AB 32 does not prohibit all new GHG emissions; rather, it requires a reduction in State-wide emissions to a given level. Thus, AB 32 recognizes that GHG emissions will continue to occur; increases will result from certain activities, but reductions must occur elsewhere.

Individual projects incrementally contribute toward the potential for global climate change on a cumulative basis in concert with all other past, present, and probable future projects. This analysis identifies qualitative factors to determine whether the project's emissions should be considered cumulatively significant. Accordingly, for purposes of this analysis, the proposed project would result in a cumulatively considerable contribution to the cumulative impact of global climate change if it would substantially conflict with or obstruct the implementation of GHG emissions reduction goals under AB 32 or other State regulations.

b. Impact Analysis. The following section provides an evaluation and analysis for the potential impacts of the project for each of the criteria of significance listed above.

(1) Increase in GHG Emissions. Emissions estimates for the proposed project are discussed below. GHG emissions estimates are provided herein for informational purposes only, as there is not yet an established quantified GHG emissions threshold. Bearing in mind that CEQA does not require "perfection" but instead "adequacy, completeness, and a good faith effort at full disclosure," the analysis below is based on methodologies and information available to the City at the time this EIR was prepared. Estimation of GHG emissions in the future does not account for all changes in technology that may reduce such emissions; therefore, the estimates are based on past performance and represent a scenario that is believed to be worse than that which is likely to be encountered (after energy-efficient technologies have been implemented). While information is presented below to assist the public and the City's decision makers in understanding the project's potential contribution to global climate change impacts, the information available to the City is not sufficiently detailed to allow a direct comparison between particular project characteristics and particular climate change impacts, nor between any particular proposed mitigation measure and any resulting reduction in climate change impacts.

Development associated with the project would generate GHG emissions, with the majority of energy consumption (and associated generation of GHG emissions) occurring during the project's operation (as opposed to its construction). Typically, more than 80 percent of the total energy consumption takes place during the use of buildings and other facilities and less than 20 percent is consumed during construction.[29]

GHG emissions associated with the project would occur over the short term from construction activities, consisting primarily of emissions from equipment exhaust. There would also be long-term

[29] United Nations Environment Programme (UNEP), 2007. *Buildings and Climate Change: Status, Challenges and Opportunities*, Paris, France.

regional emissions associated with project-related vehicular trips and stationary source emissions, such as natural gas used for heating. Recognizing that the field of global climate change analysis is rapidly evolving, the approaches advocated most recently indicate that lead agencies should calculate, or estimate, emissions from vehicular traffic, energy consumption, water conveyance and treatment, waste generation, construction activities, and any other significant source of emissions within the project area.

GHG emissions generated by the project would predominantly consist of CO_2. In comparison to criteria air pollutants, such as ozone and PM_{10}, CO_2 emissions persist in the atmosphere for a substantially longer period of time. While emissions of other GHGs, such as CH_4, are important with respect to global climate change, emission levels of other GHGs are less dependent on the land use and circulation patterns associated with the proposed land use development project than are levels of CO_2.

Construction Activities. Construction activities, such as site grading, utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, asphalt paving, and motor vehicles transporting the construction crew will produce combustion emissions from various sources. During construction of the project, GHGs would be emitted through the operation of construction equipment and from worker and builder supply vendor vehicles, each of which typically uses fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as CO_2, CH_4, and N_2O. Furthermore, CH_4 is emitted during the fueling of heavy equipment. Exhaust emissions from on-site construction activities would vary daily as construction activity levels change.

Precise construction timelines are not known, and a development timeline calculator was used to estimate the timeline of each of the individual construction phases.[30] Using the URBEMIS 2007 model, it is estimated that the total project construction emissions would be approximately 1,060 tons of CO_2. The project would be required to implement the construction exhaust control measures listed in Mitigation Measure AIR-1b of Section IV.B Air Quality. This measure would reduce GHG emissions during the construction period.

Motor Vehicle Use. Transportation associated with the project would result in GHG emissions from the combustion of fossil fuels in daily automobile and truck trips. Mobile sources (vehicle trips and associated miles traveled) would be the largest emission source of GHGs associated with the proposed project. Transportation is also the largest source of GHG emissions in California and represents approximately 38 percent of annual CO_2 emissions generated in the State. For land use development projects, vehicle miles traveled (VMT) and vehicle trips are the most direct indicators of GHG emissions associated with the project. CO_2 and CH_4 emissions were estimated using trip generation data developed by Fehr & Peers; estimates of N_2O were based on EPA emission factors.

Energy Use. Buildings represent 39 percent of U.S. primary energy use and 70 percent of electricity consumption.[31] The project would increase the demand for electricity and natural gas due

[30] San Joaquin Valley Air Pollution Control District, 2008. Development Timeline Calculator. Available at http://www.valleyair.org/ISR/ISRResources.htm. While the calculator was developed for the Indirect Source Review program in the San Joaquin Valley, it is not location-specific and is applicable to projects located in other areas. Outputs are designed to be used in URBEMIS 2007.

[31] United States Department of Energy. 2003. *Buildings Energy Data Book.*

to the increased retail square footage and senior housing. Natural gas use results in the emissions of two GHGs: CH_4 (the major component of natural gas) and CO_2 from the combustion of natural gas. Electricity use can result in GHG production if the electricity is generated by combusting fossil fuel. California's water conveyance system is energy intensive. Preliminary estimates indicate that the total energy used to pump and treat this water exceeds 6.5 percent of the total electricity used in the State per year.[32] Greenhouse gas emissions related to electricity consumption were calculated based on data provided by the Energy Information Administration.

Water Use. Water-related energy use consumes 19 percent of California's electricity every year.[33] Energy use and related GHG emissions are based on water supply and conveyance, water treatment, water distribution, and wastewater treatment. Water use estimates were based on usage factors provided by the other studies in the Bay Area and the Pacific Institute.[34]

Solid Waste Disposal. Solid waste generated by the project could contribute to GHG emissions in a variety of ways. Average waste generation rates from a variety of sources are available from the California Integrated Waste Management Board.[35] Landfilling and other methods of disposal use energy for transporting and managing the waste and they produce additional GHGs to varying degrees. Landfilling, the most common waste management practice, results in the release of CH_4 from the anaerobic decomposition of organic materials. CH_4 is 25 times more potent a GHG than CO_2. However, landfill CH_4 can also be a source of energy. In addition, many materials in landfills do not decompose fully, and the carbon that remains is sequestered in the landfill and not released into the atmosphere. To determine the net GHG emissions from landfilling, the CO_2eq emissions from CH_4 generation, carbon storage (treated as negative emissions), and transportation CO_2 emissions were considered.

At present, there is a federal ban on CFCs; therefore, it is assumed the project would not generate emissions of CFCs. The project may emit a small amount of HFC emissions from leakage and service of refrigeration and air conditioning equipment and from disposal at the end of the life of the equipment. However, the details regarding refrigerants to be used within the project site are unknown at this time. PFCs and sulfur hexafluoride are typically used in industrial applications, none of which is anticipated to be used within the project site. Therefore, it is not anticipated that the project would contribute significant emissions of these additional GHGs.

As shown in Table IV.C-2, the project would generate up to 8,500 metric tons of CO_2eq per year of new emissions over existing conditions. Motor vehicle emissions are the largest source of GHG emissions at approximately 64 percent of the total project emissions. Energy use, including electricity and natural gas, are the next largest category at a combined 23 percent of CO_2eq emissions. Solid waste generation and disposal is the remaining source of GHG emissions and comprise 13 percent of the total.

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[32] California Energy Commission (CEC), 2004. *Water Energy Use in California* (online information sheet) Sacramento, CA, August 24. Website: energy.ca.gov/pier/iaw/industry/water.html. Accessed July 24, 2007.

[33] California, State of, 2005. California Energy Commission. California's Water-Energy Relationship. November.

[34] Pacific Institute, 2003. *Waste Not, Want Not: The Potential for Urban Water Conservation in California*. November.

[35] California Integrated Waste Management Board, 2009. *Estimated Solid Waste Generation Rates.* http://www.ciwmb.ca.gov/wastechar/wastegenrates/.

Table IV.C-2: University Village at San Pablo Avenue Project Greenhouse Gas Emissions

	Emissions (Metric Tons Per Year)				
Emission Source	**CO_2**	**CH_4**	**N_2O**	**CO_2eq**	**Percent of Total**
Vehicles	5,200	0.380	0.730	5,400	64
Electricity Production	1,300	0.014	0.008	1,300	15
Natural Gas Combustion	650	0.013	0.012	650	8
Solid Waste	--	--	--	1,100	13
Other Area Sources	2	--	--	2	0
Total Annual Emissions	7,200	0.410	0.750	8,500	100

Note: Numbers in table may not appear to add up correctly due to rounding.
-- Estimates not available for this pollutant and/or category.
Source: LSA Associates, Inc., April 2009.

(2) Conflict with Plans and Policies of Other Agencies. The California Environmental Protection Agency Climate Action Team (CAT) and the CARB have developed several reports to achieve the Governor's GHG targets that rely on voluntary actions of California businesses, local government and community groups, and State incentive and regulatory programs. These include the CAT's 2006 "*Report to Governor Schwarzenegger and the Legislature*," CARB's 2007 "*Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California*," and CARB's "*Climate Change Proposed Scoping Plan: a Framework for Change.*"

The reports identify strategies to reduce California's emissions to the levels proposed in Executive Order S-3-05 and AB 32. Table IV.C-3 summarizes those strategies that may be applicable to the project and assesses how the project or City efforts comply with those strategies.

<u>Impact GCC-1</u>: Policies included in the project may conflict with applicable plans, policies and regulations of other agencies to the degree that GHG reduction goals may not be met. (S)

Implementation of the following mitigation measure would ensure that project impacts related to GHG emissions would be less than significant.

<u>Mitigation Measure GCC-1</u>: To the extent feasible and to the satisfaction of the City, the following measures shall be incorporated into the design and construction of the project:

Construction and Building Materials

- Use locally produced and/or manufactured building materials for construction of the project;
- Recycle/reuse demolished construction material in accordance with or exceeding the City of Albany's ordinance regarding construction and demolition debris recycling (Ordinance #06-017); and

Table IV.C-3: Project Compliance with Greenhouse Gas Emission Reduction Strategies

Strategy	Project Compliance
Energy Efficiency Measures	
Energy Efficiency Maximize energy efficiency building and appliance standards, and pursue additional efficiency efforts including new technologies, and new policy and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California (including both investor-owned and publicly owned utilities). **Renewables Portfolio Standard** Achieve a 33 percent renewable energy mix statewide. **Green Building Strategy** Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.	**Compliant with Mitigation Incorporated.** The proposed project would be required to comply with the updated Title 24 standards for building construction. In addition, the project would be required to comply with Mitigation Measure GCC-1, identified below, including measures to incorporate energy efficient building design features.
Water Conservation and Efficiency Measures	
Water Use Efficiency Continue efficiency programs and use cleaner energy sources to move and treat water. Approximately 19 percent of all electricity, 30 percent of all natural gas, and 88 million gallons of diesel are used to convey, treat, distribute and use water and wastewater. Increasing the efficiency of water transport and reducing water use would reduce GHG emissions.	**Compliant with Mitigation Incorporated.** The project would be required to comply with Mitigation Measure GCC-1, identified below, including measures to increase water use efficiency.
Solid Waste Reduction Measures	
Increase Waste Diversion, Composting, and Commercial Recycling, and Move Toward Zero-Waste Increase waste diversion from landfills beyond the 50 percent mandate to provide for additional recovery of recyclable materials. Composting and commercial recycling could have substantial GHG reduction benefits. In the long term, zero-waste policies that would require manufacturers to design products to be fully recyclable may be necessary.	**Compliant.** Preliminary data available from the California Integrated Waste Management Board (CIWMB) indicates that the City of Albany has met the 50 percent diversion rate since 1996. The most recent year of available data (2006) indicates that City of Albany has achieved a 70 percent diversion rate.
Transportation and Motor Vehicle Measures	
Vehicle Climate Change Standards. AB 1493 (Pavley) required the State to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of GHG emissions from passenger vehicles and light duty trucks. Regulations were adopted by the CARB in September 2004. **Light-Duty Vehicle Efficiency Measures.** Implement additional measures that could reduce light-duty GHG emissions. For example, measures to ensure that tires are properly inflated can both reduce GHG emissions and improve fuel efficiency. **Adopt Heavy- and Medium-Duty Fuel and Engine Efficiency Measures**. Regulations to require retrofits to improve the fuel efficiency of heavy-duty trucks that could include devices that reduce aerodynamic drag and rolling resistance. This measure could also include hybridization of and increased engine efficiency of vehicles.	**Compliant.** The project does not involve the manufacture, sale, or purchase of vehicles. However, vehicles that operate within and access the project site would comply with any vehicle and fuel standards that the CARB adopts.

Table IV.C-3 *Continued*

Strategy	Project Compliance
Low Carbon Fuel Standard. CARB identified this measure as a Discrete Early Action Measure. This measure would reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020.	
Other	
Measures to Reduce High Global Warming Potential (GWP) Gases. CARB has identified Discrete Early Action measures to reduce GHG emissions from the refrigerants used in car air conditioners, semiconductor manufacturing, and consumer products. CARB has also identified potential reduction opportunities for future commercial and industrial refrigeration, changing the refrigerants used in auto air conditioning systems, and ensuring that existing car air conditioning systems do not leak.	**Compliant.** New products used, sold, or serviced in the project site (after implementation of the reduction of GWP gases) would comply with future CARB rules and regulations.

Source: LSA Associates, Inc., 2009.

- Use "Green Building Materials," such as those materials which are resource efficient, and recycled and manufactured in an environmentally friendly way, including low Volatile Organic Compound (VOC) materials.

Energy Efficiency Measures

- Design all project buildings to exceed California Building Code's Title 24 energy standard, including, but not limited to any combination of the following:
  - Increase insulation such that heat transfer and thermal bridging is minimized;
  - Limit air leakage through the structure or within the heating and cooling distribution system to minimize energy consumption;
  - Design, construct and operate all newly constructed and renovated buildings, including grocery store, commercial retail, and mixed-use residential buildings, pursuant to the City of Albany Green Building Standards.
- Install solar panels as appropriate to minimize demand for traditional energy usage, including electricity and natural gas usage, water heating and/or space heating/cooling;
- Provide a landscape and development plan for the project that takes advantage of shade, prevailing winds, and landscaping;
- Install efficient lighting and lighting control systems. Use daylight as an integral part of lighting systems in buildings;
- Install light colored "cool" roofs and cool pavements;
- Install energy efficient heating and cooling systems, appliances and equipment, and control systems; and
- Install solar or light emitting diodes (LEDs) for outdoor lighting.

Water Conservation and Efficiency Measures

- Devise a comprehensive water conservation strategy appropriate for the project and location. The strategy may include the following, plus other innovative measures that might be appropriate:
  - Create water-efficient landscapes within the development, requiring drought tolerant landscaping;
  - Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls;
  - Install pipes for recycled water use for nondomestic purposes, including landscape irrigation, commercial process use, and toilet/urinal flushing in nonresidential buildings, when it becomes available at adequate quality and quantity and available at reasonable cost;
  - Collect surface runoff on site for irrigation purposes;
  - Design buildings to be water-efficient. Install water-efficient fixtures and appliances, including low-flow faucets, dual-flush toilets and waterless urinals; and
  - Restrict watering methods (e.g., prohibit systems that apply water to non-vegetated surfaces) and control runoff.

Transportation and Motor Vehicle Measures

- Provide transit facilities (e.g., bus bulbs/turnouts, benches, shelters);
- Provide bicycle lanes and/or paths, incorporated into the proposed street systems and connected to a community-wide network; and
- Provide sidewalks and/or paths, connected to adjacent land uses, transit stops, and/or community-wide network. (LTS)

After implementation of Mitigation Measure GCC-1, the project would implement appropriate GHG reduction strategies and would not conflict with or impede implementation of reduction goals identified in AB 32, the Governor's Executive Order S-3-05, and other strategies to help reduce GHGs to the level proposed by the Governor. Therefore, the project's contribution to cumulative GHG emissions would be reduced to a less-than-significant level.

3. Impacts to the Proposed Project from Global Climate Change

Local temperatures could increase in time as a result of global climate change with or without the development envisioned by the proposed project. This increase in temperature could lead to other climate effects, including, but not limited to, increased flooding due to increased precipitation and runoff, and a reduction in the Sierra snowpack. At present, the extent of climate change impacts is uncertain, and more extensive monitoring of runoff and snowpack is necessary for an understanding of pending changes in hydrologic patterns. Studies indicate that increased temperatures could result in a greater portion of peak streamflows occurring earlier in the spring, with decreases in late spring and

early summer.[36] These changes could have implications for water supply, flood management, and ecosystem health.

While estimates vary, sea level is expected to rise an additional 22 to 35 inches by the year 2100.[37] Although these projections are on a global scale, the rate of sea level rise along California's coast is relatively consistent with the worldwide average rate observed over the past century. Therefore, it is reasonable to assume that changes in worldwide sea level rise will also be experienced along California's coast.[38]

Studies and maps have been made available by several agencies, including the United States Geological Survey (USGS) and the San Francisco Bay Conservation and Development Commission (BCDC), which have employed geographic information system (GIS) software to identify the shoreline areas likely to be most impacted by a one meter rise in sea level.[39] However, neither of these agencies identified risk levels in the specific area associated with the project. The location of the project site (near San Francisco Bay), could expose the site to coastal hazards arising from global climate change, such as sea level rise. However, the elevation of the site (approximately 36 feet), and distance from the coast (approximately 4,200 feet) place it sufficiently high and inland that it would not be at risk in this century. BCDC has undertaken a Climate Change Planning project that includes goals to: (1) identify strategies for adapting to climate change, (2) develop a regional task force to inform and coordinate local governments, stakeholders, and land use planning bodies in the Bay area regarding approaches for adapting to global climate change, and (3) identify the findings and policies in the San Francisco Bay Plan pertaining to climate change and update other relevant Bay Plan policies to incorporate new information about the impacts of climate change.

The East Bay Municipal Utility District (EBMUD) supplies water and provides wastewater treatment to the region. EBMUD's water supply system collects, transmits, treats, and distributes high-quality water from its primary water source, the Mokelumne River in the Sierra Nevada, to its customers in Alameda and Contra Costa counties within the San Francisco East Bay Area. The water supply system consists of a network of reservoirs, aqueducts, water treatment plants, pumping plants and distribution facilities.
Water reliability can also be affected by various events such as droughts and earthquakes. EBMUD is working on many water system improvements to meet projected needs and to increase water reliability.[40] While climate change could reduce the size of the snowpack, which is a source of water for many parts of California, EBMUB has determined that the impact of climate change on delivery

[36] United States Global Change Research Program. 2001. *Climate Change Impacts on the United States: The Potential Consequences of Climate Variability and Change.*

[37] California Climate Change Center, 2006. *Our Changing Climate. Assessing the Risks to California.* CEC-500-2006-077. July.

[38] California, State of. Department of Water Resources, 2006. *Progress on Incorporating Climate Change into Management of California's Water Resources*. July.

[39] California, State of. San Francisco Bay Conservation and Development Commission, 2009. Climate Change website. http://www.bcdc.ca.gov/planning/climate_change/climate_change.shtml.

[40] East Bay Municipal Utility District, 2009.Water Supply website. http://www.ebmud.com/water_&_environment/water_supply/

of an adequate water supply to the region would be minimal with changes to the management of its system.[41]

The plans and programs implemented by the BCDC and EBMUD are intended to ensure that sufficient water supply will be available to all users within the region in future years. Therefore, the potential effects of climate change (e.g., sea level rise, water supply, etc.) on the proposed project would be less than significant.

[41] Wallis, M.J., M.R. Ambrose and C.C. Chan, 2008. *Climate Change: Charting a Water Course in an Uncertain Future.* Journal of the American Water Works Association 100:6. June.

D. NOISE

This section describes existing noise conditions in the vicinity of the site, criteria for determining the significance of noise impacts, and estimates the likely noise that would result from construction activities, vehicular traffic, aircraft, and other noise sources. Where appropriate, mitigation measures are recommended to reduce project-related noise impacts to a less-than-significant level.

1. Setting

This setting section begins with an introduction to several key concepts and terms that are used in evaluating noise. It then explains the various agencies that regulate the noise environment in the City of Albany and summarizes key standards that are applied to proposed development. This setting section concludes with a description of current noise sources that affect the project site and the noise conditions that are experienced in the project site vicinity.

a. Characteristics of Sound. Noise is generally defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep.

To the human ear, sound has two significant characteristics: *pitch* and *loudness*. Pitch is the number of complete vibrations or cycles per second of a wave that results in the range of tone from high to low. Loudness is the strength of a sound that describes a noisy or quiet environment, and it is measured by the amplitude of the sound wave. Loudness is determined by the intensity of the sound waves combined with the reception characteristics of the human ear. Sound intensity refers to how hard the sound wave strikes an object, which in turn produces the sound's effect. This characteristic of sound can be precisely measured with instruments. The analysis of a project defines the noise environment of the project area in terms of sound intensity and its effects on adjacent sensitive land uses.

(1) Measurement of Sound. Sound is characterized by various parameters that describe the rate of oscillation (frequency) of sound waves, the distance between successive troughs or crests in the wave, the speed that it travels, and the pressure level or energy content of a given sound. The sound pressure level has become the most common descriptor used to characterize the loudness (or amplitude) of an ambient sound, and the decibel (dB) scale is used to quantify sound intensity. A decibel (dB) is a unit of measurement which indicates the relative intensity of a sound. The 0 point on the dB scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Changes of 3 dB or less are only perceptible in laboratory environments. Audible increases in noise levels generally refer to a change of 3 dB or more, as this level has been found to be barely perceptible to the human ear in outdoor environments.

Because sound can vary in intensity by over one million times within the range of human hearing, a logarithmic loudness scale[1] is used to keep sound intensity numbers at a convenient and manageable level. Thus, a 10 dBA increase in the level of a continuous noise represents a perceived doubling of loudness, while a 20 dBA increase is 100 times more intense, and a 30 dBA increase is 1,000 times

[1] Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale, representing points on a sharply rising curve. The logarithmic decibel scale allows an extremely wide range of acoustic energy to be characterized in a manageable notation.

more intense. As noise spreads from a source, it loses energy so that the farther away the noise receiver is from the noise source, the lower the perceived noise level. Noise levels diminish or attenuate as distance from the source increases based on an inverse square rule, depending on how the noise source is physically configured. Noise level from a single-point source, such as a single piece of construction equipment at ground level, attenuates at a rate of 6 dB for each doubling of distance (between the single-point source of noise and the noise-sensitive receptor of concern). Heavily traveled roads with few gaps in traffic behave as continuous line sources and attenuate roughly at a rate of 3 dB per doubling of distance.

Since the human ear is not equally sensitive to all pitches (sound frequencies) within the entire spectrum, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity in a process called "A-weighting," expressed as "dBA." The dBA or A-weighted decibel refers to a scale of noise measurement that approximates the range of sensitivity of the human ear to sounds of different frequencies. Table IV.D-1 contains a list of typical acoustical terms and definitions. Table IV.D-2 shows some representative noise sources and their corresponding noise levels in dBA.

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. Equivalent continuous sound level (L_{eq}) is the total sound energy of time varying noise over a sample period. However, the predominant rating scales for human communities in the State of California are the L_{eq}, the community noise equivalent level (CNEL), and the day-night average level (L_{dn}) based on A-weighted decibels (dBA). CNEL is the time varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale, but without the adjustment for events occurring during the evening relaxation hours. CNEL and L_{dn} are within one dBA of each other and are normally exchangeable. The noise adjustments are added to the noise events occurring during the more sensitive hours. Typical A-weighted sound levels from various sources are described in Table IV.D-2.

Other noise rating scales of importance when assessing the annoyance factor include the maximum noise level (L_{max}), which is the highest exponential time averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis are specified in terms of maximum levels denoted by L_{max} for short-term noise impacts. L_{max} reflects peak operating conditions, and addresses the annoying aspects of intermittent noise.

Noise impacts can be described in three categories. The first is audible impacts that refer to increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3.0 dBA or greater, since, as described earlier, this level has been found to be barely perceptible in exterior environments. The second category, potentially audible, refers to a change in the noise level between 1.0 and 3.0 dBA. This range of noise levels has been found to be noticeable only in laboratory environments. The last category is changes in noise level of less than 1.0 dBA that are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

Table IV.D-1: Definitions of Acoustical Terms

Term	Definitions
Decibel, dB	A unit of level that denotes the ratio between two quantities proportional to power; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
Frequency, Hz	Of a function periodic in time, the number of times that the quantity repeats itself in one second (i.e., number of cycles per second).
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted, unless reported otherwise.
L_{01}, L_{10}, L_{50}, L_{90}	The fast A-weighted noise levels equaled or exceeded by a fluctuating sound level for 1 percent, 10 percent, 50 percent, and 90 percent of a stated time period.
Equivalent Continuous Noise Level, L_{eq}	The level of a steady sound that, in a stated time period and at a stated location, has the same A-weighted sound energy as the time varying sound.
Community Noise Equivalent Level, CNEL	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of five decibels to sound levels occurring in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 decibels to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
Day/Night Noise Level, L_{dn}	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 10 decibels to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
L_{max}, L_{min}	The maximum and minimum A-weighted sound levels measured on a sound level meter, during a designated time interval, using fast time averaging.
Ambient Noise Level	The all encompassing noise associated with a given environment at a specified time, usually a composite of sound from many sources at many directions, near and far; no particular sound is dominant.
Intrusive	The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Harris, C.M. 1998. *Handbook of Acoustical Measurements and Noise Control*.

Table IV.D-2: Typical A-Weighted Sound Levels

Noise Source	A-Weighted Sound Level in Decibels	Noise Environments
Near Jet Engine	140	Deafening
Civil Defense Siren	130	Threshold of pain
Hard Rock Band	120	Threshold of feeling
Accelerating Motorcycle at a Few Feet Away	110	Very loud
Pile Driver; Noisy Urban Street/Heavy City Traffic	100	Very loud
Ambulance Siren; Food Blender	95	Very loud
Garbage Disposal	90	Very loud
Freight Cars; Living Room Music	85	Loud
Pneumatic Drill; Vacuum Cleaner	80	Loud
Busy Restaurant	75	Moderately loud
Near Freeway Auto Traffic	70	Moderately loud
Average Office	60	Moderate
Suburban Street	55	Moderate
Light Traffic; Soft Radio Music in Apartment	50	Quiet
Large Transformer	45	Quiet
Average Residence Without Stereo Playing	40	Faint
Soft Whisper	30	Faint
Rustling Leaves	20	Very faint
Human Breathing	10	Very faint

Source: Compiled by LSA Associates, Inc., 2008.

(2) Physiological Effects of Noise. According to the U.S. Department of Housing and Urban Development's 1985 Noise Guidebook, permanent physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 to 90 dBA. Exposure to high noise levels affects our entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, and thereby affecting blood pressure, functions of the ear, and the nervous system. In comparison, extended periods of noise exposure above 90 dBA would result in permanent cell damage. When the noise level reaches 120 dBA, a tickling sensation occurs in the human ear even with short-term exposure. This level of noise is called the threshold of feeling. For avoiding adverse effects on human physical and mental health in the workplace or in communities, the U.S. Department of Labor, Occupation Health and Safety Administration (OSHA) requires the protection of workers from hearing loss when the noise exposure equals or exceeds an 8-hour time-weighted average of 85 dBA.[2]

Unwanted community effects of noise occur at levels much lower than those that cause hearing loss and other health effects. Annoyance to noise occurs when it interferes with sleeping, conversation, noise-sensitive work, including learning or listening to radio, television, or music. According to the World Health Organization (WHO) noise studies, during daytime hours, few people are seriously annoyed by activities with noise levels below 55 dBA, or moderately annoyed with noise levels below 50 dBA.[3]

b. Noise Regulatory Framework. The following section summarizes the regulatory framework related to noise, including federal, State and City of Albany plans, policies and standards.

(1) U.S. Environmental Protection Agency (EPA). In 1972 Congress enacted the Noise Control Act. This act authorized the EPA to publish descriptive data on the effects of noise and establish levels of sound "requisite to protect the public welfare with an adequate margin of safety." These levels are separated into health (hearing loss levels) and welfare (annoyance levels), as shown in Table IV.D-3. The EPA cautions that these identified levels are not standards because they do not take into account the cost or feasibility of the levels.

Table IV.D-3: Summary of EPA Noise Levels

Effect	Level	Area
Hearing loss	$L_{eq}(24) \leq 70$ dB	All areas.
Outdoor activity interference and annoyance	$L_{dn} \leq 55$ dB	Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use.
	$L_{eq}(24) \leq 55$ dB	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor activity interference and annoyance	$L_{eq} \leq 45$ dB	Indoor residential areas.
	$L_{eq}(24) \leq 45$ dB	Other indoor areas with human activities such as schools, etc.

Source: U.S. Environmental Protection Agency, 1974. "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety." March.

For protection against hearing loss, 96 percent of the population would be protected if sound levels are less than or equal to an $L_{eq(24)}$ of 70 dBA. The "(24)" signifies an L_{eq} duration of 24 hours. The EPA activity and interference guidelines are designed to ensure reliable speech communication at about 5 feet in the outdoor environment. For outdoor and indoor environments, interference with activity and annoy-

[2] Occupational Safety & Health Administration. Regulations, Standards 29 CFR, Occupational Noise Exposure 1910.95.

[3] World Health Organization, Guidelines for Community Noise, Geneva, 1999. Available on the internet at: http://www.who.int/docstore/peh/noise/guidelines2.html.

ance should not occur if levels are below 55 dBA and 45 dBA, respectively.

The noise effects associated with an outdoor L_{dn} of 55 dBA are summarized in Table IV.D-4. At 55 dBA L_{dn}, 95 percent sentence clarity (intelligibility) may be expected at 11 feet, and no community reaction. However, 1 percent of the population may complain about noise at this level and 17 percent may indicate annoyance.

Table IV.D-4: Summary of Human Effects in Areas Exposed to 55 dBA L_{dn}

Type of Effects	Magnitude of Effect
Speech – Indoors	100 percent sentence intelligibility (average) with a 5 dB margin of safety.
Speech – Outdoors	100 percent sentence intelligibility (average) at 0.35 meters. 99 percent sentence intelligibility (average) at 1.0 meters. 95 percent sentence intelligibility (average) at 3.5 meters.
Average Community Reaction	None evident; 7 dB below level of significant complaints and threats of legal action and at least 16 dB below "vigorous action."
Complaints	1 percent dependent on attitude and other non-level related factors.
Annoyance	17 percent dependent on attitude and other non-level related factors.
Attitude Towards Area	Noise essentially the least important of various factors.

Source: U.S. Environmental Protection Agency, 1974. "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety." March.

(2) State of California. The State of California has established regulations that help prevent adverse impacts to occupants of buildings located near noise sources. Referred to as the "State Noise Insulation Standard," it requires buildings to meet performance standards through design and/or building materials that would offset any noise source in the vicinity of the receptor. State regulations include requirements for the construction of new hotels, motels, apartment houses, and dwellings other than detached single-family dwellings that are intended to limit the extent of noise transmitted into habitable spaces. These requirements are found in the California Code of Regulations, Title 24 (known as the Building Standards Administrative Code), Part 2 (known as the California Building Code), Appendix Chapters 12 and 12A. For limiting noise transmitted between adjacent dwelling units, the noise insulation standards specify the extent to which walls, doors, and floor ceiling assemblies must block or absorb sound. For limiting noise from exterior noise sources, the noise insulation standards set an interior standard of 45 dBA CNEL in any habitable room with all doors and windows closed. In addition, the standards require preparation of an acoustical analysis demonstrating the manner in which dwelling units have been designed to meet this interior standard, where such units are proposed in an area with exterior noise levels greater than 60 dBA CNEL.

The State has also established land use compatibility guidelines for determining acceptable noise levels for specified land uses. The City has adopted and modified the State's land use compatibility guidelines, as discussed below.

(3) City of Albany. The City of Albany addresses noise in the goals and policies of the General Plan[4] and in the noise ordinances of the Municipal Code.[5]

The noise policies of the General Plan require the preparation of acoustical reports for projects which would be exposed to noise levels in excess of those shown as "normally acceptable" in their established land use compatibility standards. According to these standards, environments with noise

[4] Albany, City of, 1992. *City of Albany General Plan and Final EIR*. December 7.

[5] Albany, City of, 2008. *The Code of the City of Albany*, Chapter VIII Law Enforcement, 8-1 Noise. August 4.

levels up to 65 dBA L_{dn} are considered "normally acceptable" for business commercial land use development; while environments with noise levels up to 60 dBA L_{dn} are considered "normally acceptable" for new residential land uses.

The following are the noise policies of the General Plan applicable to the proposed project.

- CHS 4.1: Require preparation of an acoustical report for any project which would be exposed to noise levels in excess of those shown as "normally acceptable" in Figure 3[6] and Table 1[7] and as generally identified on the Noise Contours Map.
- CHS 4.2: Require mitigation measures for new residential, transient lodging, motel/hotel, school, library, church and hospital development to reduce noise exposure to "normally acceptable" levels.
- CHS 4.3: Require post-construction monitoring and sign-off by an acoustical engineer to ensure that City guidelines have been achieved whenever mitigation measures to achieve conformance with the criteria in Figure 3 and Table 1 are imposed.
- CHS 4.4: Require mitigation measures be incorporated into and an acoustical report be prepared for projects that would cause the following criteria to be exceeded or would have the potential for creating significant community annoyance:
  1) the L_{dn} in existing residential areas to exceed an L_{dn} of 60 dB minimum;
  2) the L_{dn} in existing residential areas to increase by 3 dB or more if the L_{dn} currently exceeds 60 dB; or
  3) noise levels that would be expected to create significant adverse community response.

The Noise Ordinance of the City of Albany's Municipal Code limits noise generating activities, particularly in residential areas. The noise ordinance's exterior and interior noise standards for stationary noise sources are summarized in Table IV.D-5. The noise ordinance also includes a restriction on the hours of noise producing construction and demolition activities. Such operations are restricted to the hours of 8:00 a.m. to 6:00 p.m. weekdays and Saturdays, and from 10:00 a.m. to 6:00 p.m. on Sundays and legal holidays. In addition, all construction equipment used in the City of Albany must be equipped with appropriate sound muffling equipment, which must be properly maintained, and used at all times such equipment is in operation.

c. Existing Noise Environment. The project is located in an urban area and is, therefore, influenced by several surrounding noise sources including traffic and railroad noise as discussed below.

(1) Existing Ambient Noise Levels. An LSA noise technician conducted short-term ambient noise monitoring on the project site on October 9, 2008 between the hours of 2:00 p.m. and 4:00 p.m. at three separate locations on the project site. The purpose of this noise monitoring was to document the existing noise environment and capture the noise levels associated with current operations and activities in the project vicinity. Table IV.D-6 lists the noise levels measured during the short-term 20-minute noise measurements. Maximum and minimum noise levels were recorded as well as the equivalent continuous noise level measure L_{eq}. The meteorological conditions at the time of each noise measurement are shown in Table IV.D-7. The noise monitoring locations are shown in Figure IV.D-1.

[6] Found on page 13 of the Albany General Plan Technical Appendices, C. Noise. March 17, 1989.

[7] Found on page 14 of the Albany General Plan Technical Appendices, C. Noise. March 17, 1989.

Table IV.D-5: City of Albany Exterior and Interior Noise Exposure Standards for Receiving Land Use

Cumulative Number of Minutes in Any One Hour Time Period	Daytime (8:00 a.m. – 10:00 p.m.) dBA	Nighttime (10:00 p.m. – 8:00 a.m.) dBA
Exterior Noise Level Standard at Receiving Land Use for All Residential and Public Facilities Zones		
30	55	50
15	60	55
5	65	60
1	70	65
0	75	70
Exterior Noise Level Standard at Receiving Land Use for All Other Zones		
30	65	60
15	70	65
5	75	70
1	80	75
0	85	80
Interior Noise Level Standard at Receiving Residential Land Uses		
30	45	40
15	50	45
5	55	50
1	60	55
0	65	60

Source: Albany, City of, 2008. *The Code of the City of Albany*, Chapter VIII Law Enforcement, 8-1 Noise. August 4.

Table IV.D-6: Short-Term Ambient Noise Monitoring Results, dBA, October 9, 2008

Location Number	Location Description	Start Time	L_{eq} [a]	L_{max} [b]	L_{min} [c]	Primary Noise Sources
1	11 feet east of 10th Street, 154 feet south of Monroe Street	2:19 p.m.	58.5	73.0	51.8	Traffic on San Pablo Avenue
2	12 feet from southeast property line, 19 feet from southern property line	2:51 p.m.	61.2	77.1	53.5	Traffic on San Pablo Avenue
3	138 feet north of Monroe Street, 14 feet from northwest property line	3:23 p.m.	53.9	73.7	49.9	Traffic on San Pablo Avenue and Monroe Street

[a] L_{eq} represents the average of the sound energy occurring over the 20-minute time period.
[b] L_{max} is the highest instantaneous sound level measured during the 20-minute time period.
[c] L_{min} is the lowest instantaneous sound level measured during the 20-minute time period.
Source: LSA Associates, Inc., October 2008.

Table IV.D-7: Meteorological Conditions During Ambient Noise Monitoring

Location Number	Maximum Wind Speed (mph)	Average Wind Speed (mph)	Temperature (F)	Percent Relative Humidity
1	6.5	2.2	70.8	46.0
2	7.8	2.4	70.3	43.9
3	4.1	1.3	76.4	43.8

Source: LSA Associates, Inc., October 2008.

Traffic on San Pablo Avenue is the primary noise source affecting the existing noise levels in the project vicinity. Other noise in the project vicinity include railroad noise and loading and unloading activities at commercial land uses east and south of the project site along San Pablo Avenue.

(2) Existing Traffic Noise Levels. Existing traffic noise levels were calculated using the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model. Traffic data used in the model was obtained from the traffic impact analysis prepared by Fehr & Peers Transportation Consultants for this project.[8] Table IV.D-8 lists the calculated traffic noise levels along roadway segments in the project vicinity under existing (2008) conditions. The traffic noise model printouts are included in Appendix E.

Existing traffic noise levels along roadway segments adjacent to the project site range from 53.3 dBA to 63.9 dBA L_{dn} at 50 feet from the centerline of the outermost travel lane. Interstate 80 (I-80) is located over 2,860 feet west of the project site and is not a major contributor to ambient noise levels at the project site.

Table IV.D-8: Existing Traffic Noise Levels

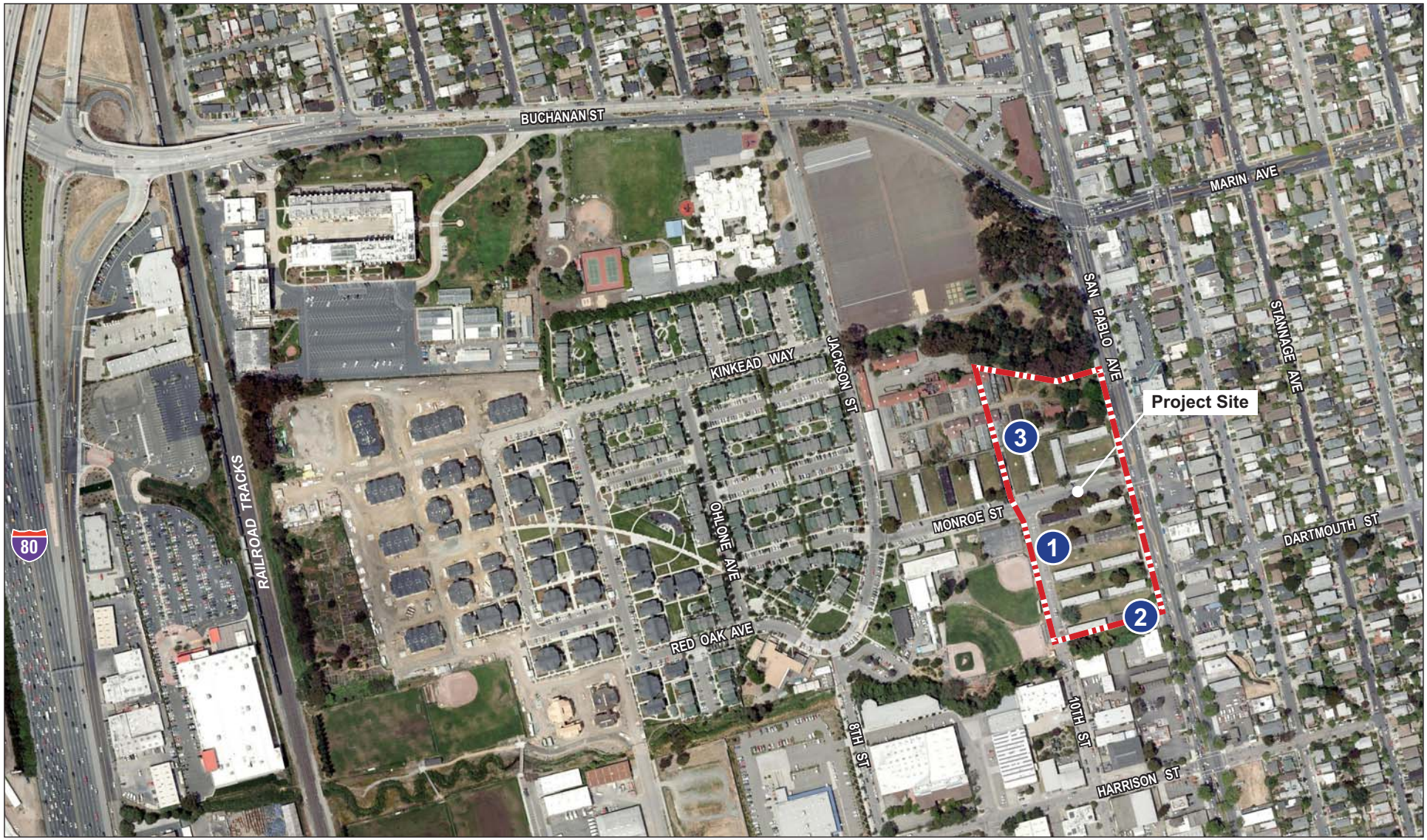
Roadway Segment	Average Daily Trips	Centerline to 70 dBA L_{dn} (feet)	Centerline to 65 dBA L_{dn} (feet)	Centerline to 60 dBA L_{dn} (feet)	L_{dn} (dBA) 50 Feet From Outermost Lane
Buchanan Street - Eastshore Highway to Jackson Street	22,800	< 50 [a]	< 50	104	62.4
Marin Avenue - Jackson Street to San Pablo Avenue	20,200	< 50	< 50	96	61.9
Marin Avenue - East of San Pablo Avenue	17,300	< 50	< 50	87	61.2
San Pablo Avenue - Marin Avenue to Monroe Street [b]	20,600	< 50	63	128	63.8
San Pablo Avenue - Monroe Street to Dartmouth Street	20,700	< 50	63	128	63.8
San Pablo Avenue - Dartmouth Street to Harrison Street	21,100	< 50	64	129	63.9
San Pablo Avenue - Harrison Street to Gillman Street	15,200	< 50	< 50	105	62.5
Monroe Street - Jackson Street to San Pablo Avenue	2,000	< 50	< 50	< 50	53.3
Jackson Street - Buchanan Street to Monroe Street	5,000	< 50	< 50	< 50	55.1
Jackson Street - Monroe Street to Harrison Street	3,500	< 50	< 50	< 50	53.6

[a] Traffic noise within 50 feet of roadway centerline requires site specific analysis.
[b] Shaded cells represent roadway segments adjacent to the project site.
Source: LSA Associates, Inc., March 2009.

(3) Existing Aircraft Noise Levels. The closest airport, the Oakland International Airport, is located approximately 10.5 miles south of the project site. San Francisco International Airport is located approximately 18.0 miles southwest of the project site. Although noise from aircraft activity is occasionally audible in the project vicinity, due to the distance of the project site from these two airports and the orientation of the runways and flight patterns, the project site does not lie within the 55 dBA CNEL noise contours of either airport. Thus, aircraft activities are not a primary noise source in the project vicinity.

(4) Existing Railroad Noise Levels. The Union Pacific railroad line is located approximately 2,300 feet west of the project site. The nearest at-grade railroad crossing to the project site is at Gilman Street, approximately 2,600 feet southwest of the project site. The rail line for Bay Area Rapid Transit (BART) is is located approximately 1,600 feet east of the project site. Based on the railroad noise contours shown in the noise technical appendix of the General Plan, the project site does not lie within the 60 dBA L_{dn} noise contours of either rail line.

[8] Fehr & Peers Transportation Consultants, 2009. *University Village at San Pablo Avenue Project*, Transportation Impact Analysis. March.



LSA

FIGURE IV.D-1

University Village at San Pablo Avenue Project EIR

Noise Monitoring Locations

N

0 250 500

FEET

PROJECT SITE

3 NOISE MONITORING LOCATIONS

SOURCE: GOOGLE EARTH, 2007.

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(5) Existing Noise Sensitive Land Uses in the Project Vicinity. Land uses surrounding the project site consist of commercial, retail, residential, and agricultural research land uses. The closest sensitive receptors to the project site are the multi-family residential land uses of University Village on Jackson Street and the residential land uses to the east of the project site on Kains Avenue. Other sensitive land uses include Oceanview Elementary School, located northwest of the project site and the Albany Children's Center, located southwest of the project site. The construction and operation of the proposed project could affect these surrounding land uses. Other land uses in the project vicinity include the recreational and office land uses on the southeast corner of Monroe Street and Jackson Street and the commercial and office land uses immediately south of and east of the project site along San Pablo Avenue.

2. Impacts and Mitigation Measures

This section analyzes the potential noise impacts that could result from implementation of the University Village at San Pablo Avenue project. This section begins with a listing of criteria of significance, which establish the thresholds for determining whether a project impact is significant. The latter part of this section presents the potential noise impacts associated with the proposed project. Mitigation measures are recommended, as appropriate.

a. Criteria of Significance. A project will normally have a significant effect on the environment related to noise if it will substantially increase the ambient noise levels for adjoining areas or conflict with adopted environmental plans and goals of the community in which it is located. For the purposes of this project, a noise impact is considered significant if the project would:

- Expose persons to or generate noise levels in excess of standards established in the City of Albany's General Plan and Municipal Code, or applicable standards of other agencies;
- Expose persons to or generate excessive groundborne vibration or groundborne noise levels;
- Result in a substantial temporary, periodic, or permanent increase in ambient noise levels in the project vicinity above levels existing without the project (for this project an increase of 3 dBA or greater is considered significant in areas where the ambient noise level without the project exceeds 60 dBA L_{dn}); or
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.

b. Less than Significant Noise Impacts. The following noise sources would produce less-than-significant effects on sensitive receptors in the project area.

(1) Transportation of Construction Workers and Equipment Noise Impacts. The transport of workers and construction equipment and materials to the project site would incrementally increase noise levels on access roads leading to the site. Because workers and construction equipment would use existing routes, noise from passing trucks (85 dBA L_{max} at 50 feet) would be similar to existing truck-generated noise. For this reason, short-term intermittent noise from trucks would be minor when averaged over a longer time period. In addition, noise associated with on-road vehicles is regulated by federal and State governments and is exempted from local government regulations. Therefore, short-term construction-related noise associated with worker and equipment transport to

the proposed project site would result in a less-than-significant impact on receptors along the access routes leading to the proposed project site.

(2) Aircraft Noise Impacts. The proposed project site is not located within an airport land use plan nor within the 55 dBA CNEL noise contour of any airport. Oakland International Airport is the closest airport to the project site and is located approximately 10.5 miles south of the project site. Therefore, implementation of the project would not expose persons residing or working in the project area to excessive noise levels from aircraft noise sources.

(3) Railroad Noise Impacts. The Union Pacific railroad line is located approximately 2,300 feet west of the project site. The nearest at-grade railroad crossing to the project site is at Gilman Street, approximately 2,600 feet southwest of the project site. The rail line for Bay Area Rapid Transit (BART) is located approximately 1,600 feet east of the project site. Based on the railroad noise contours shown in the noise technical appendix of the General Plan, the project site does not lie within the 60 dBA L_{dn} noise contours of either rail line. Therefore, implementation of the project would not expose persons residing or working in the project area to excessive noise levels from railroad noise sources.

(4) Stationary Noise Impacts. On-site commercial and retail uses would generate noise from truck deliveries, loading/unloading activities, and typical parking lot activities. These activities are potential point sources of noise that could affect noise-sensitive receptors in the project vicinity. Of the on-site stationary noise sources, noise generated by delivery truck activity would generate the highest maximum noise levels. Delivery truck loading and unloading activities can result in maximum noise levels from 75 dBA to 85 dBA L_{max} at 50 feet. Representative parking activities, such as people conversing or doors slamming, would generate approximately 60 dBA to 70 dBA L_{max} at 50 feet.

The proposed project includes outdoor parking and loading docks for the proposed commercial market facility on the Block A parcel, which could result in potential stationary noise impacts on nearby sensitive receptors. The delivery areas for the proposed development on the Block B parcel would be on San Pablo Avenue. Parking for Block B be would be located underground on 10th Street. The on-street parking proposed with the project would not be expected to result in noise levels in excess of those generated by traffic on the adjacent roadways.

The closest existing noise sensitive receptors to the project site include the multi-family residential land uses of University Village located over 500 feet west of proposed loading docks on Block A. At this distance these residential land uses could experience noise levels from delivery truck activities ranging up to 55 dBA, with noise levels occasionally reaching 65 dBA L_{max} for brief moments. However, these noise levels would not exceed the City's nighttime stationary noise level standard (summarized in Table IV.D-5 above) of 65 dBA for more than 1 minute within any one hour time period at the receiving property line of the multi-family residences located on Jackson Street.

While the proposed residential senior housing component of the project would also be located close to these stationary noise sources, the proposed design of the market on Block A of the project site would shield this residential land use from direct exposure to the loading dock facilities. Thus, noise impacts from delivery loading/unloading activities would be considered less-than-significant and mitigation would not be required.

c. Significant Noise Impacts. Noise impacts related to the following sources would result in potentially significant impacts.

(1) Construction Noise Impacts. Implementation of the proposed project could result in noise levels from construction activities that would expose sensitive receptors to excessive noise levels.

<u>Impact NOISE-1</u>: Noise levels from construction activities may range up to 85 dBA L_{max} at the nearest sensitive land uses to the project site. (S)

Noise generated during excavation, grading, site preparation, and building erection on the project site would result in potential noise impacts on off-site uses. Existing receptors in the vicinity, such as the office land uses on Monroe Street and the multi-family residential land uses on Jackson Street, would be subject to short-term noise generated by construction equipment and activities on the project site when construction occurs near the project boundary.

Construction is performed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These phases would change the character of the noise generated on the project site and, therefore, the noise levels surrounding the site as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction related noise ranges to be categorized by work phase. Table IV.D-9 lists typical construction equipment noise levels recommended for noise impact assessments, based on a distance of 50 feet between the equipment and a noise receptor. Typical noise levels range up to 91 dBA L_{max} at 50 feet during the noisiest construction phases. The site preparation phase, which includes excavation and grading of the site, tends to generate the highest noise levels, because the noisiest construction equipment is earthmoving equipment. Earthmoving equipment includes excavating machinery such as backhoes, bulldozers, draglines, and front loaders. Earthmoving and compacting equipment includes compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve one or two minutes of full-power operation followed by three or four minutes at lower power settings.

Table IV.D-9: Typical Construction Equipment Maximum Noise Levels, L_{max}

Type of Equipment	Range of Maximum Sound Levels (dBA at 50 feet)	Suggested Maximum Sound Levels for Analysis (dBA at 50 feet)
Pile Drivers	81 to 96	93
Rock Drills	83 to 99	96
Jackhammers	75 to 85	82
Pneumatic Tools	78 to 88	85
Pumps	74 to 84	80
Scrapers	83 to 91	87
Haul Trucks	83 to 94	88
Cranes	79 to 86	82
Portable Generators	71 to 87	80
Rollers	75 to 82	80
Dozers	77 to 90	85
Tractors	77 to 82	80
Front-End Loaders	77 to 90	86
Hydraulic Backhoe	81 to 90	86
Hydraulic Excavators	81 to 90	86
Graders	79 to 89	86
Air Compressors	76 to 89	86
Trucks	81 to 87	86

Source: Bolt, Beranek & Newman, 1987. *Noise Control for Buildings and Manufacturing Plants.*

Construction of the proposed project is expected to require the use of earthmovers such as bulldozers and scrapers, loaders and graders, water trucks, and pickup trucks. As shown in Table IV.D-9, the typical maximum noise level generated by backhoes on the proposed project site is assumed to be 86 dBA L_{max} at 50 feet from the operating equipment. The maximum noise level generated by bulldozers

is approximately 85 dBA L_{max} at 50 feet. The maximum noise level generated by water and other trucks is approximately 86 dBA L_{max} at 50 feet from these vehicles. Each doubling of the sound sources with equal strength would increase the noise level by 3 dBA. Assuming each piece of construction equipment operates at some distance apart from the other equipment, the worst-case combined noise level during this phase of construction would be 91 dBA L_{max} at a distance of 50 feet from an active construction area.

The closest noise sensitive land uses to the project construction areas are the multi-family residential land uses of University Village located approximately 320 feet west of the nearest construction areas. At these distances, maximum noise levels from construction activities could range up to 75 dBA L_{max} at these properties.

In accordance with City standards, implementation of the following multi-part mitigation measure would reduce potential construction period noise impacts to less-than-significant levels.

> Mitigation Measure NOISE-1a: All construction equipment must have appropriate sound muffling devices, which shall be properly maintained and used at all times such equipment is in operation.
>
> Mitigation Measure NOISE-1b: Where feasible, the project contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.
>
> Mitigation Measure NOISE-1c: The construction contractor shall locate on-site equipment staging areas so as to maximize the distance between construction-related noise sources and noise-sensitive receptors nearest the project site during.
>
> Mitigation Measure NOISE-1d: Except as otherwise permitted, construction activities shall be restricted to the hours of 8:00 a.m. to 6:00 p.m. weekdays and Saturdays, and 10:00 a.m. to 6:00 p.m. on Sundays and legal holidays.

Implementation of the multi-part Mitigation Measure NOISE-1 would sufficiently mitigate construction-related noise impacts to a less-than-significant level. (LTS)

(2) Traffic Noise Impacts. Implementation of the proposed project could result in noise levels from project-related traffic noise sources that would expose sensitive receptors to excessive noise levels or in significant increases over noise levels existing without the project.

Impact NOISE-2: Local traffic would generate long-term noise exceeding normally acceptable levels on the project site and could expose site uses to unacceptable interior noise levels. (S)

The FHWA highway traffic noise prediction model (FHWA RD-77-108) was used to evaluate traffic-related noise conditions in the vicinity of the project site. The resultant noise levels were weighed and summed over a 24-hour period in order to determine the L_{dn} values. The existing and cumulative (year 2035) traffic volumes for roadway segments in the project vicinity were used in the traffic noise impact analysis. Table IV.D-10 shows the Existing Plus Project traffic noise levels in the project vicinity. Tables IV.D-11 and IV.D-12 show the Cumulative (2035) traffic noise levels without and

with the project respectively. The shaded cells in the tables indicate the roadway segments most affecting the project site.

A significant impact would occur if the project would permanently increase ambient exterior noise levels by 3 dBA or greater in areas where the ambient noise level without the project exceeds 60 dBA L_{dn}. The segment of Monroe Street, from Jackson Street to San Pablo Avenue, would experience traffic noise level increases of 6.3 dBA under Existing Plus Project conditions and of 3.7 dBA under Cumulative (2035) Plus Project conditions. However, even with this increase, the resulting traffic noise levels would only range up to 60.9 dBA L_{dn} at 50 feet from the centerline of the outermost travel lane under Cumulative (2035) Plus Project conditions. This is below the City's "normally acceptable" standard of 65 dBA L_{dn} for office land uses and below "normally acceptable" standard of 70 dBA L_{dn} for recreational land uses, which are the only existing land uses along this roadway segment. Therefore, this impact would be considered less than significant and no mitigation would be required.

The significance criteria also state that a significant impact would occur if the project would generate noise levels in excess of standards established in the City of Albany's General Plan and Municipal Code, or applicable standards of other agencies. All roadway segments adjacent to the project site would experience traffic noise levels under the Cumulative (2035) Plus Project conditions of 60.9 dBA to 65.4 dBA L_{dn}. All of these noise levels are in excess of the City's "normally acceptable" standard of 60 dBA L_{dn} for new residential development. Therefore, mitigation must be considered to protect the senior housing component of the proposed project.

The senior housing residential component proposed for development on Block B of the project site would be set back approximately 75 feet from the edge of San Pablo Avenue. Due to distance attenuation and the blocking effect of the intervening retail structure which directly fronts San Pablo Avenue these land uses would experience traffic noise levels of up to 60 dBA L_{dn}. These noise levels are equivalent to those the residential units would experience along Monroe Street of up to 60.9 dBA L_{dn}. Based on the EPA's Protective Noise Levels,[9] a combination of wall, door, and window standard construction measures for northern California residential buildings would provide more than 25 dBA in exterior to interior noise reduction with windows closed and 15 dBA or more with windows open. With windows open, the proposed senior housing residential units would not meet the interior noise level standard of 45 dBA L_{dn} for residential land uses (i.e., 60.9 dBA – 15 dBA = 45.9 dBA). As a result, an alternative form of ventilation, such as air conditioning systems, would be required in these units to ensure that windows could remain closed for a prolonged period of time. With windows closed, the proposed units would meet the 45 dBA L_{dn} interior noise standard (i.e., 60.9 dBA – 25 dBA = 35.9 dBA).

[9] EPA 550/9-79-100, November 1978.

Table IV.D-10: Existing Plus Project Traffic Noise Levels

Roadway Segment	Average Daily Trips	Center-line to 70 dBA L_{dn} (feet)	Center-line to 65 dBA L_{dn} (feet)	Center-line to 60 dBA L_{dn} (feet)	L_{dn} (dBA) 50 Feet From Outermost Lane	Increase Over Existing No Project Conditions
Buchanan Street - Eastshore Highway to Jackson Street	23,600	< 50 [a]	< 50	106	62.5	0.1
Marin Avenue - Jackson Street to San Pablo Avenue	21,300	< 50	< 50	100	62.1	0.2
Marin Avenue - East of San Pablo Avenue	17,900	< 50	< 50	89	61.3	0.1
San Pablo Avenue - Marin Avenue to Monroe Street [b]	23,600	< 50	68	139	64.4	0.6
San Pablo Avenue - Monroe Street to Dartmouth Street	22,900	< 50	67	137	64.3	0.5
San Pablo Avenue - Dartmouth Street to Harrison Street	23,400	< 50	68	138	64.3	0.4
San Pablo Avenue - Harrison Street to Gillman Street	24,000	< 50	69	141	64.5	2.0
Monroe Street - Jackson Street to San Pablo Avenue	8,500	< 50	< 50	53	59.6	6.3
Jackson Street - Buchanan Street to Monroe Street	5,100	< 50	< 50	< 50	55.2	0.1
Jackson Street - Monroe Street to Harrison Street	3,500	< 50	< 50	< 50	53.6	0.0

[a] Traffic noise within 50 feet of roadway centerline requires site specific analysis.
[b] Shaded cells represent roadway segments adjacent to the project site.
Source: LSA Associates, Inc., March 2009.

Table IV.D-11: Cumulative (2035) without Project Traffic Noise Levels

Roadway Segment	Average Daily Trips	Centerline to 70 dBA L_{dn} (feet)	Centerline to 65 dBA L_{dn} (feet)	Centerline to 60 dBA L_{dn} (feet)	L_{dn} (dBA) 50 Feet From Outermost Lane
Buchanan Street - Eastshore Highway to Jackson Street	26,600	< 50 [a]	57	115	63.1
Marin Avenue - Jackson Street to San Pablo Avenue	22,600	< 50	< 50	103	62.4
Marin Avenue - East of San Pablo Avenue	19,500	< 50	< 50	94	61.7
San Pablo Avenue - Marin Avenue to Monroe Street [b]	26,400	< 50	73	150	64.9
San Pablo Avenue - Monroe Street to Dartmouth Street	26,500	< 50	73	150	64.9
San Pablo Avenue - Dartmouth Street to Harrison Street	27,500	< 50	74	154	65.0
San Pablo Avenue - Harrison Street to Gillman Street	28,600	< 50	76	158	65.2
Monroe Street - Jackson Street to San Pablo Avenue	4,900	< 50	< 50	< 50	57.2
Jackson Street - Buchanan Street to Monroe Street	8,900	< 50	< 50	< 50	57.6
Jackson Street - Monroe Street to Harrison Street	5,300	< 50	< 50	< 50	55.4

[a] Traffic noise within 50 feet of roadway centerline requires site specific analysis.
[b] Shaded cells represent roadway segments adjacent to the project site.
Source: LSA Associates, Inc., March 2009.

Table IV.D-12: Cumulative (2035) Plus Project Traffic Noise Levels

Roadway Segment	Average Daily Trips	Center-line to 70 dBA L_{dn} (feet)	Center-line to 65 dBA L_{dn} (feet)	Center line to 60 dBA L_{dn} (feet)	L_{dn} (dBA) 50 Feet From Outermost Lane	Increase Over Existing No Project Conditions
Buchanan Street - Eastshore Highway to Jackson Street	27,400	< 50 [a]	58	117	63.2	0.1
Marin Avenue - Jackson Street to San Pablo Avenue	23,700	< 50	< 50	106	62.6	0.2
Marin Avenue - East of San Pablo Avenue	20,100	< 50	< 50	96	61.8	0.1
San Pablo Avenue - Marin Avenue to Monroe Street [b]	29,400	< 50	78	161	65.3	0.4
San Pablo Avenue - Monroe Street to Dartmouth Street	28,800	< 50	77	158	65.2	0.3
San Pablo Avenue - Dartmouth Street to Harrison Street	29,800	< 50	78	162	65.4	0.4
San Pablo Avenue - Harrison Street to Gillman Street	30,900	< 50	80	166	65.6	0.4
Monroe Street - Jackson Street to San Pablo Avenue	11,500	< 50	< 50	64	60.9	3.7
Jackson Street - Buchanan Street to Monroe Street	9,100	< 50	< 50	< 50	57.7	0.1
Jackson Street - Monroe Street to Harrison Street	5,300	< 50	< 50	< 50	55.4	0.0

[a] Traffic noise within 50 feet of roadway centerline requires site specific analysis.
[b] Shaded cells represent roadway segments adjacent to the project site.
Source: LSA Associates, Inc., March 2009.

To reduce potentially significant increases in traffic noise levels and to meet the City of Albany's land use compatibility guidelines and interior noise level standards, the proposed project shall implement Mitigation Measure NOISE-2.

> Mitigation Measure NOISE-2: All residential units of the senior housing component of the project shall include an alternative form of ventilation, such as air conditioning systems, to ensure that windows can remain closed for prolonged periods of time. (LTS)

Implementation of Mitigation Measure NOISE-2 would sufficiently mitigate traffic related noise impacts to less-than-significant levels.

E. BIOLOGICAL RESOURCES

This section describes existing biological resources and outlines potential biological resources impacts and mitigation measures. As has been noted previously, impacts associated with potential development of a Master Plan for University Village were analyzed in 1998 and again in 2004, when additional amendments to the Master Plan were proposed. The analysis in this EIR summarizes and updates the findings of the biological resources assessment prepared by LSA Associates, Inc. in October 2003, and focuses the analysis to the project site and immediate surrounding area. The findings have been updated to reflect the current project design, which redevelops only a small portion of the University Village campus.

1. Setting

The biological setting found on the project site is described below. This section includes a description of the methods used to assess biological resources, the regulatory setting, and the habitats and special status species within the project vicinity.

a. Methods. In order to assess the potential presence of special status species within the project site, LSA biologists conducted a literature review and field surveys. Documents and assessments from the previous environmental reviews of the property were conducted to provide a baseline to characterize the project site. The following documents were reviewed:

- 2004 University Village and Albany/Northwest Berkeley Properties Master Plan Amendments Subsequent Focused EIR.[1]
- 1998 Master Plan Focused Environmental Impact Report.[2]
- Biological Assessment Report for the Lower Codornices Creek Improvement Plan.[3]
- Wetland Assessment and Delineation Report for the Lower Codornices Creek Improvement Plan.[4]

In addition, LSA searched the California Natural Diversity Database (CNDDB)[5] for occurrence records of special status species within approximately 10 miles of the project site (Richmond USGS 7.5-minute quadrangle and the eight contiguous quadrangles).

Field reconnaissance surveys of the site were conducted by LSA biologists on June 30 and August 8, 2003 and again on August 14, 2008, to reassess the presence or absence of suitable habitat for special status animal species. These field surveys focused on the presence of suitable habitat for the California red-legged frog and steelhead trout (two sensitive species with the potential to occur on the

[1] LSA Associates, Inc., 2004. *Subsequent Focused EIR for the University Village & Albany/Northwest Berkeley Properties Master Plan Amendments, State Clearinghouse No. 1997072039.* January 30.

[2] EIP Associates, 1997. *Focused Draft Environmental Impact Report, University of California, Berkeley Draft Master Plan – University Village & Albany/Northwest Berkeley Properties, State Clearinghouse No. 97072039.* August 29

[3] Environmental Collaborative, 2001. *Biological Assessment Report for the Lower Codornices Creek Improvement Plan Project.* Prepared for Design Community and Environment, Berkeley, CA.

[4] Environmental Collaborative, 2001. *Wetland Assessment and Delineation Report for the Lower Codornices Creek Improvement Plan Project.* Prepared for Design Community and Environment, Berkeley, CA.

[5] California Department of Fish and Game (CDFG), 2008. California Natural Diversity Database (CNDDB), commercial version dated October 4, 2008. Biogeographic Data Branch, CDFG, Sacramento.

site), including a visual search for amphibians and fish, as well as an assessment of Codornices and Village creeks for their suitability to support these species.

b. Regulatory Context. Relevant regulations concerning biological resources are described below.

(1) Federal Endangered Species Act. The Federal Endangered Species Act (FESA) protects listed animal species from harm or "take" which is broadly defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. Take can also include habitat modification or degradation that results in death or injury to a listed species. An activity can be defined as "take" even if it is unintentional or accidental. Listed plant species are provided less protection than listed wildlife species.

The U.S. Fish and Wildlife Service (USFWS) has jurisdiction over federally-listed threatened and endangered wildlife and plant species under the FESA. The USFWS also maintains lists of 'proposed' and candidate species. Species on these lists are not legally protected under the FESA, but may become listed in the near future and are often included in their review of a project. The National Oceanic and Atmospheric Administration (NOAA) Fisheries Service has jurisdiction over federally-listed threatened and endangered marine and anadromous species, including steelhead trout, under the FESA.

(2) California Endangered Species Act. The California Endangered Species Act (CESA) prohibits the take of any plant or animal listed or proposed for listing as rare (plants only), threatened, or endangered. In accordance with CESA, the California Department of Fish and Game (CDFG) has jurisdiction over state-listed species (California Fish and Game Code 2070). Additionally, the CDFG maintains lists of "Species of Special Concern" that are defined as species that appear to be vulnerable to extinction because of declining populations, limited ranges, and/or continuing threats.

(3) California Fish and Game Code. The CDFG is also responsible for enforcing Section 1600 of the Fish and Game Code that governs the issuance of Lake and Streambed Alteration Agreements. Lake and Streambed Alteration Agreements are required whenever proposed project activities would substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated as such by the CDFG. For example, stream bank stabilization, installation of a culvert, and tree removal along a creek bank are all regulated by CDFG under Section 1600.

(4) California Environmental Quality Act. Section 15380(b) of the *CEQA Guidelines* provides that a species not listed on the federal or state lists of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definitions in FESA and CESA and the section of the California Fish and Game Code dealing with rare or endangered plants or animals. This section was included in the guidelines primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on a species that has not yet been listed by either the USFWS or CDFG.

(5) Clean Water Act. Under Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers (Corps) is responsible for regulating the discharge of fill material into waters of the United States. Waters of the U.S. and their lateral limits are defined in 33 CFR Part 328.3 (a) and include streams that are tributary to navigable waters and their adjacent wetlands. Wetlands that are not

adjacent to waters of the U.S. are termed "isolated wetlands" and, depending on the circumstances, may also be subject to Corps jurisdiction.

In general, a Corps permit must be obtained before placing fill in wetlands or other waters of the U.S. The type of permit depends on the acreage involved and the purpose of the proposed fill. Minor amounts of fill can be covered by a Nationwide Permit. An Individual Permit is required for projects that result in more than a "minimal" impact on jurisdictional areas.

(6) California Water Quality and Waterbody Regulatory Programs. Pursuant to Section 401 of the federal Clean Water Act, projects that are regulated by the Corps must obtain water quality certification from the Regional Water Quality Control Board (RWQCB). This certification ensures that the project will meet state water quality standards. The RWQCB has a policy of no-net-loss of wetlands and typically requires the identification of mitigation for all impacts to wetlands before it will issue water quality certification.

When reviewing applications, the RWQCB focuses on ensuring that projects do not adversely affect the "beneficial uses" associated with waters of the State. Generally, the RWQCB defines beneficial uses to include all of the resources, services, and qualities of aquatic ecosystems and underground aquifers that benefit the State. In most cases, the RWQCB seeks to protect these beneficial uses by requiring the integration of water quality control measures into projects that will result in discharge into waters of the State. For most construction projects, RWQCB seeks to protect these beneficial uses by requiring the integration of water quality control measures into projects that will result in discharge into waters of the State and to require the use of construction and post-construction Best Management Practices (BMPs).

(7) Other Statutes, Codes, and Policies. The federal Migratory Bird Treaty Act (16 U.S.C., Sec. 703, Supp. I, 1989) prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. Most native bird species on the project site are covered by this Act. The California Fish and Game Code (Sections 3503 and 3505) prohibits the take, destruction, or possession of any bird, nest, or egg of any bird unless express authorization is obtained from CDFG.

The California Native Plant Society (CNPS), a non-governmental conservation organization, has developed lists of plant species of concern in California.[6] Vascular plants included on these lists are defined as follows:

List 1A	Plants considered extinct.
List 1B	Plants rare, threatened, or endangered in California and elsewhere.
List 2	Plants rare, threatened, or endangered in California but more common elsewhere.
List 3	Plants about which more information is needed - review list.
List 4	Plants of limited distribution - watch list.

Although the CNPS is not a regulatory agency and plants on these lists have no formal regulatory protection, plants appearing on List 1B or List 2 are, in general, considered to meet CEQA's Section 15380 criteria and adverse effects to these species are considered "significant."

[6] California Native Plant Society (CNPS), 2004. *Inventory of Rare and Endangered Plants (online edition, v. 6-04c)*. California Native Plant Society, Sacramento. http://www.cnps.org/inventory.

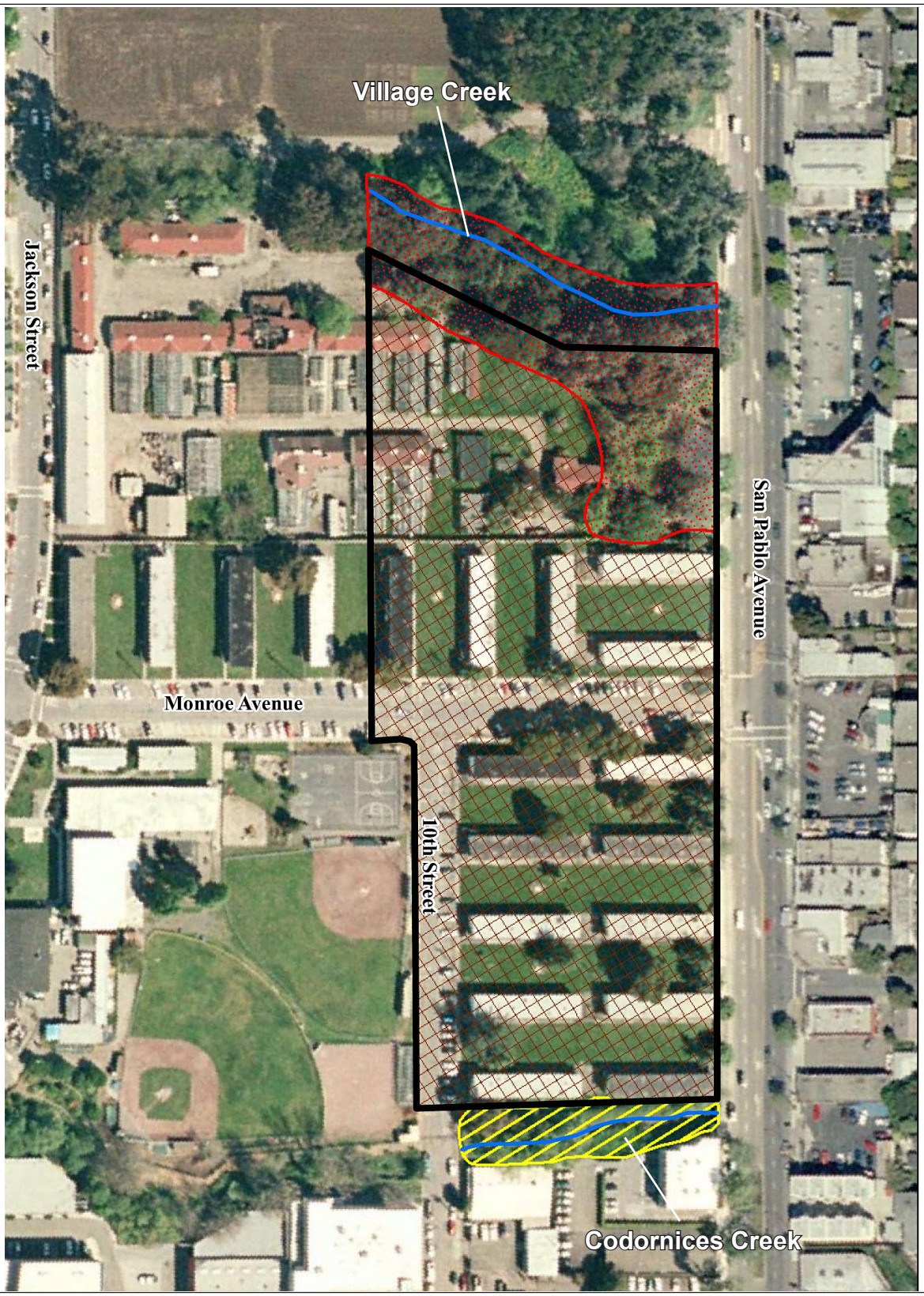
(8) City of Albany. The City of Albany General Plan identifies the following policies related to biological resources.

- Policy LU 7.1: Designate the UC lands along the San Pablo Avenue frontage and a portion of Buchanan Street at the intersection of San Pablo for commercial retail and compatible uses. Incorporate the recommendations in the San Pablo Avenue Design Guideline and Public Improvement Study as part of this effort. In addition, consider preserving a portion of the Gill Tract, particularly those portions with important and significant stands of trees, as open space when any re-use of this area is proposed.
- Policy LU 7.2: Participate actively in the UC Master Plan process for redevelopment of the Gill Tract and Albany Village. Specific concerns that must be addressed in this process include but are not limited to:
  - B. Protect and enhance the creeks running through and adjacent to the U.C. Village property.
  - C. Protect and preserve the important stands of trees on the site.
- Policy LU 9.2: Develop policies to protect existing riparian habitat with the Creek Conservation Zone and restrict development in this Zone appropriately.
- Goal CROS 1: Enhance the natural features of the City's creeks and increase public access to them.
- Policy CROS 1.1: Develop a comprehensive program to sponsor restoration and public access improvements for Albany's creeks. Continue to implement the 1977 Albany Creek Restoration Program. As part of this effort, continue to recognize that these areas have important wildlife and vegetation values.
- Policy CROS 1.3: Support the efforts of the Codornices Creek Association to restore Codornices Creek.
- Policy CROS 1.4: Develop policies to be included in the Watercourse Combining District to protect riparian habitat within the Creek Conservation Zone where practically feasible and applicable.
- Policy CROS 4.3: Promote preservation of trees and other vegetation by requiring an inventory of significant site vegetation prior to development application review.
- Policy CROS 4.5: Require tree preservation measures during site design and construction.
- Policy CHS 1.1: Conserve riparian and littoral habitat within the area 100 feet from creek centerline in appropriate areas both for its importance in reducing flood impacts and for its aesthetic value.

c. Existing Environment Setting. The following describes the existing biological resources setting, and includes a discussion of habitat, vegetation, and wildlife that may be located on the project site.

(1) Habitat and Vegetation. The project site totals 5.3 acres and contains a variety of vegetation. Habitats on the project site, and immediately adjacent to the project site, are described in four general categories: (1) developed and ruderal (weedy) areas; (2) riparian dense overstory (Codornices Creek); (3) major stands of ornamental/non-native trees (Village Creek area); and (4) creeks. Figure IV.E-1 shows vegetation types on the project site.

Developed and Ruderal Areas. The project site consists of an abandoned house and other buildings, a large lawn where married student housing was formerly located, and ornamental trees. Ruderal vegetation present consists primarily of rip-gut brome (*Bromus diandrus*), oat (*Avena* sp.), Bermuda grass (*Cynodon dactylon*), Italian ryegrass (*Lolium multiflorum*), Mediterranean barley (*Hordeum marinum*), fiddle dock (*Rumex pulcher*), wild radish (*Raphanus sativus*), field bindweed (*Convolvulus arvensis*), bristly ox-tongue (*Picris echioides*), fennel (*Foeniculum vulgare*), and ivy (*Hedera* sp.). Scattered coast live oak (*Quercus agrifolia*) trees are also present. The portion of the project site south of Monroe Street is a mowed lawn/ruderal field that contains scattered ornamental trees.



LSA

FIGURE IV.E-1

Project Boundary
Stream (Waters of the U.S.)
Major Stands of Non-native/ Ornamental Trees
Riparian - Dense Overstory (Native & Non-native)
Developed/Ruderal Vegetation

0 100 200
FEET

University Village at San Pablo Avenue Project EIR
Vegetation Types and Streams

NOTE: ONLY THE APPROXIMATE LOCATIONS OF THE CREEKS ADJACENT TO THE PROJECT SITE ARE SHOWN.

SOURCE: DIGITALGLOBE (APRIL 1, 2007)
I:\ABY0701 Albany Village\figures\Fig_IVE1.ai (4/6/09)

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Dense Riparian Overstory. Between San Pablo Avenue and 10th Street, there is a dense cover of native and non-native riparian trees along Codornices Creek. This riparian cover is dominated by willow (*Salix* sp.) and Scotch elm (*Ulmus glabra*). The understory consists of Himalayan blackberry (*Rubus discolor*), nasturtium (*Tropaeolum majus*), ivy, and other non-native forbs (herbs) and grasses.

Major Stands of Ornamental/Non-native Trees. Village Creek has an overstory and adjacent uplands dominated by blue gum eucalyptus (*Eucalyptus globulus*), Monterey pine (*Pinus radiata*), Monterey cypress (*Cupressus macrocarpa*), planted redwood (*Sequoia sempervirens*), and Scotch elm. The understory is a dense mix of ivy, nasturtium, and Himalayan blackberry.

Creeks. Village Creek and Codornices Creek are located adjacent to the project site, on the north and south, respectively. These creeks are shown in Figure IV.E-1.

Village Creek flows above ground through the Gill Tract from San Pablo Avenue to Jackson Street. This segment had a very low flow during the biologist's June 2003 visit, and was completely dry during the August 2003 and August 2008 site visits. The creek channel was approximately 1 to 3 feet wide. The channel bed contains a sand/loam/clay substrate; no gravels or cobble were observed.

Codornices Creek is an urbanized stream that supports various types of riparian and wetland vegetation along its banks and within its channel. Between San Pablo Avenue and 10th Street, the creek bed is mostly unvegetated with occasional riffles and some large pools. The creek is perennial; flowing water was present during a site visit in August 2008. At the western boundary of the project site the creek flows west through a box culvert under 10th Street.

The water depth was approximately 1-inch during the August 2008 field survey. The streambed is approximately 3 to 7 feet wide between 10th Street and San Pablo Avenue and contains sand/clay/ loam substrate as well as gravel and cobble. The water was clear at the time of the survey but trash, dog waste, and human waste were present. A large pool with algae and watercress (*Rorippa nasturtium-aquatica*) is present just west of the San Pablo Avenue culvert. There is an approximately 5-foot-wide area of riparian vegetation on both sides of the creek. A fence is present along the north side of the creek (*i.e.*, the bank abutting the project site). Most of the Codornices Creek banks along the project site are relatively steep and bordered by ruderal vegetation, landscaping, and development. Riparian vegetation is discussed below.

Codornices Creek has been subject to an active citizen effort to restore and protect the creek and enhance the habitat quality of the creek where possible. These include efforts to support biodiversity along the riparian corridor, and encourage the restoration of steelhead trout habitat in the creek proper. Construction of the proposed pedestrian/bike path is aligned with the goals of the creek restoration since it will improve public access to the creek and provide opportunities for educating the public regarding the sensitivity of the habitat and presence of steelhead trout. Section 2.c.(1), below provides additional details related to project affects on Codornices Creek and steelhead trout habitat.

As part of the Lower Codornices Creek Improvement Plan Project, a wetland assessment and delineation was conducted by Environmental Collaborative on September 5, 2001. This assessment concluded that all of Codornices Creek and Village Creek below the Ordinary High Water Mark (OHWM) qualify as jurisdictional waters of the United States, under Section 404 of the Clean Water Act. Portions of Codornices Creek, most of its bypass, and most of Village Creek are vegetated with wetland plants and also qualify as jurisdictional wetlands.

(2) Special Status Species. The following section addresses the potential presence of special status plant and animal species on or in the vicinity of the project site. Special status species include species of special concern and listed species, which are addressed separately due to the differing legal requirements regarding potential impacts.

Listed species are those classified as threatened or endangered under California State or Federal Endangered Species Acts. Species of special concern include: animal and plant species that are proposed or candidates for listing under the State and/or federal endangered species acts; animals listed by the State of California as Species of Special Concern because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction; plants listed as rare by the State of California because they occur in such small numbers throughout their range that they may become endangered if their present environment worsens; and plant species listed under the California Native Plant Society List 1B, which are those considered to be rare, threatened, or endangered in California and elsewhere. Animal species that are considered of special concern, according to the above criteria, have no formal legal protection except in cases where local, State or federal law prohibits the destruction or disturbance of nest sites, wintering colonies, or other similar phenomenon.

(3) Threatened and Endangered Species. The project site is located within the known or historic range of two federally-listed Threatened species: California red-legged frog and the Central Coast Evolutionary Significant Unit of steelhead.

California Red-Legged Frog. There is one CNDDB recorded occurrence of the California red-legged frog within five miles of the project site, however this occurrence is 4.9 miles east of the project site in the town of Orinda and is separated from the project site by the City of Albany, Berkeley Hills, and Tilden Regional Park. No individuals were observed along Codornices or Village creeks during LSA's site visits in June and August of 2003 and August of 2008. The habitat along these sections of Codornices Creek and Village Creek is not suitable for California red-legged frogs for several reasons: there are few deep pools in which frogs could breed; there is no refuge from high flow storm events; Codornices Creek has a highly variable water regime; most of the stream corridor is intensively developed; and the surrounding urban area supports an abundance of domestic and wild predators that probably have a significant impact on amphibian populations.[7]

Central Coast Steelhead. Approximately 150 juvenile steelhead were observed in Codornices Creek between the railroad tracks and San Pablo Avenue during surveys in 2001 by Rana Resources.[8] Steelhead were again observed in Codornices Creek within the project area during LSA's site visit in June 2003. Steelhead appear to be surviving in Codornices Creek despite the surrounding urban development, non-point source pollution, and the potential for removal or killing by people and domestic animal predators. Their continued presence in Codornices Creek is probably due to many factors, notably the lack of barriers between the Bay and upstream areas, the presence of a few deep pools in which to seek cover and take refuge when the stream is relatively dry, a cobbled stream bed in sections that can be used for spawning, and the abundant overstory in many sections that keep the stream shaded and cool. Although Codornices Creek provides suitable habitat for steelhead, NOAA

[7] Environmental Collaborative. 2001. *Biological Assessment Report for the Lower Codornices Creek Improvement Plan Project*. Prepared for Design Community and Environment, Berkeley, CA.

[8] Ibid.

Fisheries does not consider it to be critical habitat. It is considered "occupied, but excluded as critical habitat."[9]

(4) Species of Special Concern. Species of special concern include:

- Animal and plant species that are proposed or candidates for listing under the state and/or federal endangered species acts;
- Animals listed by the State of California as Species of Special Concern because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction;
- Plants listed as rare by the State of California because they occur in such small numbers throughout their range that it may become endangered if its present environment worsens; and
- Plant species listed under the California Native Plant Society List 1B, which are those considered to be rare, threatened, or endangered in California and elsewhere.

Plants. Several special-status plants occur within 10 miles of the project site (in western Alameda and southwestern Contra Costa County). Species known to occur in the surrounding areas are listed in Table IV.E-1. The following special status plant species have occurred, or currently occur, within five miles of the project site: bent-flowered fiddleneck; pallid manzanita; alkali milk-vetch; San Joaquin spearscale; round-leaved filaree; Point Reyes bird's beak; western leatherwood; fragrant fritillary; Diablo helianthella; Santa Cruz tarplant; Kellogg's horkelia; Oregon meconella; and robust monardella. Some of these species have not been observed in several decades or more and are believed to be extirpated from the area. None of these species have been reported on the project site. A survey of the areas around Codornices Creek and Village Creek within the project site in May 2001 did not find any plant species of special concern.[10] None of these species were observed during a follow-up survey in August 2008. The level of past and current disturbance makes it unlikely that any of these species occur on the project site.

[9] National Oceanic and Atmospheric Administration (NOAA). 2005. Endangered and threatened species; designation of critical habitat for seven evolutionarily significant units of Pacific salmon and steelhead in California; Final Rule. *Federal Register*: 70:52488-52627.

[10] Environmental Collaborative. 2001. *Biological Assessment Report for the Lower Codornices Creek Improvement Plan Project*. Prepared for Design Community and Environment, Berkeley, CA.

Table IV.E-1: Special Status Species Potentially Occurring in the University Village Project Area

Species Name	Status[a]	Habitat Requirements	Analysis Results
Plants			
Amsinckia lunaris Bent-flowered fiddleneck	List 1B	Cismontane woodland, valley and foothill grassland.	No suitable habitat is present on-site due to past disturbance and development. Nearest occurrence is within 3 miles of the project site, on San Pablo Ridge.
Arctostaphylos pallida Pallid manzanita	FT/SE/ List 1B	Upland forest, cismontane woodland, coastal scrub. Grows on uplifted marine terraces.	No suitable habitat is present on-site due to past development and disturbance. Nearest remaining natural occurrences are in Sobrante Ridge Regional Preserve, 6 miles northeast of the project site.
Astragalus tener var. *tener* Alkali milk-vetch	List 1B	Valley-foothill grassland, alkali playa. Occurs primarily on alkaline soils.	No suitable habitat is present on-site due to past development and disturbance. Nearest known records are in Emeryville, approximately 3.5 miles south of the project site. There are no recent records; species presumed extirpated from area.
Atriplex joaquiniana San Joaquin spearscale	List 1B	Chenopod scrub, alkali meadow, valley and foothill grassland. Occurs primarily in alkali wetlands and alkali sink scrub.	No suitable habitat is present on-site. Nearest known record is from the Oakland marshes within 5 miles south of the project site. This record is from 1929 and is possibly extirpated.
California macrophylla Round-leaved filaree	List 1B	Cismontane woodland, valley and foothill grassland. Typically found on clay soils.	Nearest occurrence is within 3 miles of the project site, in Berkeley. All occurrences within 10 miles are from the late 1800's. Presumed extinct in this area.
Cordylanthus maritimus ssp. *palustris* Point Reyes bird's beak	List 1B	Coastal salt marshes and swamps.	No suitable habitat is present on-site due to past development and disturbance. Believed extirpated from Alameda County. Nearest known occurrences are in Marin County.
Dirca occidentalis Western leatherwood	List 1B	Broad-leaved upland forest, chaparral, closed-cone coniferous forest, cismontane woodland, north coast coniferous forest, riparian forest, riparian woodland.	No suitable habitat is present on-site due to past development and disturbance. Nearest occurrence is 2 miles from project site in Tilden Regional Park.
Fritillaria liliacea Fragrant fritillary	List 1B	Coastal scrub, coastal prairie, and valley-foothill grassland.	No suitable habitat is present on-site due to past development and disturbance. No current records. Nearest known record is 3 miles east in Tilden Regional Park.
Helianthella castanea Diablo helianthella	List 1B	Upland forest, chaparral, cismontane woodland, coastal scrub, valley-foothill grassland.	No suitable habitat is present on-site due to past development and disturbance. Nearest known record is at the northwest end of San Pablo Reservoir, 4.5 miles northwest of the project site.
Holocarpa macradenia Santa Cruz tarplant	FT/SE/ List 1B	Coastal prairie and valley-foothill grassland.	No suitable habitat is present on-site due to past development and disturbance. Historically known from vicinity but presumed extirpated (eliminated). Nearest known recent records are approximately 3 miles northwest in Wildcat Regional Park.

Table IV.E-1 *Continued*

Species Name	Status[a]	Habitat Requirements	Analysis Results
Horkelia cuneata ssp. *sericea* Kellogg's horkelia	List 1B	Closed-cone coniferous forest, coastal scrub, chaparral. Primarily found on old dunes and coastal sand hills.	No suitable habitat is present on-site. Nearest occurrence is within 5 miles from the project site, in Oakland, and is possibly extirpated.
Meconella oregana Oregon meconella	List 1B	Coastal prairie and coastal scrub.	Nearest occurrence is within 4 miles of the project site in the Berkeley Hills.
Monardella villosa ssp. *globosa* Robust monardella	List 1B	Broad-leaved upland forest, chaparral, cismontane woodland, valley and foothill grassland.	Nearest occurrence is within 3 miles of the project site in Tilden Regional Park.
Invertebrates			
Danaus plexippus Monarch Butterfly – Winter colony sites	**	Winter colony sites occur along the California coast in wind protected tree groves (eucalyptus, Monterey pine, and cypress) where nectar and water resources are nearby.	No winter colony sites have been documented on-site. This species has been observed on-site and approximately 1000 individuals seen in trees on Gill Tract in January 1998.
Fishes			
Oncorhynchus mykiss Central Coast steelhead	FT	Spawns in small coastal streams and rivers. For spawning and egg development: requires cool, well-oxygenated water with moderate flow/velocity, small to medium gravel bottom material, and moderately deep, cool pools for refuge. Rearing sites are in tributaries.	Species known to occur in Codornices Creek. 150 individuals observed in 2001 surveys. Few individuals observed in pools during 2003 survey.
Reptiles and Amphibians			
Actinemys marmorata Western pond turtle	CSC	Ponds, marshes, streams, and irrigation ditches with aquatic vegetation, deep water, basking sites, and adjacent uplands that are suitable for egg-laying (sandy banks or grassland).	Codornices and Village creeks do not provide suitable breeding or resident habitat. There is suitable habitat up- and down-stream from the project site along Codornices Creek and turtles may periodically disperse along the creek, moving between these areas. There are four CNDDB occurrences within 5 miles of the project site.
Rana draytonii California red-legged frog	FT	Perennial ponds or pools, streams where water remains long enough for breeding and development of young. Highest frog densities associated with dense emergent or shoreline riparian vegetation and deep (>2 feet), still or slow-moving water. Juvenile frogs often found in warm, shallow-water habitats with floating or submerged vegetation.	Codornices and Village creeks on the project site do not provide suitable habitat for this species. There is one CNDDB recorded occurrence of California red-legged frog within 5 miles of the project site, near Orinda. This species was probably once common in the area, however, urban development has eliminated most suitable habitat.

Table IV.E-1 *Continued*

Species Name	Status[a]	Habitat Requirements	Analysis Results
Birds			
Circus cyaneus Northern harrier	CSC	Valley-foothill grassland, coastal prairie, coastal salt marsh.	This species has been observed on the site (Environmental Collaborative 2001) and marginal foraging habitat exists on the Gill Tract. It is unlikely that this species breeds or forages extensively on-site since the property is surrounded by urban development and the existing habitat is extremely marginal.
Elanus leucurus White-tailed kite	FP	Woodland, valley-foothill grassland and open marshes adjacent to woodland.	This species has been observed on the site (Environmental Collaborative 2001) and marginal breeding and foraging habitat exists on the Gill Tract. It is unlikely that this species breeds or forages extensively on-site since the property is surrounded by urban development and the existing habitat is extremely marginal.
Athene cunicularia Burrowing owl	CSC	Grassland/pastureland; nests in burrows, especially ground squirrel complexes	There are four occurrences in the project vicinity. One occurrence is approximately 2.5 miles northwest of the project site in south Richmond. Three additional occurrences are located within 1.5 miles of the project site, along the Berkeley shoreline at the following locations: Cesar Chavez Park, Berkeley Meadows, and the Gilman ballfields (LSA observations in 2008, 2009, and 2006, respectively). Marginal habitat may be found in open ruderal areas of the project site. However, no burrows were observed during biological surveys.
Mammals			
Antrozous pallidus Pallid bat	CSC	Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rockier areas for roosting. Needs roosts that protect bats from high temperature and disturbance.	No suitable habitat is present within the project site. No recent (after 1970) occurrences within 10 miles of the project site. Nearest occurrence was within 1.5 miles of the project site (in El Cerrito), in 1943.
Nyctinomops macrotis Big free-tailed bat	CSC	Low-lying arid areas in Southern California. Needs high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.	No habitat present within the project site. No recent occurrences within 10 miles of the project site. Only one occurrence within 10 miles of the project site, a record 1.5 miles away (in Berkeley), in 1916.

[a] Status:
SE = Listed as endangered under the State of California Endangered Species Act.
FT = Listed as threatened under the Federal Endangered Species Act
CSC = California Species of Concern
FP = California fully protected species
1B = CNPS (California Native Plant Society): Plants rare, threatened or endangered in California and elsewhere.
** = Winter colonies recognized by California Dept. of Fish and Game as a sensitive habitat in California

Animals. Animal species of special concern are known to occur or potentially occur in the vicinity of the project site. These species are found in western Alameda and southwestern Contra Costa Counties and may utilize one or more of the habitats present on the project site.

Birds. Northern harrier, a State species of special concern, and white-tailed kite, a State fully protected species are known to occur on the project site.[11] Burrowing owl, a State Species of Special Concern is known to occur within 1.5 miles from the project site and marginal habitat is present on the project site. However, no burrowing owls, burrows or ground squirrels have been observed on the project site.

Northern harrier and white-tailed kite may nest and/or forage in the tree groves, riparian woodland, and ruderal or cultivated fields on and adjacent to the project site. Coast live oak, eucalyptus, willows, and ornamental trees may provide nest sites for these species as well as more common raptors and birds. One raptor, a red-shouldered hawk (not a special status species), was observed in the trees on the Gill Tract during the August 2003 site visit. No raptors were observed during the August 2008 site visit.

Western Pond Turtle. The western pond turtle is found in ponds and marshes, as well as in streams where deep pools, basking sites, and retreat habitat are present.

No turtles were observed during LSA's field survey of Codornices and Village creeks on June 2003 or August 2008, or during extensive surveys conducted in 2001 by Rana Resources. Village Creek does not provide suitable habitat for western pond turtles on or off of the project site due to the lack of perennial deep pools or basking sites and because most of the creek channel is narrow or densely vegetated. The lack of large pools and suitable nesting habitat along Codornices Creek within the project site makes it unlikely that this species would permanently occupy this creek within the project site. However, suitable habitat exists upstream and downstream from the project site. As a result, western pond turtles may periodically disperse along Codornices Creek in the project area when moving between suitable habitats located off-site. There are no known occurrences of western pond turtle in Codornices Creek, but this species would be difficult to observe along this creek corridor due to the narrow, densely vegetated, and largely shaded conditions.

Monarch Butterfly Winter Colony Sites. Monarch butterflies are not listed as a species of special concern, threatened, or endangered by the United States Fish and Wildlife Services (USFWS) or the California Department of Fish and Game (CDFG). However, California law recognizes Monarch butterfly winter colonies as "special resources." The CDFG is required to identify winter colony sites and establish management plans to protect them. Monarch butterflies winter in large colonies along the California coast. Winter roost sites are typically characterized by large, mature trees that are close together, providing a stable micro-climate and protection from wind. Monarch butterflies often use non-native tree species, including eucalyptus, as well as native species such as Monterey pine and Monterey cypress (species native to the Monterey Peninsula but not elsewhere).

The eucalyptus, pine, and cypress groves within and adjacent the project area have the potential to support Monarch butterflies. U.C. Berkeley staff observed monarchs roosting in eucalyptus trees

[11] Ibid.

along Codornices Creek in 1998.[12] No winter colonies have been observed on the project site. However, in October 1997, City of Albany staff observed several hundred Monarch butterflies in the eucalyptus groves in Dowling Park, west of the project site, along the railroad tracks, and in pine and eucalyptus trees on the Gill Tract. At that time, the University consulted with Paul Cherubini, a Monarch butterfly expert who determined that these aggregations of Monarchs entailed temporary roosts, rather than over-wintering habitats. The nearest known regular wintering colony is at the Point Pinole Regional Shoreline. Large groups of Monarch butterflies have also been observed in the fall and winter in eucalyptus groves near Albany Hill and in Richmond to the northwest.

(5) Other Animals. There are a number of animal species that have adapted well to urban areas and are not considered sensitive species. Trees, parks, and gardens planted in urban areas provide suitable habitat for many of these species. The ornamental trees, open field/vacant lot where student housing was previously located, and riparian areas along Village Creek and Codornices Creek have the potential to support numerous species, particularly resident and migratory birds.

2. Impacts and Mitigation Measures

The following section provides the criteria of significance and a discussion of potential impacts to biological resources that could result from implementation of the proposed project.

a. Criteria of Significance. The project may result in a significant effect on biological resources if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in applicable local or regional plans, policies, regulations, or by the CDFG or USFWS;
- Have a substantial adverse effect on federally-protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any applicable local policies or ordinances protecting biological resources, such as a tree preservation policy ordinance; and/or
- Conflict with the provision of approved local, regional, or State habitat conservation plans.

b. Less-Than-Significant Biological Resource Impacts. Less-than-significant impacts associated with implementation of the project are described below.

[12] California Department of Fish and Game (CDFG). 2008. *California Natural Diversity Database (CNDDB), commercial version dated October 4, 2008*. Biogeographic Data Branch, CDFG, Sacramento.

(1) Special-Status Plants. No special status plants have been reported on the project site. Given the level of past and current disturbance, it is unlikely that any of the listed special status plants occur on the project site. Therefore, it is unlikely that any of these plants would be impacted by the project.

(2) Other Animals. There are a number of animal species that have adapted well to urban areas. Trees, parks, and gardens planted in urban areas provide suitable habitat for many of these species. The ornamental trees, riparian areas, and open fields within the project site have the potential to support numerous animal species, particularly resident and migratory birds.

The riparian area along Codornices Creek will largely remain intact due to the location of the proposed pedestrian/bike path outside the creek bank. However, installation of at least two new outfalls into the creek will likely require removal of some vegetation along the stream bank. Depending on the location of the outfalls, some tree removal may be necessary.

Tree removal could also be required along Village Creek for installation of at least two outfalls there. Additionally, the arborist report[13] for the project (included in Appendix F) recommends that five trees within the top of bank (CDFG jurisdiction) of Village Creek be removed. These trees are recommended for removal because they pose a hazard due to instability and/or poor health. These trees (blue gum Eucalyptus, Monterey Cypress, and deodar cedar) are not native to the area; therefore, CDFG may not require mitigation. Several additional non-native trees in the wooded area beyond the top of bank of Village Creek will be removed to accommodate the proposed creekside retail space, pedestrian path, and adjacent parking area.

The outfalls along both creeks and the portion of the pedestrian path located within the top of bank of Village Creek would require a Streambed Alteration Agreement through CDFG. If any work related to the proposed outfalls is required in the stream channels, a Corps permit and 401 Certification from the RWQCB would also be required.

A landscaping plan for the proposed project will be required by the City. The following conditions would be incorporated into the landscape plan:

- Where feasible, landscaping shall be designed and operated to treat stormwater runoff by incorporating elements that collect, detain, and infiltrate runoff. In areas that provide detention of water, plants that are tolerant of saturated soil conditions and prolonged exposure to water shall be specified.
- Plant materials selected shall be appropriate to site specific characteristics such as soil type, topography, climate, amount and timing of sunlight, prevailing winds, rainfall, air movement, patterns of land use, ecological consistency and plant interactions to ensure successful establishment.
- Existing native trees, shrubs, and ground cover shall be retained and incorporated into the landscape plan to the maximum extent practicable. Measures to protect trees during construction

[13] Tree Management Experts. 2009. *Arborist Report for University Village at San Pablo, Albany, CA.* Prepared for the LaLanne Group, Inc. San Francisco, CA.

will be identified, and replacement of the trees removed from the project site will be considered in the design of the landscape plan.

- The landscape plan shall be reviewed and is subject to approval by the City's Urban Forester.
- Proper maintenance of landscaping, with minimal pesticide use, shall be the responsibility of the property owner.

A reduction in the number of trees and total area of ruderal fields would reduce the habitat available for urban wildlife using the project site. Paved areas and manicured landscaping provide less suitable habitat for many urban-adapted wildlife species than ruderal fields. Construction activities also have the potential to impact birds by disturbing nests during the breeding season.

The project would concentrate development in previously developed areas and minimize the number of trees impacted. Following the arborist report recommendations, some trees such as small oaks will be transplanted while a few of the larger trees will be preserved where appropriate and feasible. Minimizing the number of trees removed and planting new trees in the landscaped areas and along pedestrian paths, would help maintain suitable habitat and minimize the impacts associated with redevelopment. As such, the project will not result in significant impacts to migratory birds or wildlife corridors.

c. Significant Biological Resource Impacts and Mitigation Measures. Four biological resources could be impacted by the proposed project: Central Coast Steelhead; nesting birds; Western pond turtle; and Monarch butterfly winter colonies.

(1) Central Coast Steelhead. Assuming that outfall construction would involve work in the stream channel, temporary de-watering of the creek at one or more locations will be necessary. This could potentially impact steelhead that may be present in the creek during construction. Any work in the stream channel would require authorization from NOAA Fisheries in addition to Corps, RWQCB, and CDFG authorizations.

Removal of vegetation on the stream bank (and possibly in the streambed) would occur during outfall placement. If tree removal is necessary, this could result in less shading of the creek and potentially higher water temperatures that are less favorable to steelhead. Other aspects of the project that would involve work adjacent to Codornices Creek would have the potential to harm steelhead habitat through potential impacts to water quality during or after construction. Work that will occur adjacent to the creek includes a 10-foot-wide pedestrian/bicycle path. Construction of this path will not involve removal of additional riparian vegetation since it will be located beyond the top of bank.

Impact BIO-1: Development of the proposed project could impact Central Coast Steelhead habitat in Codornices Creek. (S)

The following three-part mitigation measure would reduce Impact BIO-1 to a less-than-significant level:

Mitigation Measure BIO-1a. All construction activities in or adjacent to Codornices Creek shall be completed between June 15 and October 15 (i.e., outside the steelhead migration period). Should the project proponent demonstrate a need to conduct activities outside this time period,

the Corps may authorize such activities after obtaining approval from NOAA Fisheries. During temporary de-watering of the stream (if required), pre-construction surveys by a qualified biologist shall be conducted. Subject to the approval of the NOAA Fisheries, any steelhead that are found in the stream section that would be de-watered shall be captured and relocated to a suitable site upstream or downstream from the construction area. Prior to the initiation of construction activities for the outfalls, NOAA Fisheries shall approve a permit for the biologists to conduct such relocation work. The following additional steps will be implemented to further reduce direct and indirect impacts to steelhead and their habitat:

- The NOAA Fisheries-approved biologist shall be present at the work site until such time as all removal of steelhead (if found) and habitat disturbance has been completed. After that time, the contractor or permittee shall designate a person to monitor on-site compliance with all mitigation measures. The monitor and the NOAA Fisheries-approved biologist shall have the authority to halt any action that might result in impacts that exceed the levels anticipated by the Corps and NOAA Fisheries.
- Disturbance to existing grades and vegetation will be limited to the actual site of the project and necessary access routes. Vegetation removal will be minimized to the extent possible. Placement of all roads, staging areas, and other facilities shall avoid and limit disturbance to the stream bank or stream channel habitat to the extent possible. When possible, existing ingress or egress points shall be used and/or work performed from the top of the creek banks. Following completion of the work, the contours of the creek bed and creek flows shall be returned to pre-construction conditions or better.
- All fueling and maintenance of vehicles and other equipment, and staging areas, shall be located at least 20 meters from Codornices Creek. Prior to the onset of work, the project proponent will prepare a plan to allow a prompt and effective response to any accidental spills into the creek (see Mitigation Measure BIO-1b, below). All workers shall be informed of the importance of preventing spills and the appropriate measures to take should a spill occur. In the event of a spill, NOAA Fisheries will be notified.

Mitigation Measure BIO-1b: Best management practices (BMPs) shall be implemented during all construction activities to prevent erosion and sedimentation into the stream and to prevent the spill of contaminants around the stream. These BMPs shall be described in a Stormwater Pollution Prevention Plan (SWPPP) that shall be prepared in compliance with Regional Water Quality Control Board requirements. The SWPPP shall include the following major components, at a minimum:

- A comprehensive erosion and sediment control plan, depicting areas to remain undisturbed, and providing specifications for revegetation of disturbed areas.
- A list of potential pollutants from building materials, chemicals, and maintenance practices used during construction, and the specific control measures to be implemented to minimize release and transport of these constituents in runoff.
- Specifications and designs for the appropriate BMPs for controlling drainage and treating runoff in the construction phase.
- A program for monitoring all control measures that includes schedules for inspection and maintenance, and identifies the party responsible for monitoring.

- A site map that locates all water quality control measures and restricted areas to be left undisturbed.

Mitigation Measure BIO-1c: Post-construction BMPs shall be prepared for the project prior to initiating construction. The BMPs shall address long-term operation and management of the project to avoid water quality degradation and other potential adverse impacts to Codornices Creek. In particular, structural and management BMPs shall be implemented to ensure adequate treatment of storm water and irrigation runoff to a level needed to maintain habitat for steelhead in compliance with stream "beneficial uses" under the RWQCB Region 2 Basin Plan (RWQCB 2007). (LTS)

(2) Bird Species of Special Concern. Redevelopment of the site could result in loss of foraging or nesting habitat of certain species, including the northern harrier and white tailed kite. Nest sites could be lost as a result of project development if trees are removed or construction activities occur in close proximity to nest sites. The CDFG Code prohibits the disturbance or destruction of raptor nests during the breeding season. This applies to not only these species of special concern, but also to other raptor species. In addition, the federal Migratory Bird Treaty Act prohibits the destruction of nests or disturbance of nesting activity for migratory bird species.

Impact BIO-2: The proposed project could impact the foraging or nesting habitat for bird species of special concern. (S)

The following mitigation measure would reduce Impact BIO-2 to a less-than-significant level.

Mitigation Measure BIO-2: In order to avoid impacts to raptors and other migratory nesting birds, pre-construction surveys shall be conducted by a qualified biologist during the months of March through August, no more than 30 thirty days prior to the start of grading or vegetation removal. Pre-construction surveys are not required if construction activities are restricted to the non-nesting season (September through February). At a minimum, the surveys shall encompass all areas within 100 feet of the grading or vegetation removal work. If active nests are found on the project site, a qualified biologist shall establish an adequate buffer zone around the nests within which construction is prohibited until the biologist has determined that the young birds have fledged. (LTS)

(3) Western Pond Turtle. The lack of large pools and suitable nesting habitat along Codornices Creek within the project site makes it unlikely that this species would permanently occupy this creek within the project site; however, suitable habitat exists upstream and downstream from the project site. As a result, western pond turtles may periodically disperse along Codornices Creek in the project area when moving between these areas. Construction of outfalls into Codornices Creek could result in killing or injuring western pond turtles if present during construction activities in or near the creek.

Impact BIO-3: The construction of the proposed project could impact western pond turtles that may be present in Codornices Creek. (S)

The following mitigation measure would reduce Impact BIO-3 to a less-than-significant level.

Mitigation Measure BIO-3: Prior to the start of creek de-watering (if necessary) and outfall installation, Codornices Creek shall be surveyed by a qualified biologist for the presence of western pond turtles. If present, the western pond turtle individuals shall be relocated to suitable habitat upstream or downstream of the project site to avoid killing or injuring such individuals. (LTS).

(4) Monarch Butterfly Winter Colonies. There have been no records of a Monarch butterfly winter colony on the project site, but the eucalyptus, pine, and cypress groves on the project site have the potential to support Monarch butterflies. If a colony were to begin using any of the tree groves on the project site prior to construction, then this colony could be disturbed by construction activities or eliminated by the removal of trees.

Impact BIO-4: The construction of the proposed project could impact Monarch butterfly winter colonies.

Implementation of this mitigation measure would reduce Impact BIO-4 to a less-than-significant level.

Mitigation Measure BIO-4: Prior to the initiation of any work that will affect eucalyptus, pine, and cypress groves on the project site during the period between September and March, pre-construction surveys by a qualified biologist shall be conducted in the tree groves. If Monarch butterflies are found to be utilizing any of the trees as a winter colony site, construction in the vicinity of those trees shall be avoided and the removal of trees around the colony shall be avoided or postponed until after the butterflies have left for the breeding season. The width of the protected buffer zones around the winter colony trees shall be determined on a case-by-case basis by the biologist, based on guidelines for maintaining suitable microclimatic conditions in the tree canopy, as per *Conservation and Management Guidelines for Preserving the Monarch Butterfly Migration and Overwintering Habitat in California* (The Monarch Project, January 1993). (LTS)

F. HYDROLOGY AND WATER QUALITY

This section describes the existing hydrological setting for the project site, including runoff, drainage, and water quality, based on information provided by the applicant, review of environmental investigation reports and other published materials, and a site reconnaissance. Based on information reviewed, this section identifies impacts that may result from project development, and identifies mitigation measures to reduce potential impacts.

1. Setting

A description of the existing conditions at and near the site related to hydrology and storm drainage is provided below.

a. Climate. The climate of the Bay Area is characterized as dry-summer subtropical (often referred to as Mediterranean), with cool wet winters and relatively warm dry summers. In the vicinity of the project site between the years 1893 and 2008, the approximate annualized average high temperature is 64.8º Fahrenheit (F) and the average low is 49.3º F. The mean annual rainfall is approximately 23.4 inches, with the majority of rainfall between October and May. During the period of record, annual rainfall has varied from 9.9 inches (1929) to 48.4 inches (1983), with a one-day high of 7.0 inches of precipitation on January 4, 1982.[1] Analysis of long-term precipitation records indicates that wetter and drier cycles lasting several years are common in the region. Severe, damaging rainstorms occur in the Bay Area at a frequency of about once every three years.[2]

b. Runoff and Drainage. The project site is relatively flat with a gentle slope to the southwest and an elevation of approximately 37 to 44 feet National Geodetic Vertical Datum of 1929 (NGVD).[3,4] Along the east edge of the project site, San Pablo Avenue slopes gently to the south and has curb-set drop inlets leading to storm-sewers. Monroe Street slopes to the west where curb-set drop inlets for stormwater are near the intersection with 8th Street.

The majority of the project site is clear of structures and impervious surfaces, with the exception of the Gill House, appurtenant driveways, some foundation remnants from small structures near the Gill House, and vacant greenhouse and research structures. In general, the site drains by infiltration or overland sheet-flow toward the west and south.

Two creeks are adjacent to the project site. Village Creek is an intermittent stream and is located adjacent to the north edge of the project site. Codornices Creek is adjacent to the southern edge of the project site and defines the boundary between the cities of Albany and Berkeley. There are no creeks or streams crossing the project site.[5] Both Village Creek and Cordonices Creek convey stormwater

[1] Western Regional Climate Center, www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca0693, (accessed March 18, 2009).

[2] Brown, William M. III, 1988. Historical Setting of the Storm: Perspectives on Population, Development, and Damaging Rainstorms in the San Francisco Bay Region, in Landslides, Floods, and Marine Effects of the Storm of January 3-5, 1982, in the San Francisco Bay Region, California, Stephen D. Ellen and Gerald F. Wieczorek, Eds., U.S. Geological Survey Professional Paper 1434.

[3] United States Geological Survey (USGS), 1995. *Richmond Quadrangle, California*, 7.5' series topographic map.

[4] For most purposes, NGVD 29 is equivalent to mean sea level.

[5] Sowers, J.M., 1993. *Creek and Watershed Map of Oakland and Berkeley*, published by the Oakland Museum of California.

runoff from the area, and both lead to a common engineered channel west of Highway 80 near Golden Gate Fields which drains to the north into the mud flats of San Francisco Bay.

The project site is located entirely within the Codornices Creek watershed, which has headwaters in the hills above Berkeley and extends to San Francisco Bay.[6] Historically, the creek entered a tidal marsh; however, filling of San Francisco Bay over the years has redirected the mouth of Codornices Creek northward to the present location near Buchanan Street. The Bay's tidal influence now reaches upstream to Second Street, just east of Interstate 80.[7]

Codornices Creek has been subject to an active citizen effort to restore and protect the creek, and enhance the habitat quality of the creek where possible. These efforts to support biodiversity along the riparian corridor, and encourage the restoration of Steelhead Trout habitat in the creek proper, are described in the Codornices Creek Watershed Restoration Action Plan (CCWRAP).[8] Please refer to the Biological Resources, Section IV.E of this EIR for further discussion of biological resources. With reference to Hydrology and Water Quality, the CCWRAP includes recommendations for altering the stream bed such as the reintroduction of meanders into the stream, removing culverts, alleviating severe gradients that result in fast water, improving shading to cool water, and restoration of banks and plantings to filter runoff, slow and cool water, and provide for pools which can settle out suspended materials.

c. Flooding. The project site is adjacent to the 500- and 100-year special flood hazard zones for Codornices Creek, as mapped by the Federal Emergency Management Agency (FEMA). Village Creek does not have a FEMA special flood zone indicated in the mapping for the project area.[9,10] The southernmost portion of the project site, approximately 80 feet from the Codornices Creek centerline, would be expected to be susceptible to storm-related flooding from the 100-year event.

Flood Studies were previously prepared during preparation of the University Village Master Plan EIR[11] and the 2004 Subsequent Focused EIR for the University Village and Albany.[12] Based on these studies, these EIRs did indicate areas of more extensive flooding than the FEMA FIRM maps along Codornices Creek and Village Creek for areas downstream of the project. However, in the area of this project the indicated flood hazard areas are consistent with the FEMA interpretations. Much of the shallow downstream flooding is a result channel constriction that occurs where creeks are routed through culverts with inadequate conveyance capacity; some downstream culverts appear only

[6] Sowers, Janet M., 1993/2000. Creek & Watershed Map of Oakland & Berkeley, William Lettis & Associates, Inc.

[7] Kier Associates, 2003. *Codornices Creek Watershed Restoration Action Plan*, prepared for the Urban Creeks Council, November.

[8] Ibid.

[9] Federal Emergency Management Agency (FEMA)/Environmental Systems Research Institute, U.S. Flood Hazard Maps, https://hazards.fema.gov.

[10] FEMA, 1980. *Flood Insurance Rate Map* for the City of Albany, California, Panel No. 060003 0002 A, 1 February.

[11] EIP Associates, 1997. *Focused Draft Environmental Impact Report, University of California, Berkeley Draft Master Plan – University Village & Albany/Northwest Berkeley Properties*, State Clearinghouse No. 97072039. August 29

[12] LSA Associates, Inc., (LSA) 2004. *Subsequent Focused EIR for the University Village & Albany/Northwest Berkeley Properties Master Plan Amendments*, State Clearinghouse No. 1997072039. January 30.

adequate for 75 to 85 percent of the 10-year flow.[13] Near the southwest corner of the project site, the 10th street culverts for Codornices Creek have been slated for replacement by a bridge as part of the planned Codornices Creek improvements and restorations under the Master Plan; the bridge is not a part of this project.[14]

While the Berryman, C.L. Tilden, Summit, and San Pablo Clearwell dams are located in the hills above Albany, the project site is not located within a mapped dam failure inundation zone.[15]

d. Coastal Hazards. The location of the project site, on lowlands near San Francisco Bay, creates a potential for coastal flooding hazards, including tsunami, extreme high tides, and sea level rise. However the elevation of the project site, approximately 37 to 45 feet NGVD, would be expected to provide adequate protection from tsunamis, extreme high tides, and sea level rise, all of which tend to present hazards for sites at elevations lower than 10 feet NGVD. [16,17,18,19]

e. Water Quality. The quality of surface water and groundwater in the vicinity of the project site is affected by past and current land uses at the site and within the watershed, as well as the composition of geologic materials in the vicinity. Codornices Creek has been subject to water quality monitoring and analysis as part of the ongoing study related to implementation of the CCWRAP. Water quality monitoring has been focused on polycyclic aromatic hydrocarbons (PAHs), temperature, pH, electrical conductivity, and dissolved oxygen. Recent analysis indicates that PAHs levels in the creek were below criteria thresholds, pH was generally normal, dissolved oxygen levels in the vicinity of and downstream of the project were below preferred target levels, while water temperatures were, at times, above the preferred range.[20]

The University Village Master Plan effects on stormwater quality were evaluated as part of the 1998 Master Plan EIR and reviewed for the 2004 Subsequent Focused EIR, and were determined to be less-than-significant due to mandated compliance with existing regulations, including requirements that a Stormwater Management Plan would be prepared describing a stormwater pollution control system that would be installed to capture and treat stormwater runoff.[21] Design and construction of Step 2 of the Master Plan (an area west of the current project site) included an integrated stormwater manage-

[13] Ibid.

[14] City of Albany, 2009. Planning and Zoning Agenda Staff Report. February 10.

[15] Association of Bay Area Governments, 2009. Interactive *ABAG (GIS) Maps Showing Dam Failure Inundation*, http://www.abag.ca.gov/bayarea/eqmaps/damfailure/damfail.html.

[16] Houston, J.R., Garcia, A.W., 1975. *Type 16 Flood Insurance Study: Tsunami Predictions for Monterey and San Francisco Bays and Puget Sound*, Technical Report H-75-17, November.

[17] Ritter, J., Dupre, W., 1972. *Maps Showing Areas of Potential Inundation of Tsunamis in the San Francisco Bay Region, California, Department of the Interior*, U.S. Geological Survey, Misc. Field Studies, MF480.

[18] United States Army Corps of Engineers, 1984. San *Francisco Bay Tidal Stage vs. Frequency Study*, October.

[19] U.S. EPA, 1995. *The Probability of Sea Level Rise*, EPA 230-R-95-008, October.

[20] Kier Associates, 2007. *Final Monitoring Report for the Codornices Creek Watershed Restoration Action Plan, Phase 2*. Prepared for the Urban Creeks Council, January.

[21] LSA, 2004. Op. cit.

ment approach using best management practices (BMPs) such as permeable pavement, pavers, grassy swales, and water retentive landscaped bioswales.[22,23,24,25]

f. Regulatory Background. Water quality in surface and groundwater bodies is regulated by the State Water Resources Control Board and Regional Water Quality Control Boards. The project site is under the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (Water Board), which is responsible for implementation of state and federal water quality protection guidelines in the Bay Area. The Water Board implements the Water Quality Control Plan (Basin Plan),[26] a master policy document for managing water quality issues in the region. The Basin Plan establishes beneficial water uses for waterways and water bodies within the region.

(1) Stormwater Quality: NPDES and C-3 requirements. Runoff water quality is regulated by the National Pollutant Discharge Elimination System (NPDES) Program (established through the Clean Water Act). The NPDES program objective is to control and reduce pollutants to water bodies from stormwater and non-stormwater discharges. Locally the NPDES program is administered by the Water Board. The Water Board has conveyed responsibility for implementation of stormwater regulations in the vicinity of the project site to the Alameda Countywide Clean Water Program (ACCWP).[27] The ACCWP maintains compliance with the NPDES Permit and promotes stormwater pollution prevention within that context. Compliance with the NPDES Permit is mandated by state and federal statutes and regulations. Participating agencies (including the City of Albany)[28] must comply with the provisions of the County permit by ensuring that new development and redevelopment mitigate water quality impacts to stormwater runoff both during construction and operation periods of projects. The required stormwater management provisions are described in Water Board Order R2-2003-0021 (NPDES Permit No. CAS0029831).[29]

New development and significant redevelopment projects that that would create or replace more than 10,000 square feet of impervious surface are subject to Provision C.3 of the Water Board order. While all projects regardless of size should consider incorporating appropriate source control and site design measures that minimize stormwater pollutant discharges to the maximum extent practicable, new and redevelopment projects that do not create or replace more than 10,000 square feet of impervious

[22] UC Berkeley, undated. *University Village Albany Step 2 Design Approval presentation*, www.ucop.edu/facil/pd/design_plans/documents/UCB_UVA.pdf, (accessed April 2, 2009).

[23] Haet, Greg, PE, 2007. *University Village: Integrating Stormwater Controls in Project Design – Practical Aspects*. For UCB, February, www.cleanwaterprogram.org/uploads/07-UC_Village-Greg_Haet-wshop_021307-smallest.pdf, (accessed April 2, 2009).

[24] UC Berkeley, 2005. *Campus Sustainability Assessment*, prepared by the Chancellor's Advisory Committee on Sustainability, sustainability.berkeley.edu/, (accessed April 2, 2009).

[25] UC Berkeley, 2008. Campus Sustainability, report prepared by the Chancellor's Advisory Committee on Sustainability, October, sustainability.berkeley.edu/.

[26] California Regional Water Quality Control Board San Francisco Bay Region, 2007. *San Francisco Bay Basin (Region 2) Water Quality Control Plan* (Basin Plan). January 18.

[27] Alameda Countywide Clean Water Program (ACCWP). Program Information, www.cleanwaterprogram.com/aboutus_home.htm, (accessed April 2, 2009).

[28] City of Albany, 2009. Urban Runoff Program, www.albanyca.org/index.aspx?page=505, (accessed April 3, 2009).

[29] Water Board, 2003. Alameda Countywide NPDES Municipal Stormwater Permit, Order R2-2003-0021, www.waterboards.ca.gov/sanfranciscobay/board_decisions/adoporders.shtml, (accessed April 2, 2009).

surface are not subject to the requirements of Provision C.3. The proposed project would create or replace more than 10,000 square feet of impervious surface and therefore would be required to meet all the terms of the permit, including (but not limited to):

- ***Numeric Sizing Criteria for Pollutant Removal Treatment Systems.*** The project must include source controls, design measures, and treatment controls to minimize stormwater pollutant discharges. Treatment controls must be sized to treat a specific amount – about 85 percent – of average annual runoff (in the Bay Area this is equivalent to about the 1-inch storm).
- ***Operation and Maintenance of Treatment Measures.*** Treatment controls often do not work unless adequately maintained. The permit requires an operations and maintenance (O&M) program, which includes: 1) identifying the properties with treatment controls; 2) developing agreements with private entities to maintain the controls (e.g., incorporation into CC&Rs or homeowners association duties); and 3) periodic inspection, maintenance (as needed), and reporting.
- ***Limitation on Increase of Peak Storm Water Runoff Discharge Rates.*** Urbanization creates impervious surfaces that reduce the landscape's natural ability to absorb water and release it slowly to creeks. These impervious surfaces increase peak flows in creeks and can cause erosion. Projects must evaluate the potential for this to occur and provide mitigation as necessary.

On March 14, 2007, the Water Board issued Order No. R2-2007-0025 (NPDES Permit No. CAS0029831), an amendment revising Order No. R2-2003-0021. This order adopts the revised hydrograph modification management provisions and includes by reference the ACCWP countywide Hydrograph Modification Management Plan (HMMP) of May 15, 2005. The HMMP standard is intended to ensure that new projects in Alameda County, including those within the City of Albany, do not increase erosion. A new development or redevelopment project in which the combined amounts of impervious surface created and replaced totals one acre or more is required to comply with the Water Board Order's hydromodification standard and the ACCWP HMMP unless it falls into one of several exempt categories. Examples of exempt projects include single-family homes; transit village redevelopments; and sidewalks, bicycle lanes, trails, bridge accessories, guardrails, and landscape features associated with streets, roads, highways, or freeways. Exemptions are also provided for projects in areas near the Bay that are tidally influenced or subject to sediment deposition, and projects served by hardened stormwater conduits.

NPDES General Permit for Discharges of Storm Water Associated with Construction Activity (99-08-DWQ)*, the Construction General Permit.* Dischargers whose projects disturb one or more acres of soil or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the Construction General Permit for Discharges of Storm Water Associated with Construction Activity (CGP). For projects that qualify for coverage, the CGP has provisions requiring storm water management during both the construction and operational periods.

Projects seeking coverage under the CGP are required to file a Notice of Intent (NOI) with the Water Board for discharges of storm water associated with construction activity. A developer must propose control measures that are consistent with the CGP. A Storm Water Pollution Prevention Plan (SWPPP) must be developed and implemented for each site covered by the CGP. The SWPPP should contain a site map(s) which shows the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection and discharge points, general topography both before and after construction, and drainage patterns across the project. The SWPPP must list BMPs the discharger will

use to protect storm water runoff and the placement of those BMPs for both the construction and operational phases of the project. Additionally, the SWPPP must contain a visual monitoring program. A chemical monitoring program for "non-visible" pollutants must be implemented if there is a failure of BMPs. A sediment monitoring plan is required if the site discharges directly to a water body listed on the Federal Clean Water Act Section 303(d) list for sediment.[30] Section A of the CGP describes a complete list of the elements that must be contained in a SWPPP.

A revision to the current CGP is currently undergoing review, and may be adopted by the Water Board during 2009. Some of the changes proposed in the new CGP include required numeric action levels for pH, turbidity, total petroleum hydrocarbons, additional BMPs, low impact development (LID) implementation, effluent monitoring and reporting, active treatment systems, performance standards for hydromodification impacts, technical training for staff, and annual report requirements.

(2) Groundwater. The proposed project is located above the East Bay Plain groundwater subbasin.[31] The averaged seasonal elevation of groundwater from 1974 to 1987 at a well approximately four blocks west of the project site was 5 feet mean sea level (msl), and with a ground surface elevation at the wellhead of 20 feet msl. About 12 blocks east of the site at a ground surface elevation of approximately 100 feet msl, the groundwater is estimated to be at an elevation of approximately 20 feet msl.[32] Based on groundwater elevation at these two sites, the elevation of groundwater in the vicinity of the project site is approximately 12 feet msl, or approximately 25 feet below ground surface; however, seasonal variations and 'perched' water above low permeability subsurface zones may result in groundwater being present at shallower depths. The Basin Plan specifies that groundwater underlying the project site has designated beneficial uses, including municipal, industrial, and agricultural supply.[33]

g. City of Albany. The following section provides applicable provisions related to hydrology and water quality from the General Plan and Municipal Code.

(1) Albany General Plan. Policies from the General Plan that relate to hydrology and water quality are listed below.

Land Use Element

- Policy LU 7.2: Participate actively in the UC Master Plan process for redevelopment of the Gill Tract and Albany Village. Specific concerns that must be addressed in this process include but are not limited to:
  B. Protect and enhance the creeks running through and adjacent to the U.C. Village property.
  C. Protect and preserve the important stands of trees on the site.
- Policy LU 9.2: Develop policies to protect existing riparian habitat within the Creek Conservation Zone and restrict development in this Zone appropriately (see Conservation, Recreation and Open Space Element Policies).

[30] The CWA 303(d) listing policy requires that States assess the quality of their waters every two years and publish a list of those waters not meeting the water quality standards established for them. For water bodies placed on the 303(d) List of Water Quality Limited Segments, states are required to develop Total Maximum Daily Loads (TMDLs) for the pollutant(s) that are causing standards impairment. The most recent (2006) Water Board 303(d) list does not specify Codornices Creek, Village Creek, or San Francisco Bay to be impaired for sediment.

[31] Hickenbottom, Kelvin, and Muir, Kenneth, 1998. Geohydrology and Groundwater-Quality Overview of the East Bay Plain Area, Alameda County, California: 205 (j) Report, prepared for the California Regional Water Quality Control Board San Francisco Bay Region, June.

[32] Ibid.

[33] Water Board, 2007. op. cit.

Conservation, Recreation, and Open Space Element.

- Goal CROS 1: Enhance the natural features of the City's creeks and increase public access to them.
- Policy CROS 1.1: Develop a comprehensive program to sponsor restoration and public access improvements for Albany's creeks. Continue to implement the 1977 Albany Creek Restoration Program. As part of this effort, continue to recognize that these areas have important wildlife and vegetation values.
- Policy CROS 1.2: Pursue funding for the restoration of Codornices and Cerrito Creeks through the Department of Water Resources Urban Stream Restoration Program, and the Coastal Conservancy.
- Policy CROS 1.3: Support the efforts of the Codornices Creek Association to restore Codornices Creek.
- Policy CROS 104: Develop policies to be included in the Watercourse Combining District to protect riparian habitat within the Creek Conservation Zone where practically feasible and applicable.

Community Health and Safety Element.

- Policy CHS 1.1: Conserve riparian and littoral habitat within the area 100 feet from creek centerline in appropriate areas both for its importance in reducing flood impacts and for its aesthetic value.

(2) Watershed Management Plan.[34] The Watershed Management Plan (WMP) was designed to provide a comprehensive overview of the City's drainage systems (both manmade and natural) and guide the City in making management decisions about these systems. The WMP, along with participation in the Countywide NPDES permit, an urban creeks restoration program, and storm drainage and flood control are all elements of the City's Clean Water Program.

The WMP includes general recommendations for improvements to both Codornices and Village Creeks in the area of the proposed project. For Codornices Creek, the recommendations include minor restoration, such as removal of debris and exotic plants, re-vegetating with native species, trail/bike path construction, identification and educational signage, and bridge railings. For Village Creek, the WMP recommends restoration of creek channel riparian habitat, and support for current habitat value provided by mature non-native ornamental trees in the area.

(3) Municipal Code. Applicable provisions to the municipal code are listed below.

Chapter XV Sewers and Sanitation, Section 15-4.7 d. Reduction of Pollutants in Storm Water. In part, Section 15-4 states:

> Any person engaged in activities which will or may result in pollutants entering the City storm sewer system shall undertake all practicable measures to reduce such pollutants, including implementation of BMPs for new development and redevelopment projects. Any construction contractor performing work in the City shall endeavor, whenever possible, to provide filter materials at the catch basin to retain any debris and dirt flowing into the City's storm sewer system. The Director of Public Works may establish controls on the volume and rate of storm water runoff from new developments and redevelopments as may be appropriate to minimize the discharge and transport of pollutants.

[34] City of Albany, 1998. *Watershed Management Plan*. October.

Furthermore, section states:

> That it shall be unlawful for any person, firm, or corporation to obstruct or cause to be obstructed, or in any manner to interfere with or caused to be interfered with, any natural watercourse or any natural drain, swale, gully or other depression in the surface of land in the City, which carries off at any time of the year any storm water or any surface water which has been precipitated by rains. Further, no person shall cause discharge into or connect any pipe or channel to a watercourse, and shall not locate structures closer than twenty feet from the top of the natural creek bank.

Chapter XX Planning and Zoning, Section 20.12.080 Overlay Districts. The Albany Creek Restoration Program was adopted by the City Council in 1977 and resulted in a series of zoning amendments for protecting and preserving the creeks. The Albany Zoning Ordinance contains a Watercourse Overlay (WC) Zoning District, which applies to areas within 75 feet of the centerline of each creek and areas designated on the Flood Insurance Rate Map as a Special Flood Hazard Zone. The Zoning Ordinance requires that no structures be built within 20 feet of the natural creek bank; however, this setback requirement may be decreased with a Public Works Conditional Use Permit. The Zoning Ordinance requires the Planning Commission to consider creek preservation and restoration when reviewing proposed development adjacent to the creeks. Any change to the land must follow flood damage prevention requirements and special geotechnical, drainage and erosion control measures as outlined by the Planning Department.

Chapter XX Planning and Zoning, Section 20.52 Flood Damage Prevention Regulations. A flood zone permit shall be obtained before construction or development begins within any area of special flood hazard identified by the Federal Insurance Administration of FEMA in the latest version of *The Flood Insurance Study for the City of Albany* with accompanying FIRMs, and the Flood Boundary and Floodway Maps. The City's Flood Plain Administrator may deny the permit application if the project would adversely affect, or contribute to a cumulative effect that will increase the water surface elevation of the base flood more than one foot at any point, or other adverse effects as detailed in the code. Approval of the permit may carry conditions to be imposed on the project, and may be in addition to other permits and conditions imposed by the City. Standard conditions required for structures to be constructed under a flood zone permit include: structure anchoring, flood resistant materials, special design considerations for utilities, a lowest finished floor elevation at one foot above flood elevations when known, or three feet above adjacent grades when flood elevations unknown, as well as other requirements.

Chapter XX Planning and Zoning, Section 20.68 Green Building and Bay-Friendly Landscaping Regulations. The City through the design, construction, operation and deconstruction of facilities it funds shall provide leadership to both the private and public sectors by incorporating green building and bay-friendly landscaping practices and requiring the integration of green building and bay-friendly landscaping strategies in City and public-private partnerships buildings and landscapes.

2. Impacts and Mitigation Measures

This section analyzes the impacts related to hydrology and water quality that could result from implementation of the University Village at San Pablo Avenue project. This section begins with a listing of criteria of significance, which establish the thresholds for determining whether a project

impact is significant. The latter part of this section presents the potential hydrology and water quality impacts associated with the proposed project. Mitigation measures are recommended, as appropriate.

a. Criteria of Significance. The project would have a significant effect on hydrology, storm drainage, or water quality if it would:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
- Create or contribute runoff water which would exceed the capacity of existing or planned storm-water drainage systems or provide substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- Inundation by seiche, tsunami, or mudflow.

b. Less-than-Significant Hydrology and Water Quality Impacts. Primarily due to its elevation above sea level and distance from the shore, there is no substantial hazard related to the project from coastal hazards, such as seiche, tsunami, extreme high tides, or sea level rise.

The project would use municipal utility services for water supply and sewage disposal. Please see the Utilities Section of the Initial Study (located in Appendix A) for a discussion of water supply. Implementation of the proposed project would not contribute to depletion of groundwater supplies as groundwater withdrawal is not proposed by the project. The project is not expected to have any substantial effect on groundwater quality in the vicinity of the site as no project components, such as septic systems or industrial activities involving the ongoing use or storage of substantial quantities of hazardous materials, or other new uses that pose a threat to groundwater quality are proposed.

The project would not alter the course of a stream or river, since no such hydrologic features cross the site boundary. A discussion of potential impacts related to development on the creek banks is included below under Impacts HYDRO-3 and HYDRO-4.

The project would not expose people or structures to a significant risk of loss, injury or death involving flooding as a result of the failure of a levee or dam. State regulated dams are regularly inspected and maintained under the California Department of Water Resources, Division of Safety of Dams program and failure of a State regulated dam is considered a low probability event. Although several dams are located in the hills east of the proposed project, the project site is not located in the mapped inundation zone for any State regulated dam or reservoir.

c. Significant Hydrology and Water Quality Impacts and Mitigation Measures. Five potentially significant impacts are discussed below.

(1) Stormwater Runoff. Construction and grading within the project site would require temporary disturbance of surface soils and removal of existing impervious surfaces and vegetative cover.

<u>Impact HYDRO-1</u>: Construction-phase activities could result in degradation of water quality in Codornices Creek, Village Creek and the San Francisco Bay by reducing the quality of stormwater runoff. (S)

During the construction period, grading and excavation activities would result in exposure of soil to runoff, potentially causing erosion and entrainment of sediment and contaminants in the runoff. Soil stockpiles and excavated areas on the project site would be exposed to runoff and, if not managed properly, the runoff could cause erosion and increased sedimentation and pollutants in stormwater.

The potential for chemical releases is present at most construction sites given the types of materials used, including fuels, oils, paints, and solvents. Once released, these substances could be transported to Village or Codornices Creek and to San Francisco Bay in stormwater runoff, wash water, and dust control water, potentially reducing water quality. Erosion of contaminated soils could result in the transport of pollutants (along with the sediments) to the Bay. The proximity of the project site to the Bay reduces the chances that the pollutants would be naturally attenuated in a standard-design storm drainage system prior to discharge to the Bay.

While the applicant has proposed certain specific BMPs to treat stormwater runoff in the conceptual design documents for the finished project, a comprehensive SWPPP has not been developed.

> Mitigation Measure HYDRO-1: The project contractor shall comply with the City of Albany Municipal Code relating to grading projects, erosion control, and discharge regulations and requirements (Chapter XX, Section 15-4.7). In addition, the project applicant shall prepare a SWPPP designed to reduce potential impacts to surface water quality through the construction period of the project. The SWPPP must be maintained on-site and made available to City inspectors and/or Water Board staff upon request. The SWPPP shall include specific and detailed BMPs designed to mitigate construction-related pollutants. At a minimum, BMPs shall include practices to minimize the contact of construction materials, equipment, and maintenance supplies (e.g., fuels, lubricants, paints, solvents, adhesives) with stormwater. The SWPPP shall specify properly designed centralized storage areas that keep these materials out of the rain.

An important component of the stormwater quality protection effort is the knowledge of the site supervisors and workers. To educate on-site personnel and maintain awareness of the importance of stormwater quality protection, site supervisors shall conduct regular tailgate meetings to discuss pollution prevention. The frequency of the meetings and required personnel attendance list, along with summary of topics of discussion, shall be specified in the SWPPP.

The SWPPP shall specify a monitoring program, which must include both dry and wet weather inspections, to be implemented by the construction site supervisor. In addition, in accordance with State Water Resources Control Board Resolution No. 2001-046,[35] monitoring would be required during the construction period for pollutants that may be present in the runoff that are "not visually detectable in runoff."[36] Water Board and/or City personnel, who may make unannounced site inspections, are empowered to levy considerable fines if it is determined that the SWPPP has not been properly prepared and implemented.

BMPs designed to reduce erosion of exposed soil may include, but are not limited to: soil stabilization controls, watering for dust control, perimeter silt fences, placement of hay bales, and sediment basins. The potential for erosion is generally increased if grading is performed during the rainy season as disturbed soil can be exposed to rainfall and storm runoff. If grading must be conducted during the rainy season, the primary BMPs selected shall focus on erosion control, that is, keeping sediment on the site. End-of-pipe sediment control measures (e.g., basins and traps) shall be used only as secondary measures. Entry and egress from the construction site shall be carefully controlled to minimize off-site tracking of sediment. Vehicle and equipment wash-down facilities shall be designed to be accessible and functional during both dry and wet conditions. (LTS)

(2) Dewatering Effluent. The proposed project includes a subsurface garage area beneath the structure on Block A. Groundwater may be encountered during excavation for the garage areas, building foundations, utilities, and other improvements. There are two general classes of pollutants that may result from dewatering operations: sediment and chemical compounds (including toxics and petroleum hydrocarbons). Chemical pollutants are most commonly found in dewatering effluent in areas with a history of groundwater contamination (e.g., leaks to the subsurface from industrial sites).

<u>Impact HYDRO-2</u>: Dewatering effluent may contain contaminants and if not properly managed could cause impacts to construction workers and the environment. (S)

Historically, the project site has been used for residential dormitories since at least the 1960's, reducing the likelihood of industrial contaminations at the site. High sediment content in dewatering discharges is common because of the nature of the operation in which soil and water mix in the turbulent flow of high volume pump intakes. Direct discharge of dewatering effluent to the storm drainage system could result in downstream water quality impacts.

[35] State Water Resources Control Board, 2001. Modification of Water Quality Order 99-08-DWQ State Water Resources Control Board (SWRCB) National Pollutant Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity.

[36] Construction materials and compounds that are not stored in water-tight containers under a water-tight roof or inside a building are examples of materials for which the discharger may have to implement sampling and analysis procedures.

Mitigation Measure HYDRO-2: The construction-period SWPPP shall include provisions for the proper management of construction-period dewatering effluent. At minimum, all dewatering effluent shall be contained prior to discharge to allow the sediment to settle out, and filtered, if necessary, to ensure that only clear water is discharged to the storm or sanitary sewer system, as appropriate. In areas of suspected groundwater contamination (i.e., underlain by fill or near sites where chemical releases are known or suspected to have occurred), groundwater shall be analyzed by a State-certified laboratory for the suspected pollutants prior to discharge. Based on the results of the analytical testing, the project applicant shall acquire the appropriate permit(s) prior to discharge of the effluent. Discharge of the dewatering effluent would require a site-specific permit from the Water Board or may be permitted under the Construction General Permit (for discharge to the storm sewer system or to San Francisco Bay) and/or East Bay Municipal Utility District (EBMUD) (for discharge to the sanitary sewer system). (LTS)

(3) Project Implementation. The proposed project is located within Step 3 of the University Village and Albany/Northwest Berkeley Properties Draft Master Plan, and the preliminary plans for this specific project include similar stormwater management features to those described as part of the Step 2 development of the Master Plan. Specifically, the use of permeable pavement and pavers have been proposed for portions of the site, particularly the parking and walkway area near the market. In addition, preliminary site plans indicate landscaped drainage swales along the west edge of the property, and a stormwater detention basin at the northwest corner of the site. The applicant has indicated that the post-development drainage plan will mimic the historic tributary divide between Village and Codornices Creeks. New outfalls to each creek will be required. The outfalls will be connected to the sub-drains of the bio swales, collectors under the permeable pavers, and to foundation drainage. These plans are all conceptual at this time and a design level site-specific drainage plan, including specific C.3 compliance proposals, has not yet been prepared by the project applicant. Please refer to the Conceptual Site Plans, Figure III-3 of this EIR for details. Currently, the site is largely vacant with the exception of the Gill House and vacant research/greenhouse structures. The proposed project will result in a high percentage of the site being developed with new buildings and pavement (estimated from conceptual drawings to be in excess of 85 percent cover). New roofs, walks, parking, and ancillary paving could result in significant increase in impervious surface and could increase the rate and volume of runoff.

Impact HYDRO-3: Operation-phase activities of the site could result in hydrology and water quality impacts through a reduction in infiltration, increases in runoff volume, duration, or velocity, and degradation the quality of stormwater runoff. (S)

The vicinity of the project site discharges through storm drains to Codornices Creek and then into San Francisco Bay. The proposed project site is within an area mapped as being susceptible to hydromodification and is not serviced by hardened stormwater conveyance; hence, the proposed project is subject to the HMMP requirements.

The Water Board has designated San Francisco Bay as water quality impaired for several pesticides (chlordane, DDT, diazinon, and dieldrin), dioxin compounds, exotic species, furan compounds, mercury, nickel, PCBs, and selenium.[37] If there is a chance that the project could increase the load of

[37] Regional Water Quality Control Board (RWQCB), San Francisco Bay Region, 2007. 2006 CWA Section 303(d) List of Water Quality Limited Segments Requiring TMDLs, Approved by USEPA. 28 June 2007.

any of these pollutants discharged to the Bay, then a significant impact would be expected to occur (the Water Board has determined that the assimilative capacity of the Bay for these pollutants has already been exceeded). Most of the contaminants that have been identified as causing the water quality impairment of the Bay are unlikely to be used at the site. Each of the pesticides (chlordane, DDT, diazinon, and dieldrin) has been banned (except, in some cases for agricultural use) and is therefore not available for legal use at the project site. The source of the dioxin and furan compounds has been identified as atmospheric deposition. The proposed project would not alter the rate of atmospheric deposition, and therefore not change the current loading rate of these compounds (the rate may be decreased due to implementation of BMPs).

Exotic plant species compete with, and in some cases attack, native species and can have deleterious effects on habitat. Exotic plants can result in a reduction of dissolved oxygen in host waters, and without natural limits may grow unchecked and choke out native species, leading to a reduction in water quality.[38] The proposed project would not introduce exotic species to the creeks or Bay, or increase the impact of existing exotic species. (See SectionIV.E for a discussion of biological resources.)

PCBs and mercury would not be used at the site and discharges of these contaminants would not be expected to be affected by the project. The selenium impairment has been caused by industrial point sources, agriculture, natural sources, and exotic species. None of these uses is proposed for the project site. Nickel in stormwater runoff is mostly associated with suspended solids and organic matter. Sources of nickel include corrosion of welded metal plating, wear of moving parts in engines, electroplating and alloy manufacture, and food production equipment.[39] It is possible that increased vehicle traffic at the project site as a result of the project could result in the discharge of nickel in stormwater. Since nickel is almost always associated with suspended solids, stormwater pollution controls to reduce or eliminate suspended solids would be effective in decreasing nickel load in runoff leaving the site.

Stormwater runoff quality may be impacted as proposed land uses at the project site would result in discharge of urban pollutants to stormwater runoff. These pollutants include fuels, lubricants, tire wear, and atmospheric fallout, which will contribute petroleum hydrocarbons, heavy metals, and sediment to the pollutant load in runoff being transported to receiving waters. Runoff from landscaped areas at the site may contain residual pesticides and nutrients. Long-term degradation of water quality runoff from the site could impact local water quality in Village or Codornices Creek and San Francisco Bay. Potential discharge of pollutants related to the operational phase of the project is a significant impact.

> Mitigation Measure HYDRO-3: The project applicant and City of Albany shall ensure that the proposed project drainage design meets all the requirements of the current Countywide NPDES Permit (NPDES Permit No. CAS0029831), as amended. The drainage plan shall include features and operational Best Management Practices to reduce potential impacts to surface water quality associated with operation of the project. Stormwater discharges shall not cause an

[38] San Francisco Estuary Institute, 2003. Practical Guidebook for the Identification and Control of Invasive Aquatic and Wetland Plants in the San Francisco Bay-Delta Region, April.

[39] Makepeace, D.K., Smith, D.W. and Stanley, S.J., 1995. Urban Storm Water Quality: Summary of Contaminant Data, *Critical Reviews in Environmental Science and Technology*, Vol. 25, No. 2, pp. 93-139.

increase in the erosion potential of the receiving stream over the pre-project (existing) conditions. Increases in runoff flow and volume shall be managed so that post-project runoff shall not exceed estimated pre-project rates and durations, where such increased flow and/or volume is likely to cause increased potential for erosion of creek beds and banks, silt pollutant generation, or other adverse impacts to beneficial uses due to increased erosive force. Such management shall be through implementation of the hydromodification requirements of Provision C.3.F of Order No. 2003-0021 as amended. These features shall be included in the project drainage plan and final development drawings. Specifically, the final design shall include measures designed to mitigate potential water quality degradation of runoff from all applicable portions of the completed development. In general, "passive," low-maintenance BMPs (e.g., stormwater planters, rain gardens, grassy swales, pervious pavements) are preferred over active filtering or treatment systems.

An operations and maintenance plan shall be developed and implemented to inspect and maintain BMPs in perpetuity. If paved surfaces within garages and covered parking areas are washed with water, this water shall not be directed to the storm drainage system. This wash water effluent shall either be directed to the sanitary sewer or contained and transported off-site for proper disposal.

The final design team for the project shall review and incorporate as many concepts as practicable from *Start at the Source, Design Guidance Manual for Storm Water Quality Protection*[40] and the California Storm water Quality Association's *Storm Water Best Management Practice Handbook, Development and Redevelopment*, and the Alameda County Clean Water Program (ACCWP) technical guidelines.

The City Public Works Department shall review and approve the drainage plan prior to approval of the grading plan. (LTS)

(4) Codornices Creek. The Albany Creek Restoration Program was adopted by the City Council in 1977 and resulted in a series of zoning amendments for protecting and preserving the creeks. The Albany Zoning Ordinance contains a Watercourse Combining (WC) Zoning District which applies to areas within 75 feet of the centerline of each creek, and areas designated on the Flood Insurance Rate Map as a Special Flood Hazard Zone. The Zoning Ordinance requires that no structures be built within 20 feet of the natural creek bank. The setback requirement may be decreased with a Conditional Use Permit. The Zoning Ordinance requires the Planning Commission to consider creek preservation and restoration when reviewing proposed development adjacent to the creeks. Any change to the land must follow flood damage prevention requirements and special geotechnical, drainage and erosion control measures as outlined by the Planning Department. The City of Albany General Plan Policy CHS 1.1. specifies an intent to "Conserve riparian and littoral habitat within the area 100 feet from creek centerline in appropriate areas both for its importance in reducing flood impacts and for its aesthetic value." In addition, the WMP was adopted by the City in 1998 and is designed to guide the City in making management decisions about City's drainage systems.

[40] Bay Area Storm Water Management Agencies Association, 1999. *Start at the Source,* Design Guidance Manual for Storm water Quality Protection.

In May of 2001 a Lower Codornices Creek Improvements Plan (LCCIP) was prepared jointly for the University of California Berkeley, the City of Albany, and the City of Berkeley.[41] In 2004 an Initial Study/Mitigated Negative Declaration was prepared for the LCCIP.[42] The LCCIP notes that a number of groups have an interest in the planning for Codornices Creek, including various creek organizations, sports field user groups, bicycle advocates, residents, and property owners. The LCCIP includes proposed plans and cross-sections of a channel design for Codornices Creek immediately west of San Pablo Avenue, and adjacent to the proposed project. The LCCIP indicates modifications to the current stream bed, including creating a meandering channel, widening the vegetated floodplain area and sloping the banks, and creating a trail/path along the north edge of the creek. The total width of the improvements would be approximately 100 feet.

The preliminary conceptual drawings and site plans for the proposed University Villages project indicate that property lines, setbacks, landscaping, paths, and paving have been designed in such a way as to accommodate the implementation of the LCCIP; however, there is potential for the proposed project to inhibit complete implementation of the LCCIP unless integration of the two plans is assured through careful design review.

Impact HYDRO-4: The project as proposed, including landscaping, paving, and walkways, may conflict with implementation of the existing Lower Codornices Creek Improvement Plan (LCCIP) and associated Memorandum of Agreement. (S)

Mitigation Measure HYDRO-4: The project applicant and City of Albany shall ensure that the site and structure design of the proposed project, including final landscape and drainage plans, do not interfere with the implementation of the LCCIP, as currently designed.

(5) Flooding. Based on review of the conceptual project design, it appears that the proposed project improvements may encroach into the floodplain (i.e., the 100-year special flood hazard area as mapped by FEMA) along Codornices Creek. Two issues make definitive determination related to project encroachment into the floodplain difficult at this time: 1) FIRMs are planning level maps and may not be precise at the parcel level of detail; and 2) the project design is at the conceptual level and may be refined in the future. Encroachment and the potential for the project to impede flood flows or displace floodplain storage is a potentially significant impact.

Impact HYDRO-5: The proposed project may place housing, structures, or site improvements within the 100-year special flood hazard area as mapped by FEMA, or other flood hazard delineation map, and may impede or redirect flood flows or expose people or structures to a significant risk of flood related loss. (S)

Mitigation Measure HYDRO-5: The project applicant shall retain a qualified engineering or surveying professional to prepare a determination, including appropriate site plan sheet, of the precise location of the 100-year special flood hazard area boundaries for creeks in the vicinity of the project site. Based on this determination, if the project encroaches into the floodplain,

[41] The Waterways Restoration Institute, 2001. Draft: Lower Codornices Creek Improvements Plan Berkeley/Albany, California, 1 May.

[42] Design, Community & Environment, 2004. Codornices Creek Improvements Plan, Draft Initial Study and Proposed Mitigated Negative Declaration; Prepared for the City of Albany, CA, 4 March.

consistent with the City of Albany Flood Damage Prevention Regulations, the applicant shall obtain a flood zone permit. The applicant shall comply with all requirements of the flood zone permit as imposed by the City. These recommendations and requirements are to be implemented in the planning and construction of the proposed project, so as to assure that the project will not impede or redirect flood flows, or present a significant risk of flood-related loss to people or structures.