4.2 TRANSPORTATION

4.2.1 INTRODUCTION

This section includes an updated traffic analysis that entirely replaces the transportation section in the SEIR-1. This existing and future transportation conditions in the Silicon Valley Rapid Transit Corridor (SVRTC) and anticipated long-term significant transportation impacts resulting from the project are quantitatively evaluated. Short-term transporation construction impacts are discussed in **Section 4.19, Construction**.

Sources of updated information used to prepare this analysis include an enhanced version of the Metropolitan Transportation Commission (MTC) regional model for 2030 travel demand forecasts and two traffic reports, as identified below.

- Milpitas BART Station Transportation Impact Analysis, Hexagon Transportation Consultants, Inc., December 23, 2008.

- San Jose BART Stations Transportation Impact Analysis, Hexagon Transportation Consultants, Inc., December 23, 2008.

This section discusses transportation and safety; parking; transit; pedestrian facilities; bicycle facilities; and vehicular traffic in the SVRTC station areas. For each of these topics, existing conditions are described, followed by an analysis of the 2030 No Project conditions and Phase 1 for each topic. Phase 1 would be fully operational in 2030. In order to identify potentially significant impacts on future roadway networks and transportation facilities, the future impacts of Phase 1 on future roadway networks and transportation facilities were compared to the 2030 conditions without Phase 1. Future conditions without implementation of Phase 1 are called the 2030 No Project conditions.

4.2.2 TRANSPORTATION AND SAFETY

4.2.2.1 Existing Conditions

Emergency Access and Services

Emergency services in the Phase 1 area are provided by each local fire department, including the Fremont Fire Department, the Milpitas Fire Department, and the San Jose Fire Department. Refer to **Section 4.5**, **Community Services and Facilities,** of this SEIR-2, and Section 4.5 of the FEIR and SEIR-1 for detailed a description of emergency services and facilities in the Phase 1 area.

Air Traffic Safety

No airports are located within ¼-mile of the Phase 1 area. The closest airport is the San Jose International Airport located approximately 2.3 miles west of the proposed Berryessa Station site.

4.2.2.2 Project Impacts and Mitigation Measures

Phase 1 does not include any changes to local streets or intersections that could create a design hazard. All roadway geometrics and BART alignment features have been designed to conform with applicable city, county, or Caltrans standards and would therefore meet the necessary design safety requirements. Further, any modifications to the existing Union Pacific Railroad (UPRR) freight crossings with local roadways have been designed in accordance with the California Public Utilities Commission (CPUC) standards and will be subject to CPUC approval prior to construction. There are three existing at grade UPRR crossings with local roadways along the Phase 1 alignment: Mission Boulevard, Kato Road, and Dixon Landing Road. The Mission Boulevard and Kato Road Crossings will be grade separated by other agencies. Depending on the option selected for the Dixon Landing Road Alignment per Design Change 8, the existing UPRR crossing would either remain at grade or would be grade separated. Therefore, Phase 1 would not substantially increase hazards due to a design feature. No mitigation is required.

In regards to emergency access along the Phase 1 portion of the BART alignment, Phase 1 includes a maintenance access road along most of the BART alignment. Emergency vehicles can access this road in the event of an emergency along the Phase 1 alignment. Depending on the option selected for the Dixon Land Road Alignment per Design Change 8, emergency access would either continue as per existing conditions, or would be improved with a grade separated UPRR crossing. Phase 1 would not require changes to the local street system that would significantly impact emergency access. Phase 1 would not result in inadequate emergency access and no mitigation is required.

See **Section 4.19, Construction**, of this SEIR-2 for a discussion of access impacts during construction of Phase 1.

In regards to emergency access at the station sites, the Milpitas and Berryessa stations include 20-foot emergency access roads within the station campuses and around the station buildings and parking structures. These emergency access roads would allow for emergency vehicles or fire trucks to access the station buildings in the event of an emergency. The Phase 1 stations would have a less-than-significant impact relative to emergency access due to the presence of the access roads. No mitigation is required.

In terms of air traffic safety, the Phase 1 portion of the BART alignment and the station sites are not within the San Jose International Airport land use plan or designated airport safety zones. Therefore, Phase 1 would not introduce any foreseeable hazards to aircraft and would not result in an impact to air traffic patterns. No mitigation is required.

4.2.2.3 Conclusion

Implementing Phase 1would not create any design hazards or impede emergency access in the Phase 1 area. Additionally, Phase1 would not impact air traffic patterns of the San Jose International Airport. Therefore, no significant impacts to transportation and safety would occur as a result of Phase 1 and no mitigation is required.

4.2.3 PARKING

This parking discussion is presented for informational purposes only since the CEQA Guidelines do not require an analysis of parking.

Parking considerations fall within two areas: (1) parking demand and proposed supply associated with proposed stations and related Express/Feeder bus service under Phase 1, and (2) parking demand and proposed supply at existing (or, in the case of the Warm Springs Extension, programmed) stations in the BART system outside of Santa Clara County. This section discusses the parking demand associated with proposed stations for Phase 1. Secondarily, the anticipated increases in parking demand at BART "core system" stations generated by riders traveling to Santa Clara County from Alameda, Contra Costa, San Francisco and San Mateo counties, and elsewhere are considered. Core system parking impacts are described separately in **Chapter 5, BART Core System Parking** in this SEIR-2. Impacts related to the temporary displacement of parking during construction are discussed in **Section 4.19**, **Construcuction**, of this SEIR-2.

4.2.3.1 Existing Parking Conditions

Parking available within a ½-mile radius of proposed BART stations is a combination of on-street curbside parking and off-street private and public parking lots associated with businesses and offices. At the proposed Milpitas Station in southern Milpitas, the Great Mall and Heald College provide parking for their patrons and students, respectively, north of Montague Expressway. At the Berryessa Station in east San Jose, there are two large surface parking lots northwest and southwest of the planned station site. These lots provide parking to patrons of the San Jose Flea Market, located immediately west of the station.

4.2.3.2 Phase 1 Parking

Adequate parking at proposed BART stations along the Phase 1 alignment is important to prevent spillover into surrounding neighborhoods. Station park-and-

ride demand was projected as part of the ridership modeling. The analysis considered how far passengers would be willing to drive to ride BART. When the total parking demand is limited to a planned supply, it is said to be a constrained analysis. Otherwise, the parking demand analysis is referred to as "unconstrained," meaning that the parking supply is not a limiting factor.

Table 4.2-1 summarizes park-and-ride space requirements for Phase 1 stations. The opening year and 2030 parking demand shown in the table assumes an unconstrained parking demand, or a base "worst case" scenario for parking at stations. VTA would initially construct parking facilities at stations to accommodate parking demand estimated for several years after opening year. Facilities would be expanded when demand approaches supply.

Table 4.2-1: Opening Year and 2030 Phase 1 Park-and-Ride Space Demand and Supply

Station Name	Opening Year Parking Demand (spaces)	2030 Parking Demand (spaces)	2030 Parking Supply (spaces)
Milpitas	1,260	2,260	2,260
Berryessa[a]	2,505	4,835	4,835
Total	3,765	7,095	7,095

[a] Includes park-and-ride spaces for Phase 1 feeder service (approximately 750 in 2030).
Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc. and VTA February 2008.

As in the BART core system, parking at Phase 1 stations would be monitored annually to determine demand and evaluate whether supply is adequate. The information would be used by VTA to establish a parking management program, including phased facility expansion where necessary.

Parking demand for the Milpitas Station would be approximately 2,300 spaces under unconstrained 2030 conditions. This demand would be accommodated with a two- to eight- level parking structure and future transit facility/surface parking in the station area. Parking demand for the Berryessa Station would be approximately 4,800 spaces. This demand would be accommodated with a four- to eight-level parking structure and future transit facility/surface parking in the station area. The unconstrained parking demand reflects ridership of 46,458 for Phase 1.

Opening year parking demand of approximately 1,260 spaces at Milpitas Station and 2,505 spaces at Berryessa Station (3,765 spaces combined) would be accommodated in proposed surface parking lots and parking structures. Parking for up to 1,880 vehicles at Milpitas Station and up to 3,750 vehicles at Berryessa Station would be provided. The garages would initially be sized to provide capacity for several years of parking growth at each location. With an 8-level parking garage and surface parking at the Milpitas Station, Phase 1 is designed to accommodate up to 2,260 parking spaces to meet the 2030 demand. With an

8-level parking garage and surface parking at the Berryessa Station, Phase 1 is designed to accommodate up to 4,835 parking spaces to meet the 2030 demand.

Phase 1 stations would include curb areas for shuttle and feeder bus stops and temporary parking for kiss-and-ride drop off and pick-up. These spaces, not included in the above totals, would be provided in designated areas near station entrances, and be accessible via surface roadways, as shown in station graphics in **Appendix D**.

Projected demand for riders who use new or existing feeder services originating at the Phase 1 stations would be accommodated in park-and-ride areas at the stations and off-site bus transit parking facilities. Phase 1 would require four park-and-ride parking lots for the additional bus service. Demand for three of the four park-and-ride lots would be met within existing facilities located at the approved Warm Springs BART Station (303 spaces), the Berryessa BART Station (753 spaces), and the existing Evelyn Light Rail Transit (LRT) Station in Mountain View (49 spaces). The fourth parking facility would be constructed in downtown Sunnyvale to accommodate 91 spaces and meet projected demand. The bus park-and-ride spaces are included in the totals shown in **Table 4.2-1**.

4.2.3.3 Summary

Station design plans include adequate parking to accommodate projected parking demand. However, in the event parking demand is determined to be greater than estimated and approaches supply, VTA would, in association with BART and the local jurisdiction, help institute parking control programs. These could include time-restricted or neighborhood-only-parking zones around stations. The programs would be designed to reduce or eliminate excess demand spilling over onto adjacent land uses.

VTA would also consider parking charges as a parking management strategy when demand approaches the 2030 parking supply. The same parking control programs would be instituted as necessary to prevent vehicles from parking in neighborhoods around the station in order to avoid parking charges.

Parking conditions at each station would be monitored post start-up of Phase 1 service at least annually to determine whether corrective actions would be necessary to avoid spillover.

The Milpitas Station poses a special parking situation as it would offer a convenient intermodal transfer location to LRT and bus services. VTA would continue to work with the City of Milpitas to implement appropriate parking policies to coordinate non-project related parking demand adjacent to this station.

4.2.4 TRANSIT

4.2.4.1 Existing Conditions

Rail and Bus Services

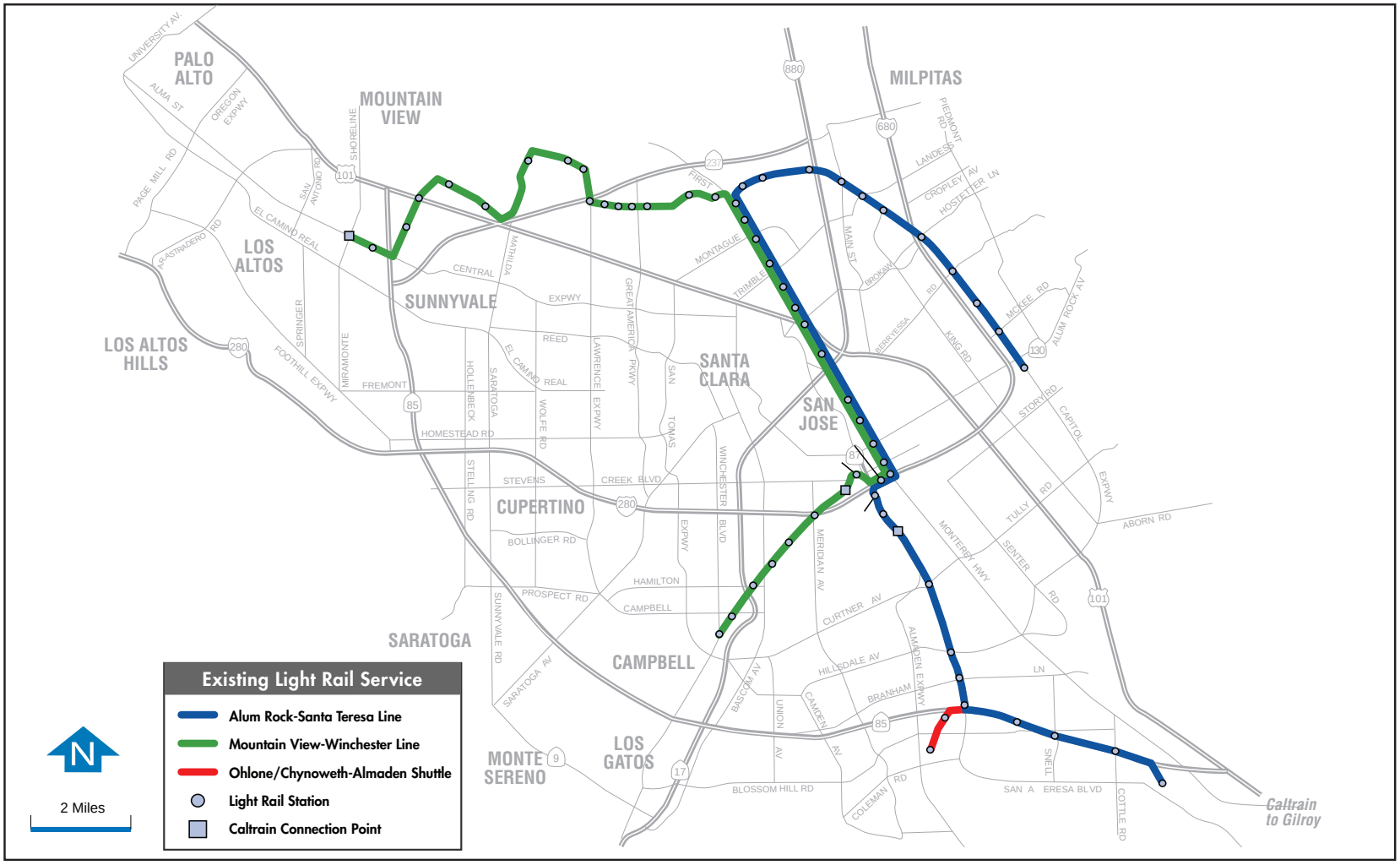
VTA operates light rail transit (LRT) and bus service in the SVRTC (see **Figures 4.2-1** and **4.2-2**). As of August 2010, VTA operated three light rail lines, 35 Local bus lines, 18 Community Bus lines, 4 Limited Stop bus lines, and 12 express bus lines in its approximately 326-square-mile service area. The total fleet size to operate these fixed-route transit services is 412 buses and 99 light rail vehicles, including spare vehicles.

VTA's LRT service in Santa Clara County includes the Mountain View – Winchester Line, which provides a direct link between the cities of Mountain View, Sunnyvale, and Santa Clara in northern Santa Clara County to San Jose and Campbell. The Alum Rock– Santa Teresa Line connects northeast San Jose and Milpitas to south San Jose. The Alameda spur line serves south San Jose.

Both longer lines operate on North First Street via downtown San Jose, providing 7 ½ minute service frequencies during peak commute hours. VTA also provides light rail shuttle service for major Santa Clara County employment destinations and paratransit service for seniors and the disabled community.

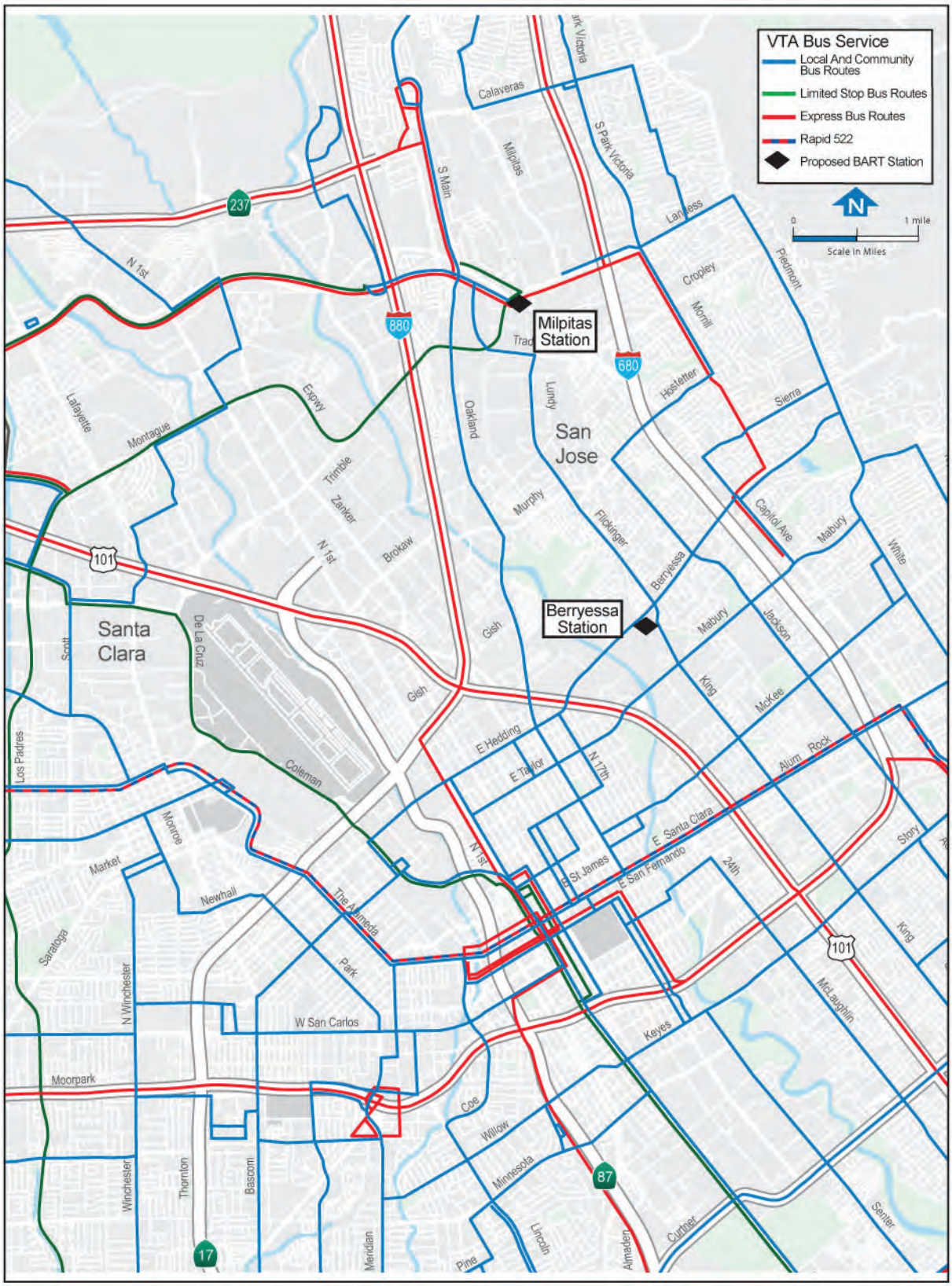
Other transit operators in the SVRTC include BART (regional rail), Caltrain (commuter rail), Altamont Commuter Express (ACE) (intercity/commuter rail), Capitol Corridor (intercity rail), Amtrak (interstate rail), and AC Transit (bus). VTA is a member of the Peninsula Corridor Joint Powers Board, which operates Caltrain service between Santa Clara, San Mateo, and San Francisco counties; the Capitol Corridor Joint Powers Board, which operates intercity rail service between Placer and Santa Clara counties; and supports the ACE commuter rail service between San Joaquin, Alameda, and Santa Clara counties.

The BART system is 104 miles in length with 43 stations serving origins and destinations in four counties: Alameda, Contra Costa, San Francisco, and San Mateo. BART's existing terminus in the SVRTC is the Fremont BART Station. An extension to Warm Springs (also in Fremont) is under construction and expected to begin service in 2014. BART operates approximately 20 hours daily, with peak train service varying from approximately 7 minutes to 15 minutes, depending upon the BART line.



Source: VTA, 2010.

Figure 4.2-1: Existing VTA Light Rail System



Source VTA 2010

Figure 4.2-2: Existing VTA Bus Service

Caltrain commuter rail service is provided seven days a week between San Jose and San Francisco, offering five- to 30-minute headways during commute hours. During weekday commuting hours, Caltrain also serves the south county, including Gilroy, San Martin, and Morgan Hill. Caltrain provides shuttle service to businesses in the Silicon Valley and on the San Francisco Peninsula.

ACE provides commuter rail service between the Central Valley and Santa Clara County, serving the Great America ACE/Amtrak Station, Santa Clara Caltrain/ACE Station, and Diridon Caltrain Station. Three trains operate during weekday commute hours, with shuttle service from the stations to employment centers provided by various public agencies.

Capitol Corridor trains provide rail service seven days a week between Sacramento and San Jose, with seven daily round trips serving the Great America ACE/Amtrak Station and Diridon Caltrain Station.

AC Transit operates bus service in the eastern portions of Alameda and Contra Costa counties and transbay commuter bus service to downtown San Francisco. Various local routes provide weekday and weekend service in Fremont, Newark, and to a lesser extent, Union City. Line 217 provides bus service between Fremont and Milpitas from the Fremont BART Station to the Great Mall Transit Center in Milpitas, via Mission and Warm Springs boulevards on 30-minute headway.

Rail and Bus Patronage

Table 4.2-2 summarizes the weekday transit boardings of these agencies, which total over 787,000 per day.

4.2.4.2 Project Impacts and Mitigation Measures

2030 No Project Conditions

The 2030 No Project conditions consists of the existing transit and roadway networks and planned and programmed improvements in the SVRTC that are identified in the Bay Area's Regional Transportation Plan (RTP)—*Mobility for the Next Generation – Transportation 2030 Plan for the San Francisco Bay Area* (Transportation 2030 Plan), adopted by MTC in February 2005, and in the *Valley Transportation Plan 2030* (VTP, 2030), adopted by VTA in February 2005. Existing transit services include bus services, light rail transit (LRT), shuttle services, paratransit service, and intercounty services. A complete description of existing VTA services is included in VTA's *Short Range Transit Plan FY 2006-2015* (VTA, 2006).

New transit services and capital projects planned and programmed for the SVRTC through 2030 are provided in **Table 4.2-3**, and include BRT projects, an LRT extension, rail service upgrades, and the Airport People Mover to the San Jose International Airport. Also included in the 2030 No Project conditions is the approved extension of BART to Warm Springs Station in Fremont.

Table 4.2-2: 2009 Average Weekday Transit Boardings by Operator in the SVRTC

Operator/Service	Boardings[a]
BART	356,712
ACE Commuter Rail ACE Trains	3,164
ACE Shuttles	935
Subtotal, ACE	4,099
Capitol Corridor Intercity Rail	4,383
VTA LRT System Santa Teresa/Alum Rock LRT (includes Almaden LRT1 Shuttle)	20,927
Winchester/Downtown Mountain View LRT	13,378
Subtotal, VTA LRT	34,305
VTA Bus System VTA Express	3,740
Local Bus	108,080
Subtotal, VTA Bus System	111,820
VTA System Total	146,125
Caltrain Commuter Rail	40,060
AC Transit	236,000
TOTAL	787,379

[a] Total boardings on average weekday. Boardings by operator are systemwide and not necessarily made in SVRTC. Whereas BART and other rail services typically exclude internal transfers in boarding counts, they thereby reflect linked trips. Bus services include all vehicle boardings, including transfers, and thereby reflect unlinked trips.

Source: VTA, 2010.

Total Ridership

Travel demand forecasts, based on the 2030 transit network assumptions described above, were developed for the 2030 No Project conditions and the Phase 1 conditions. Forecasts include estimates of transit ridership in the SVRTC and the broader area covered by the travel demand model. **Tables 4.2-4** and **4.2-5** summarize modeled area transit projections for 2030 under the No Project condition. Transit trips for all transit operators in the travel forecast area are projected to grow approximately 70 percent between 2000 and 2030, increasing from 1.25 million in 2000 to 2.12 million in 2030. Transit trips between Alameda and Santa Clara counties are expected to increase by more than 236

percent over the same period, from about 7,000 per day to 23,000 per day. Systemwide BART trips are projected to increase 82 percent to over 650,000 transit trips in 2030.

Table 4.2-3: 2030 No Project Conditions Transit Improvements in SVRTC

Transit Projects	Notes
1. Downtown/East Valley: Santa Clara/Alum Rock corridor and Capitol Expressway LRT extension[a]	15-minute intervals, terminate at Alum Rock Station
2. Bus Rapid Transit (BRT) – New Line 522 (previously Line 22/Line 300)	Limited stop (Line 300) at 15-minute intervals, 15% travel time reduction on El Camino Real from downtown San Jose to Palo Alto (Line 22)
3. BRT – Monterey Highway – Line 66/Line 68	Downtown San Jose to Santa Teresa LRT, 15-minute headway for limited stops, 10% travel time reduction on Lines 66 and 68 on Monterey Highway to San Carlos
4. BRT – Stevens Creek Boulevard – Line 23	Downtown San Jose to Cupertino, 15-minute headway for limited stops, 10% travel time reduction
6. Caltrain commuter rail service upgrades	Increase service to 120 trains/day San Jose to San Francisco, 30-minute peak/60-minute off peak serving Gilroy, electrify system, Coyote Valley Station, double-track segments between San Jose and Gilroy, extension to new San Francisco Transbay Terminal
7. Caltrain Electrification Program	Caltrain plans to complete electrification between 2012 and 2014. Electrifying Caltrain will result in a faster, more efficient and more environmentally friendly rail system, than current diesel powered trains. This project would not change the level of Caltrain operations or fleet requirements.
8. ACE commuter rail service upgrade	16 peak direction trains weekday (8 in AM, 8 in PM) service
9. Capitols commuter and intercity rail	11 round trips/day, Sacramento to San Jose trains, new Coliseum and Union City intermodal stations
10.Mineta San Jose International Airport Airport People Mover to BART, Caltrain, and LRT	3-minute intervals all day, connection to LRT in 2015, BART and Caltrain by 2030
11. Future rail corridors to be determined by Major Investment Studies	n/a
12. California High Speed Rail	n/a

[a] VTA is currently evaluating both light rail and rapid transit bus alternatives for the Santa Clara/Alum Rock corridor.

Source: VTA, 2010.

Table 4.2-4: Total Weekday Boardings – 2030 No Project Conditions

Performance Measure	2000	2030	% Growth
Weekday Boardings: All Transit Operators in Area [a]	1,246,782	2,116,784	70%
Transit Trips Between Alameda and Santa Clara Counties [b]	6,799 [c]	22,851	236%

[a] Includes total daily transit boardings for all transit operators within the modeled area, including transit users coming over the Altamont Pass on either trains or express buses.

[b] Estimated from 2000 and No Project model forecast by Hexagon, February 2008.

[c] Estimated from model calibration data by VTA, 2005.

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008.

Table 4.2-5: Average Weekday Boardings by Transit Operator for 2030 No Project Conditions

Operator/Service	2009	2030 No Project Conditions	% Growth
BART	356,712	650,256	82
ACE	4,099	11,164	172
Caltrain	40,060	66,578	66
Capitol Corridor	4,383	11,282	157
VTA Express Bus	3,740	15,908	325
VTA Local Bus	108,080	278,321	158
VTA LRT	34,305	139,586	307
Dumbarton Rail Corridor	-	8,632	-

Source: VTA, 2010.

Phase 1

Phase 1 would consist of the design, construction, and future operation of a 9.9 mile extension of the BART system. The project would begin south of the approved BART Warm Springs Station in Fremont (to be implemented by 2014) and proceed on the former UPRR right-of-way (ROW) through Milpitas to near Las Plumas Avenue in San Jose (**Figure 3-1**). Two stations are proposed, one in Milpitas and one in San Jose.

A total of seven new express bus routes are proposed to support Phase 1. In addition, a total of four park-and-ride lots would be provided to accommodate parking associated with the express buses. The express buses and related parking facilities are described in **Chapter 3, Project Description**, of this SEIR-2.

Total Ridership

Total ridership includes trips made all or in part on Phase 1. This includes trips by riders originating in the SVRTC and riding BART to locations outside Santa Clara County (e.g., internal boardings at the Phase 1 stations and external

alightings); riders originating their trips outside Santa Clara County and destined to BART stations within the SVRTC (external boardings and internal alightings); and riders on Phase 1 whose trips on BART begin and end within Santa Clara County (internal boardings and alightings). The first two types of trips represent intercounty trips; the third type represents intracounty trips.

On the average weekday in 2030, approximately 46,500 riders would use Phase 1. As shown in **Table 4.2-6A**, approximately 81 percent would have one end of their trip located outside Santa Clara County. About 19 percent of riders would travel within Santa Clara County on Phase 1. Average weekday ridership by station is shown in **Table 4.2-6B**.

Table 4.2-6A: Average Weekday Ridership in 2030

Location	Number of Riders	Percent
Between Other Counties and Santa Clara County	37,708	81%
Within Santa Clara County	8,750	19%
Total Average Weekday Ridership on Phase 1	46,458	100%

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008.

Table 4.2-6B: Average Weekday Ridership by Station in 2030

Station Name	Number of Riders
Milpitas	20,659
Berryessa	25,798
Total Average Weekday Ridership on Phase 1	46,457

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008.

Boardings and Alightings

Phase 1 would include two BART stations at the following locations. **Chapter 3, Project Description**, of this SEIR-2 describes the stations in more detail.

- Milpitas – platform below-ground (with BART tracks in a retained cut) and concourse at ground level between Montague Expressway and Capitol Avenue in the former UPRR ROW

- Berryessa – platform above-ground with BART tracks aerial and concourse at ground level between Berryessa Road and Mabury Road in the former UPRR ROW.

Table 4.2-7 shows the number of projected average weekday boardings and alightings at each planned station for Phase 1, including home-based work (i.e., to or from work) and non-work trips. Boardings and alightings demonstrate the level of passenger traffic that will pass through each station on an average weekday. Therefore, one rider could result in both a boarding and alighting at the Phase 1 stations. The highest-volume station for Phase 1, Berryessa

Station, has more than 30,000 average weekday projected boardings and alightings. The Milpitas Station would have over 25,000 projected boardings and alightings. This station offers the best transfer opportunities to light rail (with the adjacent Montague LRT station) and would be well served by VTA buses.

Table 4.2-7: Average Weekday Boardings and Alightings on Phase 1 in 2030

Phase 1 Station	Home-Based Work	Non-Work	Total
Milpitas	17,421	7,613	25,034
Berryessa	21,033	9,140	30,173

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008.

Mode of Access at Stations

Table 4.2-8 presents projected mode of access at the Phase 1 stations for the average weekday. Transit modes would account for 35 percent of the access trips, while 5 percent of access trips would be made by pedestrians and bicyclists. The high use of non-auto modes, approximately 45 percent, is due to the convenience of transit connections, including VTA local bus service, VTA LRT, and VTA BART express and feeder buses (referred to as SVRT express/feeder as they are new services implemented in conjunction with Phase 1).

Table 4.2-8: Mode of Access at Proposed Stations

Stations	Walk/ Bike	Bus	LRT	Auto KNR[a]	Auto PNR[b]	Auto Subtotal	Total
Milpitas	9%	18%	16%	9%	47%	57%	100%
Berryessa	3%	44%	–	9%	44%	54%	100%
Total	5%	35%	5%	9%	45%	55%	100%

[a] Kiss-and-Ride.

[b] Park-and-Ride.

Source: Hexagon Transportation Consultants, Inc., February 2008.

Drive access is projected to make up 55 percent of all Phase 1 related access trips. At each of the stations, park-and-ride lots and kiss-and-ride drop-off areas would be provided for passengers accessing the stations by auto. **Chapter 5, BART Core System Parking**, of this SEIR-2 addresses parking demands at existing BART stations resulting from Phase 1.

BART System Boardings

The projected change in BART 2030 total system ridership is shown in **Table 4.2-9**. Phase 1 is projected to increase BART systemwide ridership by approximately 35,000 average weekday boardings (5.4 percent) compared to the 2030 No Project conditions.

Table 4.2-9: Total Average Weekday BART System Boardings in 2030

Performance Measure	2030 No Project Conditions	Phase 1
Total Average Weekday Boardings[a]	650,256	685,486
Change from 2030 No Project Conditions[b]	NA[c]	35,230

[a] Boardings on BART reflect linked trips--or individual riders.

[b] Change represents new BART system boardings

[c] NA = Not applicable.

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008

Change in Total Ridership on Other Transit Modes

BART system boardings would increase under Phase 1. Some new BART riders, however, would be attracted from other transit modes and not be entirely new to transit. The extension of BART would replace certain bus services; BART would provide faster, better access to certain locations than other existing commuter rail and express bus services, thereby encouraging a shift in modes.

Table 4.2-10 was developed by examining the projected change in transit ridership (i.e., weekday boardings) for the set of transit services most relevant to the travel demand in the SVRTC. The transit services used for this comparison, besides BART, include ACE, Caltrain, Capitol Corridor, Dumbarton Corridor, VTA, LRT and express and local buses, and BART express/feeder bus services. Results are compared to 2030 No Project ridership as well as 2009 “existing” ridership.

Phase 1 is projected to reduce the rate of growth on rail services operated by other agencies in the area due to diversion of transit trips to BART, when compared to No Project conditions. Growth in total weekday boardings on ACE, Caltrain, Capitol Corridor and Dumbarton Corridor rail is forecast to increase 101 percent or approximately 49,100 boardings between 2009 and 2030 under the 2030 No Project conditions. Under Phase 1, growth of these services during this period would be approximately 38,800 boardings, an increase of 80 percent. Thus, although the rate of growth in ridership would be less, the absolute number of transit boardings on these services would still be substantially higher under Phase 1 relative to current levels.

Table 4.2-10: Average Weekday Boardings by Transit Operator[a]

Operator/ Service	2009 Existing	2030 No Project Conditions	Phase 1	% Change (Phase 1-No Project)	% Change (Phase 1 – Existing)
BART	356,712	650,256	685,486	5	92
ACE	4,099	11,164	8,624	-23	110
Caltrain	40,060	66,578	62,274	-7	55
Capitol Corridor	4,383	11,282	8,245	-27	88
VTA Express Bus	3,740	15,908	3,270	-79	-13
VTA Local Bus	108,080	278,321	305,571	10	183
VTA LRT	34,305	139,586	135,497	-3	295
VTA Project Express/ Feeder	NA	NA	17,224	NA	NA
Dumbarton Rail Corridor	NA	8,632	8,194	-5	NA
Total[b]	551,379	1,181,727	1,234,385	5	124

[a] Boardings by operator are system wide and not necessarily made in SVRTC. Whereas BART and other rail services typically exclude internal transfers in boarding counts, they thereby reflect linked trips. Bus services include all vehicle boardings, including transfers, and thereby reflect unlinked trips.

[b] AC Transit boardings are not included in total and in subsequent tables.

Source: VTA, March 2010.

VTA LRT and bus services would experience a redistribution in boardings, with LRT weekday demand slightly lower under Phase 1 when compared to the 2030 No Project conditions and total express and local bus demand, including BART express/feeder, substantially higher. VTA non-project related express bus service would experience the largest ridership diversion, and decrease after implementation of Phase 1 because these service corridors run parallel. However, new Phase 1 BART express/feeder services would generate over 17,000 bus trips and, along with growth in VTA local bus service, would more than offset the loss in regular express bus ridership.

Intercounty Movements: Santa Clara County-Alameda County Screenline Volumes

An important movement in the SVRTC is intercounty travel, primarily between Santa Clara and Alameda counties. Santa Clara County, being job-rich, tends to draw commuters from adjacent counties, with the highest volumes coming from Alameda County. Phase 1 would make intercounty commuting on transit more attractive.

New Linked Transit Trips ("New Riders")

Table 4.2-11 summarizes estimated transit ridership in 2030 on transit services offering connections between Santa Clara County and southern Alameda County under both the 2030 No Project conditions and Phase 1. Transit services used for this comparison include "Valley" express buses destined to/from Santa Clara County, VTA express buses, VTA light rail, ACE, and BART. Approximately 25,000 riders would cross the county line on intercity transit services on the typical weekday in 2030 in order to access work, home or other locations in Santa Clara County under the 2030 No Project conditions. The number would increase to over 53,000 following implementation of BART service provided by Phase 1. This represents over a 100 percent increase in intercounty trips made on transit. Many of these trips represent auto trips on congested I-880 and I-680 that are diverted to BART.

Table 4.2-11: Total Weekday Transit Trips Crossing Santa Clara County-Alameda County Line in 2030

Performance Measure	2030 No Project Conditions	Phase 1
Weekday Transit Trips Across Screenline	24,727	53,383
Change from 2030 No Project Conditions	NA	28,656

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008.

Travel Time Savings

Daily Travel Time. Travel time savings to commuters in the SVRTC reflect the effectiveness of the transportation services provided by Phase 1 relative to the 2030 No Project conditions. Transit travel time savings are achieved through minimizing waiting, riding, and transfer time for transit trips. Roadway travel time savings are achieved through reductions in traffic congestion. Highway/roadway travel time savings are negative (i.e., travel times increase) as traffic congestion gets worse. The net change in travel time in 2030, in terms of the number of hours saved for all users of the transportation system (transit and roadway) when comparing Phase 1 to the 2030 No Project conditions, is presented in **Table 4.2-12**. Phase 1 would generate travel time savings of almost 44,000 hours per day in comparison to 2030 No Project conditions.

Table 4.2-12: Daily Travel Time Savings in 2030

Performance Measure	2030 No Project Conditions	Phase 1	Phase 1 Travel Time Savings
Daily Travel Time (Hours)	8,143,534	8,099,926	43,608

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008.

Travel Time between Selected Origin-Destination Pairs. One of the key objectives for the SVRTC is to reduce transit travel times. Because travel time is a key factor in mode choice decisions (e.g., using an automobile versus public transit), traffic congestion and air pollution would be reduced if more people chose to use transit rather than their private automobile. More trips on transit can also lead to improved roadway travel because of reduced congestion.

Table 4.2-13 presents a comparison of total door-to-door auto, shared-ride and transit travel times between nine selected origins and either of three selected destinations (nine origin-destination pairs) in the modeled area. The trips to downtown San Jose were from locations as close as Berryessa to as far away as Pleasanton. Trips to Oakland and San Francisco were from the Alum Rock area of east San Jose and Santa Clara near the existing Caltrain Station. Trips to the south Fremont area were from Santa Clara near the existing Caltrain Station.

The 2030 No Project conditions incorporate the transportation and transit improvements planned or programmed in the RTP and VTP 2030, excluding the extension of BART service. These improvements would result in drive-alone travel times ranging from 14 to 127 minutes depending on trip origin and destination. The longest auto trips are between Alum Rock and downtown San Francisco. Times for shared rides range between 14 and 98 minutes, the longest also between Alum Rock and San Francisco. No Project transit travel times range between 36 and 125 minutes for the same origins-destinations, with the longest transit trip between Santa Clara and downtown Oakland.

Phase 1 provides a high-speed, high-quality transit linkage between San Francisco, Oakland, Fremont and San Jose with measurable travel time savings when compared to existing transit services. This linkage includes Phase 1 to Berryessa and VTA feeder bus service from the Berryessa station to downtown San Jose and Santa Clara. The average transit travel time savings for all 12 origins-destinations was projected to be about 17 minutes, with a maximum savings of 38 minutes from Alum Rock to downtown Oakland, followed by 37 minutes from south Fremont to downtown San Jose. Transit travel times into downtown San Jose from various points in northeastern Santa Clara County do not show material improvement due to the BART-to-feeder bus transfer required for the downtown San Jose destination. Transit connections between Pleasanton in east Alameda County and downtown San Jose, and Santa Clara and San Francisco also do not show a material improvement in travel times; these origin-destination pairs are projected to be well served by express buses and Caltrain, respectively, under 2030 No Project conditions.

Table 4.2-13: 2030 AM Peak Door-to-Door Travel Time (Minutes) for Selected Origin-Destination Pairs: 2030 No Project Conditions vs. Phase 1 Conditions

From	To	Drive-Alone Auto No Project	Drive-Alone Auto Phase 1	Shared-Ride Auto No Project	Shared-Ride Auto Phase 1	Transit No Project	Transit Phase 1
North Milpitas Boulevard	Downtown San Jose	20	20	18	18	52	33
Hostetter-Berryessa	Downtown San Jose	14	13	14	13	48	39
East San Jose	Downtown San Jose	20	20	18	19	36	36
South Fremont	Downtown San Jose	33	31	23	23	73	36
Newark	Downtown San Jose	41	39	29	29	58	50
Union City	Downtown San Jose	49	48	36	35	62	48
Pleasanton	Downtown San Jose	81	80	65	64	85	83
Alum Rock	Downtown Oakland	80	79	62	61	118	80
Alum Rock	Downtown San Francisco	127	125	98	97	113	88
Santa Clara	Downtown San Francisco	118	116	94	93	102	102
Santa Clara	South Fremont	33	33	25	25	115	88
Santa Clara	Downtown Oakland	79	78	62	61	125	97

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008 and August 2009.

Auto travel times show negligible improvement for many origin-destination pairs. Under the project, the average auto travel time savings for both drive-alone and shared-ride modes for all origin-destination pairs would remain virtually unchanged compared to 2030 No Project conditions. This is due in part to the projected increase in freeway traffic congestion and resulting poor level of

service that would occur by 2030 under both the No Project conditions and Phase 1.[1] See **subsection 4.2.7** of this SEIR-2 for a summary of roadway conditions forecasted for 2030.

4.2.4.3 Conclusion

Overall transit ridership in the SVRTC would increase under Phase 1. Some of this growth would be diverted ridership from other transit modes, reducing their growth in 2030.

Increase in Transit Trips in SVRTC

Total transit system ridership, meaning all modes and service providers in the corridor, would increase by 52,658 riders in the SVRTC on the average weekday in 2030 compared to 2030 No Project conditions.

BART System Boardings

Phase 1 is expected to serve over 46,000 average daily riders in Santa Clara County in 2030. This number includes new trips on BART as a result of its service to and within Santa Clara County as well as trips diverted to BART from other transit service providers.

Increase in New Transit Riders.

Phase 1 would generate 27,135 new linked transit trips, or new transit riders, compared to No Project conditions. New linked trips are diverted from non-transit modes (primarily auto) and represent new riders on BART.

Non-VTA Transit Ridership

Phase 1 would reduce the growth in non-VTA transit (ACE, Caltrain, Capitol Corridor, future Dumbarton Rail) ridership in the SVRTC by approximately 11 percent over No Project conditions, with these riders diverting to the faster, more convenient BART service. However, non-VTA transit ridership would still grow by approximately 114 percent over 2007 conditions.

[1] Roadway congestion would in theory lessen if Phase 1 diverted a substantial volume of auto trips to transit. However, on SVRTC freeways, the shifted volumes tend to be immediately replaced by autos that had diverted to other roadways because peak hour freeway demand exceeds available capacities—under both the No Project and Phase 1. The roadway network tends to reach equilibrium under both alternatives, which results in freeway operations almost always at capacity.

VTA Transit Ridership

Phase 1 would result in a redistribution of VTA transit ridership. VTA local bus trips would be about 10 percent higher than 2030 No Project conditions and VTA LRT ridership growth would be 3 percent less than forecast under the No Project conditions. Overall VTA transit ridership would grow by 6 percent over the 2030 No Project conditions.

The diversion of riders from other transit services would not be considered significant because total system boardings increase.

4.2.5 PEDESTRIANS

4.2.5.1 Existing Conditions

Pedestrian facilities in the SVRTC station areas consist primarily of sidewalks along roadways, including arterials and local collector streets, pedestrian push buttons, and signal heads at intersections. Marked crossings are provided at signalized intersections. A list of existing regional multi-use trails is included in **subsection 4.2.6** of this SEIR-2.

At Milpitas and Berryessa station locations, pedestrian facilities are less dense and lightly used due to the low density development and wider spacing of roadways. These environments generally would be viewed as not pedestrian friendly.

4.2.5.2 Project Impacts and Mitigation Measures

2030 No Project Conditions

The 2030 No Project transit and highway projects would be designed to accommodate pedestrian access consistent with American's with Disabilities Act (ADA) requirements. These types of facilities do not typically result in significant impacts, but subsequent environmental clearances would be required.

Phase 1

Milpitas and Berryessa Stations

Development of the Milpitas and Berryessa stations for BART service to Santa Clara County under Phase 1 would not cause substantial overcrowding on public sidewalks, create hazardous conditions for pedestrians or eliminate pedestrian access to adjoining areas. The projected volume of pedestrians can be estimated for Phase 1 stations by assuming that pedestrians account for approximately 88 percent and 82 percent of the bike/walk share for the Milpitas and Berryessa Stations, respectively (See the subsection for boardings and

alightings by station, and mode share projections). Pedestrian mode share assumptions for Phase 1 are based on an analysis of existing comparable BART station mode of access and non-motorized mode of access projections.

Sidewalks leading to and from the station entrances would be developed and/or improved. A pedestrian over-crossing is proposed to connect the Capitol LRT Station and the Milpitas Station. A second pedestrian over-crossing, to be provided by others, is proposed to span Montague Expressway providing a connection from future residential development to the north with the station area. Pedestrian walkways through station areas would be well defined, signed and lighted, and include designated protected crosswalks (through signing/striping and/or signals if warranted to ensure adequate safety) where pedestrians would be required to cross traffic lanes. In addition, Phase 1 stations and related pedestrian facilities would be constructed consistent with ADA requirements.

Areas surrounding these stations are planned for redevelopment, including transit oriented housing and commercial development. Although not a part of Phase 1, it is anticipated that such development would improve pedestrian facilities within the limits of the planned improvements and include pathways to and from nearby BART stations. VTA would coordinate station planning with area redevelopment proposals to ensure pedestrian circulation is convenient, safe, and secure. Therefore, no significant impacts to pedestrians would occur for Phase 1 development and no mitigation is required.

4.2.5.3 Conclusion

Phase 1 would not result in significant impacts to pedestrian facilities in the SVRTC. Improvements to these facilities would be made within the station areas to improve access by non-motorized modes. Sidewalks would be part of new roadways providing internal circulation at stations, and they would connect to sidewalks on nearby roadways. VTA will continue to work with city partners to encourage the development of pedestrian facilities that connect to the BART stations from surrounding areas. Overall, the pedestrian environment should be enhanced as a result of proposed improvements under Phase 1. Therefore, no significant impacts to pedestrians would occur for Phase 1 development and no mitigation is required.

4.2.6 BICYCLES

Bicycle facilities are implemented by the City of Fremont, City of Milpitas, City of San Jose, County of Santa Clara, and VTA within the SVRTC. Bicycle facilities identified in this section include Class I and Class II. Caltrans designates Class I bicycle facilities (referred to as bike paths), as those which are separated from vehicle traffic and shared with pedestrians. Class II bicycle facilities (referred to as bike lanes) are designated as striped bike lanes on roadways. Facilities that are located within approximately two miles of a BART stations are described below under **subsection4.2.6.1**.

A Cross-County Bicycle Corridors network is identified in VTA's *Santa Clara Countywide Bicycle Plan.* The purpose of the Cross–County Bicycle Corridors network is to provide continuous connections between Santa Clara County jurisdictions and to adjacent counties, and to serve the major regional trip-attractors in the County. Bike paths of regional significance are identified in the plan as Regional Trails. City bicycle master plans identify planned bicycle facilities. Local cities' planned bicycle facilities and VTA's Cross-County Bicycle Corridors and Regional Trails located in the vicinity of the station areas are discussed under 2030 No Project conditions.

Bicycle parking demand has been calculated for Phase 1 using ridership projections for each station, and applying mode share assumptions for riders accessing the station by bicycle. Mode share assumptions for Phase 1 are based on an analysis of existing BART station mode of access and non-motorized mode of access projections.

Bicycle facilities such as bike lanes, bike paths, and bike parking, are planned as part of station campuses are described below. Bicycle facilities for Phase 1 would be planned, designed, and constructed consistent with BART Facilities Standards.

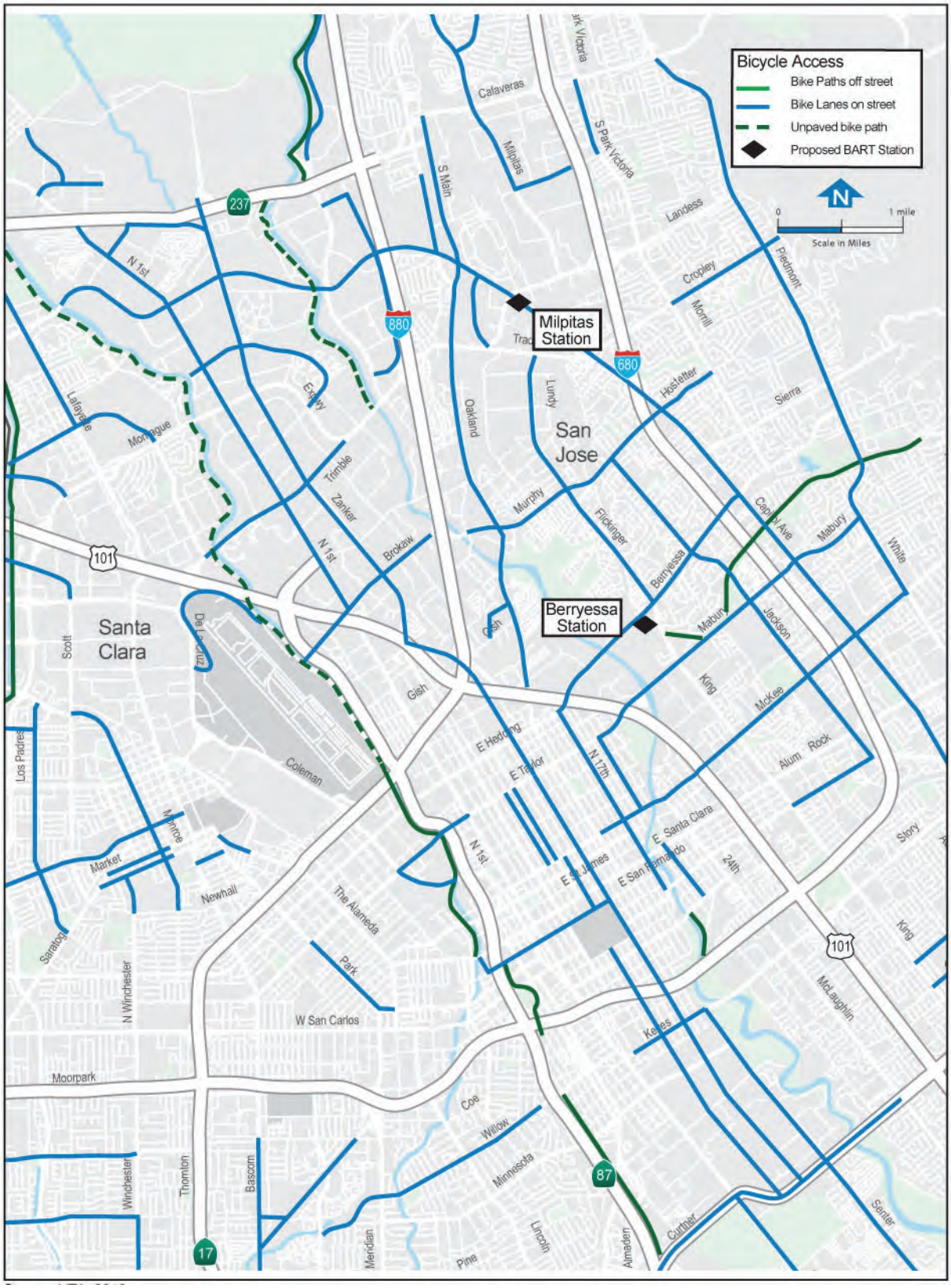
4.2.6.1 Existing Conditions

There are bicycle facilities located in the vicinity of each of the station areas. Existing bicycle facilities are based on the *Santa Clara Valley Bikeways Map* (VTA, 2008). Bike lanes and bike paths located within approximately two miles of the stations are described below and illustrated in **Figure 4.2-3.**

Milpitas Station Area

Bike lanes:

- Yosemite Road; east/west between Milpitas Boulevard and I-680
- Great Mall Parkway; north/south between I-880 and Montague Expressway
- Capital Avenue; north/south between Montague Expressway and Capital Expressway
- Abel Street; north/south between Junipero Drive and Great Mall Parkway
- McCandless Drive; north/south between Great Mall Parkway and Montague Expressway
- Oakland Drive; north/south between Great Mall Parkway and US 101



Source VTA 2010

Figure 4.2-3: Existing Bicycle Access

- Milpitas Boulevard; north/south between Yosemite Drive and the City of Fremont
- Lundy Avenue; north/south between Trade Zone Boulevard and Berryessa Road

County Expressways:

- Montague Expressway extends from I-680 in the vicinity of the station area south to the City of Campbell

Berryessa Station Area

Bike Lanes:

- Berryessa Road; east/west between 17th Street (near US 101) and Capitol Avenue
- Murphy Avenue; east/west between Ridder Park Drive (near I-880) and Capitol Avenue
- Old Bayshore Highway; north/south between Brokaw Road and Taylor Street
- Old Oakland Road; north/south between US 101 and The Great Mall
- Lundy Avenue; north/south between Berryessa Road and Trade Zone Boulevard
- Flickinger Road; north/south between Murphy Road and Commodore Drive (near Penitencia Creek Trail)
- Capitol Avenue; north/south between Capital Expressway and Montague Expressway
- Mabury Road; east/west between North 21st Street and White Road
- Jackson Avenue; north/south between Penitencia Creek Trail and Montpelier Drive (near Mckee Road)
- North 21st Street; north/south between Mabury Road and East Julian Street
- North 17th Street; north/south between Berryessa Road and East San Antonio Street

Bike Paths:

- Penitencia Creek Trail; east/west between King Road and Mabury Road, continuing between Mabury Road and Toyon Avenue

4.2.6.2 Project Impacts and Mitigation Measures

2030 No Project Conditions

The 2030 No Project conditions include any planned bicycle facility that could be implemented if funding were identified. City planned bicycle access improvements as identified in local bicycle master plans are illustrated in **Figure 4.2-4**.

The following VTA Cross-County Bicycle Corridors and Regional Trails are located within the vicinity of the station areas. The routes are for planning purposes and have no dedicated funding source for improvements. The cities of Fremont, Milpitas, and San Jose, and the County of Santa Clara and VTA, could implement bicycle facility improvements near Phase 1 stations. Should new facilities be constructed or modifications be required for existing bike facilities, separate environmental documentation would be prepared by the lead agency.

Milpitas Station Area

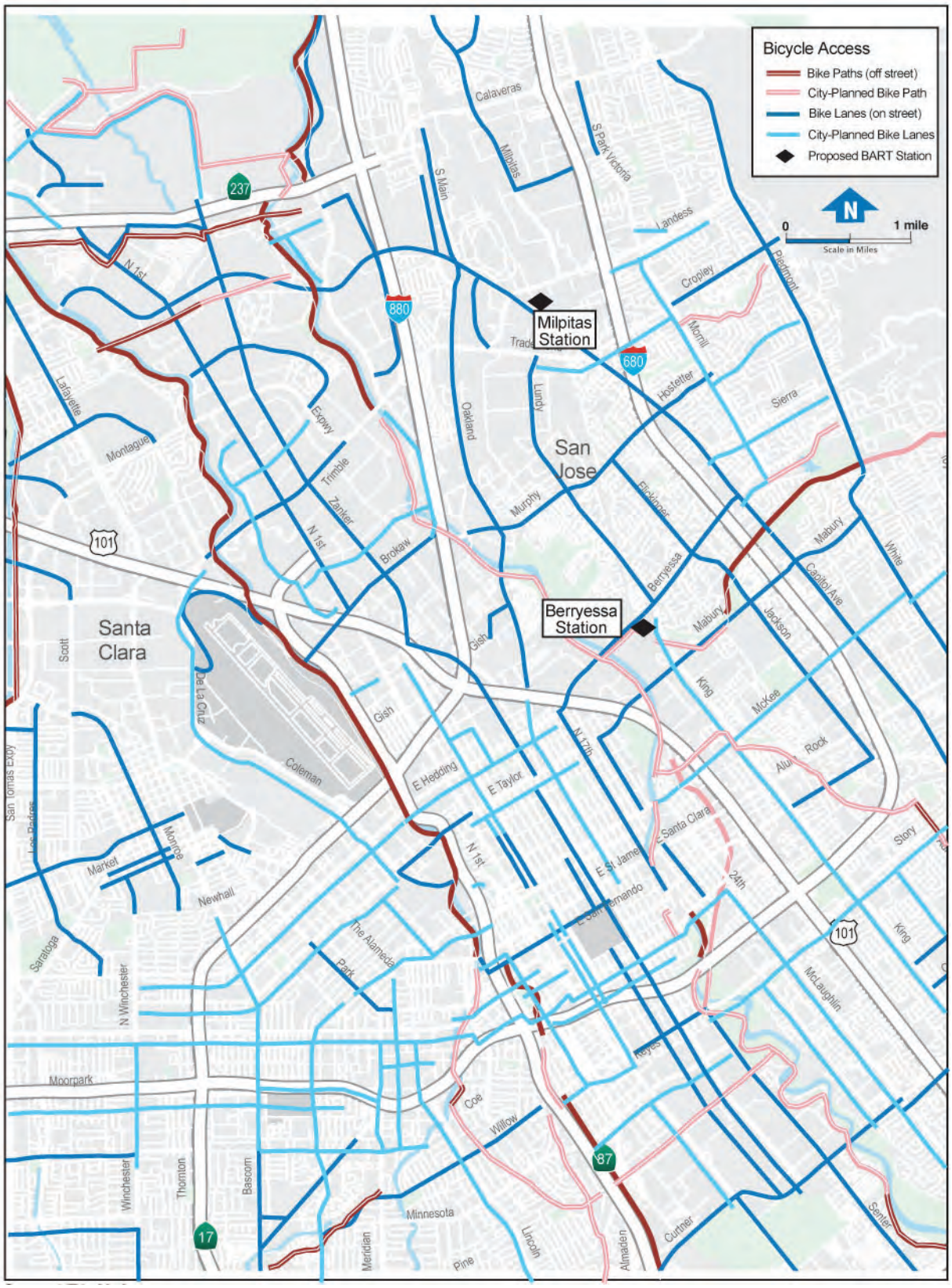
Cross-County Bicycle Corridors:

- *Tasman/Alum Rock Light Rail Corridor*; Mountain View to East San Jose extends along the Great Mall Parkway/Capitol Avenue
- *I-880/I-680 Corridor*; Alameda County Line to Los Gatos, extends along Oakland Drive
- *I-680 Corridor to Silver Creek*; extends from Milpitas to South San Jose
- Regional Trails:
- *Coyote Creek Trail;* Milpitas to Morgan Hill
- *SR 237 Bike Path*; North Santa Clara to Ed R. Levin County Park

Berryessa Station Area

Cross-County Bicycle Corridors:

- *Tasman/Alum Rock Light Rail Corridor;* extends from Mountain View to East San Jose
- *I-280 Corridor;* extends from Los Altos to Northeast San Jose



Source VTA 2010

Figure 4.2-4: Existing and Planned Bicycle Improvements

- *Homestead/Hedding/Brokaw Road Corridor; extends* along Hedding Street and Mabury Road to the foothills of East San Jose

- *North US 101/Caltrain;* extends along the extent of Hostetter Road

- *SR 237/Tasman and Capitol Rail*; extends along the extent of Capitol Avenue

- *I-880/I-680 Corridor*; Alameda County Line to Los Gatos, extends along Oakland Drive

- *I-680 Corridor to Silver Creek;* extends from Milpitas to South San Jose

Regional Trails:

- *Five Wounds/Brookwood Terrace Trail;* passes through the proposed site for the Alum Rock Station. The trail extends from Lower Silver Creek along the former UPRR line to the Coyote Creek Trail and Kelley Park.

- *Coyote Creek Trail;* Milpitas to Morgan Hill

Phase 1

Phase 1 would be constructed in a dedicated right-of-way with at-grade, retained cut, and aerial configurations. There are currently no bike paths located within the proposed alignment of Phase 1. Phase 1 would not eliminate any existing bicycle facilities within the alignment, or within any of the station areas. No hazardous conditions would be created for bicyclists, and intersecting roadways would be grade-separated, improving the bicycle network. All stations would be designed and operated to accommodate bicyclists.

Bicycle Access

Phase 1 would not significantly impact existing bike lanes within the cities of Fremont, Milpitas, and San Jose in the vicinity of the rail alignment and proposed stations. Phase 1 would improve bicycle connectivity through station areas. VTA would construct bike lanes along existing and new streets that are a part of Phase 1 within the station area at both the Milpitas and Berryessa stations. Bicycles would be permitted within station elevators and walked up/down any stairs equipped with bicycle stair channels to access station platforms.

At the Milpitas Station, new bike lanes would be provided on both sides of the proposed extension of South Milpitas Boulevard, which would connect Montague Expressway to the north, through the station area, to existing bike lanes on Capitol Avenue to the southwest. At the Berryessa Station, new bike lanes would be provided on both sides of the proposed new roadway through the site. The road would run north to south connecting existing bike lanes on Berryessa

Road to the north and Mabury Road to the south. Refer to **Appendix D**, Station Designs, for the Phase 1 station conceptual site plans for an illustration of the station areas.

Bicycle Parking

BART guidelines yield a projection for future demand of approximately 165 bicycle parking spaces for Phase 1 during the opening year (see **Table 4.2-14**).

Table 4.2-14: Projected Bicycle Parking Demand for Phase 1

Planned Station Locations	Opening Year Parking Demand (spaces)	2030 Parking Demand (spaces)
Milpitas	85	115
Berryessa	80	110
Total	165	225

Source: VTA, 2008.

BART Facilities Standards design criteria require bicycle racks be grouped for a minimum of 20 bicycles, however do not specify recommended quantities of long-term bicycle lockers and short-term bicycle racks for each station. The ratio of bicycle parking type (percent of bike racks and bike lockers) at existing BART stations varies. Existing BART bike racks are typically 35 percent used and approximately 89 percent of bike lockers are used. Demand for long-term, secured bike lockers at existing BART stations generally exceeds supply. The number of bike lockers provided at the proposed stations would be greater than the number of bike racks, if space permits. The provision of long-term secured bicycle parking would be provided, in part, by bike racks within the paid area of the stations.

The type and location of bicycle parking provided at proposed stations would depend on available space within the station area, and be determined in final design. Phase 1 bicycle parking supply would accommodate opening year demand. Usage would be monitored and the amount of bicycle parking adjusted based on actual demand observed at the stations.

4.2.6.3 Conclusion

Phase 1 would not result in significant impacts to bicycle facilities in the SVRTC. Improvements to these facilities would be made within the station areas to improve access by passengers arriving by bicycle. New bike lanes would be provided through station campuses and connect to nearby facilities. Bicycle parking is planned at the stations. Overall, the bicycle environment would be enhanced as a result of proposed improvements under Phase 1. Therefore, no significant impacts to bicycle facilities would occur for Phase 1 development and no mitigation is required.

4.2.7 VEHICULAR TRAFFIC

4.2.7.1 Background

Vehicular traffic volumes were obtained from two sources: (1) existing peak-hour manual turning movement traffic counts on the existing roadway network and (2) future (year 2030) traffic projections using a traffic model on the future roadway network. Year 2030 traffic forecasts were developed using an enhanced version of the Metropolitan Transportation Commission (MTC) regional model (the VTA 2030 SVRTC traffic model). The near-term (existing) traffic information is presented merely to identify possible constraints to development near the proposed BART Station sites. Year 2030 traffic conditions were analyzed in order to identify significant traffic impacts attributable to Phase 1 on the future roadway network and transportation facilities. Transportation modeling approaches, assumptions, baseline projects, and projections for conditions under the 2030 No Project and Phase 1 are described in the two traffic reports addressing the station areas. The two traffic reports listed below form the basis for much of the information in this section.

- Milpitas BART Station Transportation Impact Analysis, Hexagon Transportation Consultants, Inc., December 23, 2008.

- San Jose BART Stations Transportation Impact Analysis, Hexagon Transportation Consultants, Inc., December 23, 2008.

Level of Service

The VTA, which is the Congestion Management Agency of Santa Clara County, requires new development projected to generate 100 or more peak hour (AM and/or PM) trips, including both inbound and outbound trips, to complete a Transportation Impact Analysis (TIA). The TIA includes an evaluation of traffic conditions with Phase 1 on the surrounding transportation network, and identifies potential significant impacts to the transportation network directly associated with Phase 1. Traffic conditions are evaluated using level of service (LOS). Level of Service is a qualitative description of operating conditions ranging from LOS A, or free-flow conditions with little or no delay, to LOS F, or jammed conditions with excessive delays. Transportation facilities for which traffic conditions are evaluated using the LOS methodology include freeways (freeway segments) and local streets (intersections).

Freeway LOS Methodology and Standard

As prescribed in the VTA Congestion Management Plan (CMP) technical guidelines, the level of service for freeway segments is estimated based on vehicle density. Density is calculated by the following formula:

D = V / (N*S)

where:

D= density, in vehicles per mile per lane (vpmpl)

V= peak hour volume, in vehicles per hour (vph)

N= number of travel lanes

S= average travel speed, in miles per hour (mph)

The vehicle density on a segment is correlated to level of service as indicated in **Table 4.2-15**. The CMP requires that mixed-flow lanes and auxiliary lanes be analyzed separately from HOV (carpool) lanes. The CMP specifies that a capacity of 2,300 vehicles per hour per lane (vphpl) be used for segments six lanes or wider in both directions and a capacity of 2,200 vphpl be used for segments four lanes wide in both directions. The CMP defines an acceptable level of service for freeway segments as LOS E or better.

Table 4.2-15: Freeway Segment Level of Service Definitions Based on Density

Level of Service	Density (passenger cars/mile/lane)
A	density < 11.0
B	11.0 < density < 18.0
C	18.0 < density < 26.0
D	26.0 < density < 46.0
E	46.0 < density < 58.0
F	58.0 < density

Source: 2004 Monitoring and Conformance Report, Santa Clara Valley Transportation Authority, Congestion Management Program, March 2005.

Other Roadway/Intersection LOS Methodology and Standard

Level of service methodology for local intersections within the cities of Milpitas and San Jose are based on the *Highway Capacity Manual* (HCM) method for signalized intersections. Signalized intersection operations are evaluated using the 2000 HCM Operations Method and TRAFFIX software. The method evaluates intersection LOS on the basis of average control delay time for all vehicles at the intersection. Since TRAFFIX is also the CMP-designated intersection level of service software, the cities' methodology employs the CMP default values for the analysis parameters.

All local intersections within the cities of Milpitas and San Jose have an LOS standard of LOS D or better; whereas the LOS standard for CMP intersections is LOS E or better. The correlation between average delay and level of service is shown in **Table 4.2-16**.

4.2.7.2 Existing Conditions

The traffic analysis is based on peak-hour level of service for signalized intersections and freeway segments. A total of 48 signalized intersections and 30 directional freeway segments within the cities of Milpitas and San Jose were analyzed. These are grouped by proposed BART Station areas below:

- Milpitas Station: 36 study intersections/20 directional freeway segments
- Berryessa Station: 12 study intersections/10 directional freeway segments

The study intersections were selected by local cities for inclusion in the traffic analysis because of their proximity to the proposed stations, they are located along anticipated station access traffic routes, or/and their concern regarding potential significant impacts at these locations.

Table 4.2-16: Intersection Level of Service Definitions Based on Delay

Level of Service	Description	Average Control Delay Per Vehicle (Seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle lengths	Less than 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 delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.1 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 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.	55.1 to 80.0
F	Operation with delays unacceptable to most drivers occurring due to oversaturation, poor progression, or very long cycle lengths.	Greater than 80.0

Source: Transportation Research Board, Highway Capacity Manual 2000, p. 16-2, 2000.

Freeways

Regional access to the station sites is provided via various freeways. Regional access to the Milpitas Station is provided via I-680 and I-880 and to the San Jose

Stations via I-680, I-280, US 101, and SR-87. These facilities are described below.

- **Interstate-680** is an eight-lane freeway providing regional access to the cities of Milpitas and San Jose. It extends in a north-south direction from its junction with I-280 and US 101 near Downtown San Jose through the East Bay to its junction with I-80 in Fairfield. Near the Milpitas Station, the peak direction of travel is southbound during the morning commute and northbound during the afternoon commute. In San Jose, both directions of I-680 serve as peak commute travel during both the AM and PM peak hours. Access to I-680 from the Milpitas Station site is provided via its interchange with Montague Expressway and to the Berryessa Station site via its interchange at Berryessa Road.

- **Interstate-880** provides regional access to Milpitas. It extends in a north-south direction from its junction with I-280 near Downtown San Jose to I-80 in Oakland. Within the study area, I-880 consists of six mixed-flow lanes, three in each direction. In Milpitas, both directions of I-880 serve as peak commute travel during both the AM and PM peak hours. Access to I-880 from the Milpitas Station would be provided via its interchange with Montague Expressway.

- **Interstate-280** provides regional access to the City of San Jose. It connects from US 101 in San Jose to I-80 in San Francisco. It is generally an eight-lane freeway in the vicinity of Downtown San Jose. It also has auxiliary lanes between some interchanges in San Jose. The section of I-280 just north of the Bascom Avenue overcrossing has six mixed-flow lanes and two high-occupancy-vehicle (HOV) lanes. Connections from I-280 to Downtown San Jose are provided via a full interchange at Bird Avenue, and partial interchanges at Seventh Street (no north on-ramp), at Almaden/Vine (ramps to/from north), First Street (ramp to south), and Fourth Street (ramp to north).

- **US 101** provides regional access to San Jose. It is a north-south freeway that extends northward through San Francisco and southward through Gilroy. Within the study area, US 101 is an eight-lane facility (three mixed-flow lanes and one HOV lane in each direction). During the peak commute hours, the mixed-flow lanes operate under stop-and-go conditions in the peak direction of travel – northbound in the AM and southbound in the PM. Within the HOV lane, traffic flows well, although volumes are approaching capacity during the peak periods. US 101

provides access to the Berryessa Station site via interchanges at Old Oakland Road, Julian Street, Santa Clara Street, and a potential interchange at Mabury Road.

- **State Route 87** provides regional access to the City of San Jose. It connects from SR 85 in south San Jose to US 101 near the San Jose International Airport. It is generally a four-lane freeway with auxiliary lanes near the I-280 interchange. With the SR 87 HOV lane widening project recently completed, SR 87 provides HOV lanes between Julian Street and SR 85.

Refer to **Figures 3-9** and **3-11** in **Chapter 3, Project Description**, for an illustration of the proposed stations, as well as all regional and local facilities providing access to the proposed station sites.

Other Roadways: Expressways, Arterials, Local Streets

The proposed station sites also are served by various roadways providing local access. These roadways are described below.

Milpitas Station

Montague Expressway is a six- to eight-lane expressway with full freeway interchanges at I-680 and I-880. East of I-680, Montague Expressway becomes Landess Avenue, which traverses eastward up to Piedmont Road. There is a directional HOV lane on Montague Expressway between McCarthy Boulevard and De La Cruz Boulevard that operates only in the peak commute direction. With the HOV lane, there are three mixed-flow lanes in the eastbound direction during morning peak hours and three mixed-flow lanes in the westbound direction during evening peak hours along most segments of Montague Expressway. Montague Expressway would provide direct access to the proposed Milpitas Station.

Milpitas Boulevard is a four-lane north-south roadway that runs between Dixon Landing Road and Montague Expressway, where it terminates as a T-intersection. Milpitas Boulevard is planned to be extended south of Montague Expressway to connect to Capitol Avenue, south of Montague. With the planned extension, Milpitas Boulevard would run adjacent to the Milpitas Station providing direct access to the station via its intersections with Montague Expressway and Capitol Avenue.

Great Mall Parkway is a six-lane arterial extending from I-880 to Montague Expressway. West of I-880, Great Mall Parkway becomes Tasman Drive. South of Montague Expressway, Great Mall Parkway transitions into Capitol Avenue. VTA's Tasman East Light Rail line runs along Great Mall Parkway with a station and park-and-ride lot located at Great Mall Parkway and Main Street.

Capitol Avenue is a north-south divided roadway that extends from Montague Expressway south through the City of San Jose. Although the majority of Capitol Avenue is a four-lane divided roadway, some portions consist of six lanes. VTA's Tasman East Light Rail line runs along Capitol Avenue with a station located at Montague Expressway and Capitol Avenue.

Berryessa Station

Berryessa Road is an east-west roadway that extends from Piedmont Road to US 101. West of US 101, Berryessa Road becomes Hedding Street. This roadway has two lanes in each direction and a raised median. Berryessa Road provides access to and from I-680 via a full cloverleaf interchange.

Mabury Road extends in an east-west direction from east of White Road over I-680 to US 101. The Mabury overcrossings at I-680 and US 101 do not provide freeway access. At US 101, Mabury Road becomes Taylor Street. Mabury Road has one travel lane in each direction.

King Road is a north-south roadway extending from Aborn Road to Berryessa Road. At Aborn Road, King Road becomes Silver Creek Road, which traverses southward through the Yerba Buena Hills. At Berryessa Road, King Road becomes Lundy Avenue and traverses northward to Milpitas. King Road is generally a two-lane road in the vicinity of the station site.

Jackson Avenue is a four-lane north-south roadway that extends between Story Road and Berryessa Road. North of Berryessa Road, Jackson Avenue becomes Flickinger Avenue.

Freeway Volumes and Levels of Service

All study freeway segments are within Santa Clara County and are therefore subject to the Santa Clara County CMP, which is administered by VTA. The results of the freeway segment analysis under existing conditions for all proposed BART Stations is summarized in **Table 4.2-17**. The results show that 16 of the 30 directional freeway segments analyzed currently operate at an unacceptable level of service (LOS F) during at least one of the peak hours. The results are described by proposed station area.

Table 4.2-17: Existing Freeway Levels of Service Results Summary

Station	Number of Study Freeway Segments	Unacceptable LOS Segments
Milpitas	20	8
Berryessa	10	8
Total:	30	16

Source: Hexagon Transportation Consultants, Inc., 2008.

Milpitas Station

In the vicinity of the Milpitas Station, the freeway segment analysis shows that 8 of the 20 directional freeway segments analyzed currently operate at an unacceptable LOS F during at least one peak hour. The study freeway segments and their corresponding level of service are shown graphically on **Figure 4.2-5**.

Berryessa Station

In the vicinity of the Berryessa Station, the freeway segment analysis shows that 8 of the 10 directional freeway segments analyzed in the vicinity of the Berryessa Station currently operate at an unacceptable LOS F during at least one peak hour. The study freeway segments and their corresponding level of service are shown graphically on **Figure 4.2-6**.

Intersection Volumes and Levels of Service

Existing peak-hour traffic volumes were obtained from the CMP and supplemented with manual turning-movement counts mainly conducted in September and October 2005. It should be noted that the near-term traffic information is presented merely to identify possible constraints to development near the proposed station site.

The results of the intersection level of service analysis under existing conditions for the proposed BART Stations is summarized in **Table 4.2-18**. The results show that 3 of the 48 study intersections currently operate at an unacceptable level of service (LOS E or F for local intersections and LOS F for CMP intersections) during at least one of the peak hours. CMP intersections are denoted with an asterisk (*). The results are described by proposed station area**.**

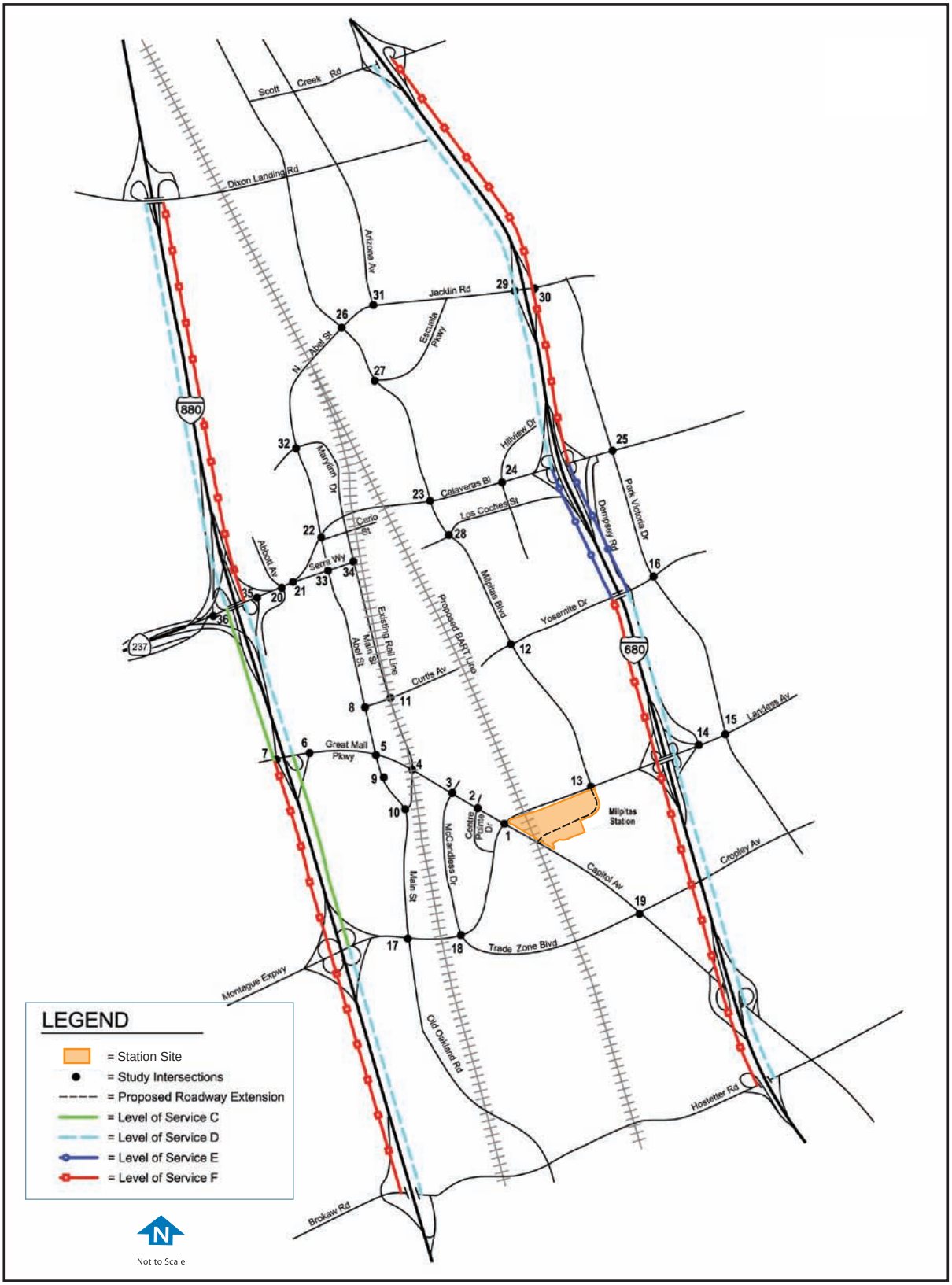
Table 4.2-18: Existing Intersection Levels of Service Results Summary

Station	Number of Study Intersections	Unacceptable LOS Intersections
Milpitas	36	2
Berryessa	12	0
Total:	48	2

Source: Hexagon Transportation Consultants, Inc., 2008.

Milpitas Station

A total of 36 intersections were evaluated in the vicinity of the proposed Milpitas Station. The results of the level of service analysis under existing conditions show that two of the signalized study intersections currently operate at an unacceptable LOS F according to CMP LOS standards. The CMP intersections are denoted with an asterisk (*). The intersections are:



Source: Hexagon Transportation Consultants, 2008.

Figure 4.2-5: Milpitas Station Study Freeway Segments Existing Conditions

Source: Hexagon Transportation Consultants, 2008.

Figure 4.2-6: Berryessa Station Study Freeways Segments Existing Conditions

(17) Old Oakland/Main Street and Montague Expressway*

(18) Trade Zone Boulevard and Montague Expressway*

All other CMP and local City of Milpitas signalized study intersections currently operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections.) The study intersections are shown graphically on **Figure 4.2-7**.

Berryessa Station

A total of 12 intersections were evaluated in the vicinity of the proposed Berryessa Station. The results of the level of service analysis under existing conditions show that all of the signalized study intersections currently operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections.) The study intersections are shown graphically on **Figure 4.2-8**.

4.2.7.3 Project Impacts and Mitigation Measures

2030 No Project Conditions

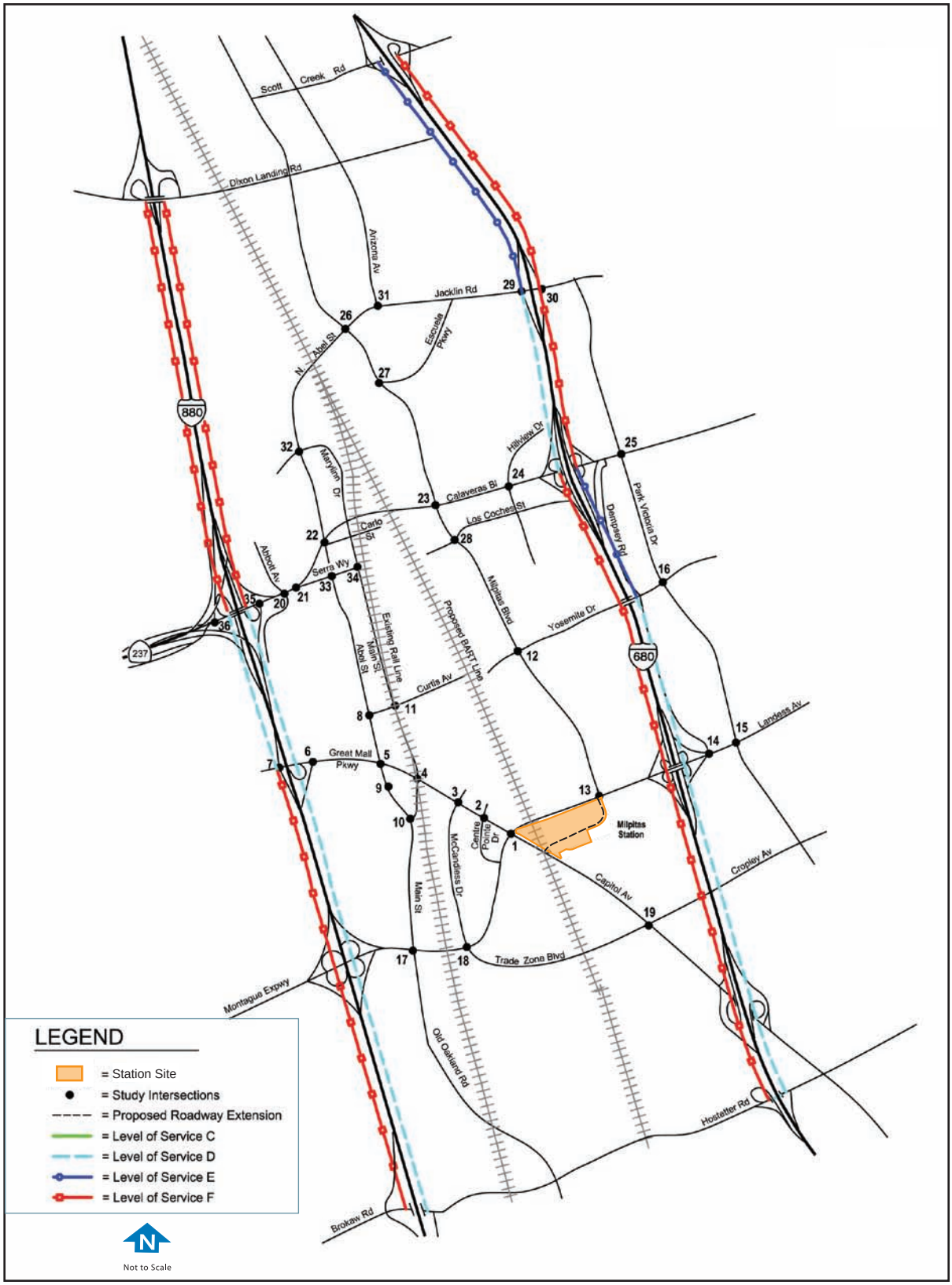
Future Roadway Network

Several transportation improvements in the SVRTC are planned and would be operational by 2030. These improvements are identified in the Bay Area's Regional Transportation Plan (RTP), *Mobility for the Next Generation – Transportation 2030 Plan for the San Francisco Bay Area* (Transportation 2030 Plan), adopted by MTC in February 2005, and the *Valley Transportation Plan 2030* (VTP 2030), adopted by VTA in February 2005. The improvements consist of street and freeway widenings and interchange improvements. There are no new freeways planned. The planned improvements and implementation period are identified in **Table 4.2-19**.

In addition, other local improvements are planned and also were included as part of the future roadway network analyzed. These improvements include:

City of Milpitas. The existing Milpitas Boulevard and Montague Expressway T-intersection is expected to become a four-legged intersection that will provide access to future development south of Montague Expressway.

City of San Jose. The City of San Jose does not have any improvements that would impact Phase 1 other than the construction of the potential future US 101 interchange at Mabury Road.



Source: Hexagon Transportation Consultants, 2008.

Figure 4.2-7: Milpitas Freeway Level of Service 2030 No Project with Improvements

Source: Hexagon Transportation Consultants, 2008.

Figure 4.2-8: Berryessa Freeway Level of Service 2030 No Project with Improvements

Table 4.2-19: 2015 and 2030 Transportation Network Improvements

#	Project	Implementation Period 2015	Implementation Period 2030
1	Montague Expressway/San Tomas Expressway/U.S. 101/ Mission College Boulevard Interchange	●	●
2	Montague Expressway/I-880 interchange reconfiguration improvements	●	●
3	I-680 Southbound HOV lanes: Alameda/Santa Clara County line to Calaveras Boulevard	●	●
4	Montague Expressway grade-separation at Capitol Avenue		●
5	I-880/SR 237 freeway interchange (Stages A,B & C)	●	●
6	U.S. 101/Blossom Hill Avenue interchange modifications	●	●
7	Tully Road/U.S. 101 interchange modifications	●	●
8	Tennant Avenue/U.S. 101 interchange improvements in Morgan Hill	●	●
9	SR 25/Santa Teresa Boulevard/U.S. 101 interchange construction	●	●
10	Buena Vista/U.S. 101 interchange construction		●
11	SR 237 widening for HOV lanes between SR 85 and U.S. 101		●
12	I-680 northbound HOV lane (Calaveras Boulevard to Alameda/Santa Clara County line)		●
13	Improvements to I-880/Stevens Creek Boulevard interchanges	●	●
14	SR 85 northbound to I-280 northbound and I-280 exit to Foothill Boulevard - braided ramp	●	●
15	SR 152 safety improvements between U.S. 101 and SR 156 (westbound SR 152 to westbound SR 156)	●	●
16	Montague Expressway/Trimble Road flyover ramp	●	●
17	Central Expressway widening for HOV lanes from SR 237 to De la Cruz Avenue	●	●
18	Widen US 101 southbound from Story Road to Yerba Buena Road	●	●
19	Widen US 101 from SR 25 to Santa Clara/San Benito County line		●
20	US 101/Capitol Expressway interchange improvements	●	●
21	Widen westbound SR 237 on-ramp from SR 237 to northbound US 101		●
22	SR 237 westbound on-ramp at Middlefield Road	●	●

#	Project	Implementation Period 2015	Implementation Period 2030
23	Widen San Tomas Expressway between SR 82 and Williams Road		•
24	Widen US 101 from I-880 to McKee Road/Julian Street	•	•
25	SR 85/Fremont Avenue ramp improvements	•	•
26	Construct SR 237 eastbound to Mathilda Avenue flyover offramp		•
27	Oakland Road widening from US 101 to Montague Expressway	•	•

Source: Transportation 2030 Plan for the San Francisco Bay Area (Transportation 2030 Plan) and Valley Transportation Plan 2030 (VTP 2030), 2008.

Freeway Volumes and Level of Service

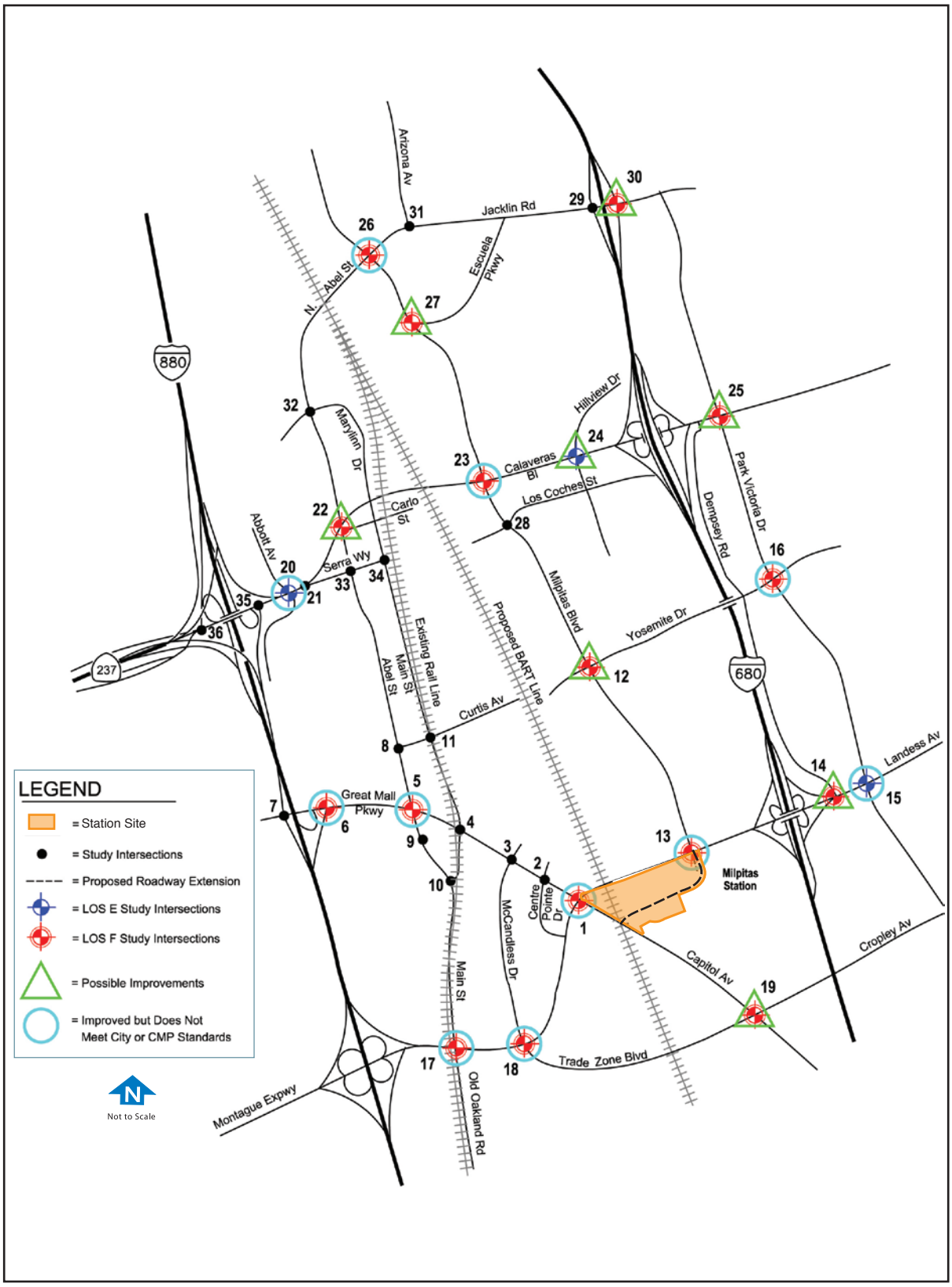
The 2030 No Project conditions traffic volumes for the study freeway segments were obtained from the VTA 2030 (SVRTC) traffic model. It should be noted that with the assumption of the US 101 interchange at Mabury Road in place by the year 2030, two additional directional freeway segments were created and analyzed for the Berryessa Station, for a total of 32 study directional freeway segments.

The results of the freeway segment analysis under the 2030 No Project conditions for the proposed BART Stations is summarized in **Table 4.2-20**. The results show that 19 of the 32 directional freeway segments analyzed would operate at an unacceptable level of service (LOS F) during at least one of the peak hours under the 2030 No Project conditions. Overall, the freeway levels of service is projected to deteriorate from existing conditions (more freeway segments are projected to operate at unacceptable levels of service). This is generally due to the expected increase in traffic on freeways by the year 2030 and the lack of additional freeways to serve the projected traffic growth. The study freeway segments and their corresponding levels of service under the 2030 No Project conditions are shown graphically on **Figure 4.2-9** for the segments in the vicinity of the Milpitas Station and on **Figure 4.2-10** for the segments in the vicinity of the Berryessa Station.

Table 4.2-20: 2030 No Project Freeway Levels of Service Results Summary

Station	Number of Study Freeway Segments	Existing Unacceptable LOS Segments	2030 No Project Unacceptable LOS Segments
Milpitas	20	8	10
Berryessa	10/12	8	9
Total:	30/32	16	19

Source: Hexagon Transportation Consultants, Inc., 2008.



Source: Hexagon Transportation Consultants, 2008.

Figure 4.2-9: Milpitas Station 2030 No Project with Improvements Level of Service Conditions

Source: Hexagon Transportation Consultants, 2008.

Figure 4.2-10: Berryessa Station 2030 No Project with Improvements Level of Service Conditions

Intersection Traffic Volumes and Levels of Service

Peak-hour traffic volumes for the year 2030 were produced using the VTA 2030 SVRTC traffic model. The 2030 traffic volumes include traffic associated with future development included in the ABAG projections and the projected future transportation network, as described previously.

Adjustments were made to the forecasted volumes to account for the coarse turn-movements produced by the model. Although the model used for this analysis was updated to include all of the study intersections, the general regional roadway network used by the model does not represent all minor streets. The lack of coding of these minor facilities causes the model to over assign traffic volumes to those facilities that are represented in the network. This results in inaccurate forecasted turn-movement volumes that require adjustments to calibrate them with actual travel patterns and use of proper facilities.

The results of the intersection level of service analysis under the 2030 No Project conditions for the proposed BART Stations is summarized in **Table 4.2-21**. The results show that 22 of the 48 study intersections would operate at an unacceptable level of service (LOS E or F for local intersections and LOS F for CMP intersections) during at least one of the peak hours. The results of the intersection analysis are described by proposed station area. Study intersections' numbers (in parenthesis) in the following lists, correspond to the numbered intersections throughout figures in this section. CMP intersections are denoted with an asterisk (*).

Table 4.2-21: 2030 No Project Intersection Levels of Service Results Summary

Station	Number of Study Intersections	Existing Unacceptable LOS Intersections	2030 No Project Unacceptable LOS Intersections
Milpitas	36	2	19
Berryessa	12	0	3
Total:	48	2	22

Source: Hexagon Transportation Consultants, Inc., 2008.

Milpitas Station. The intersection level of service results for 2030 No Project conditions show that 19 of the 36 study intersections in the Milpitas Station area are projected to operate at unacceptable levels (LOS E or F for local intersections and LOS F for CMP intersections) during at least one peak hour, according to City of Milpitas and CMP level of service standards. The intersections are:

(1) Great Mall Parkway and Montague Expressway*

(5) Abel Street and Great Mall Parkway

(6) I-880 NB ramps and Great Mall Parkway

(12) Milpitas Boulevard and Yosemite Drive

(13) Milpitas Boulevard and Montague Expressway*

(14) Dempsey Road and Landess Avenue

(15) Park Victoria Drive and Landess Avenue

(16) Park Victoria Drive and Yosemite Drive

(17) Old Oakland/Main Street and Montague Expressway*

(18) Trade Zone Boulevard and Montague Expressway*

(19) Capitol Avenue and Cropley Avenue

(20) Abbott Avenue and Calaveras Boulevard

(22) Abel Street and Calaveras Boulevard*

(23) Milpitas Boulevard and Calaveras Boulevard*

(24) Hillview Drive and Calaveras Boulevard

(25) Park Victoria Drive and Calaveras Boulevard

(26) Milpitas Boulevard and Jacklin Road

(27) Milpitas Boulevard and Escuela Drive

(30) I-680 NB Ramps and Jacklin Road

All other CMP and local City of Milpitas signalized study intersections are projected to operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections).

Berryessa Station. The intersection level of service results for 2030 No Project conditions show that 3 of the 12 study intersections in the Berryessa Station area are projected to operate at unacceptable levels (LOS E or F for local intersections and LOS F for CMP intersections) during at least one peak hour, according to City of San Jose and CMP level of service standards. The intersections are:

(2) Flickinger Avenue and Berryessa Road

(3) Lundy Avenue and Berryessa Road*

(9) Oakland Road and Commercial Street

All other CMP and local signalized study intersections are projected to operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections).

2030 No Project Conditions With Improvements

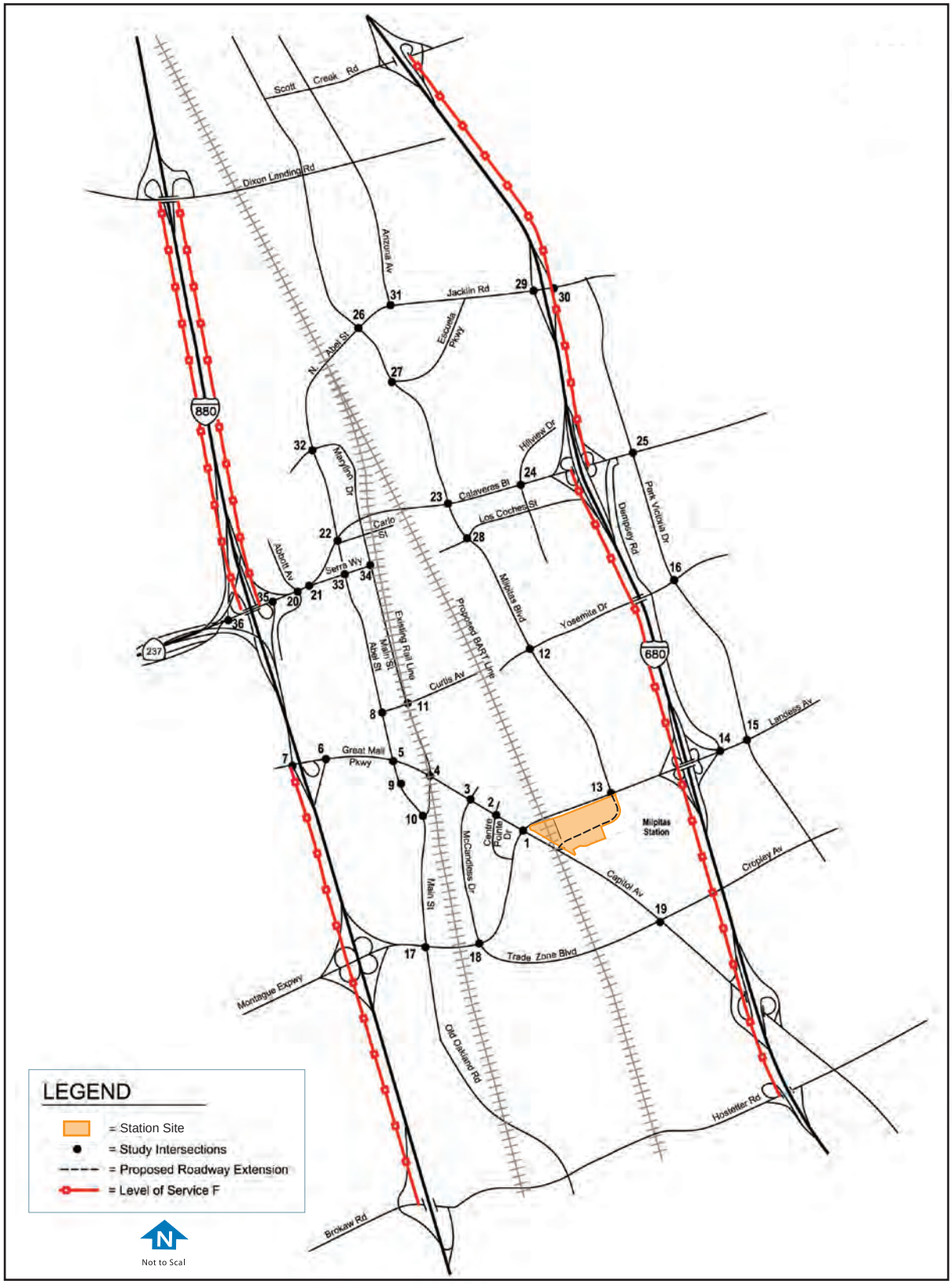
Based on the results of the 2030 No Project conditions level of service analysis, necessary improvements to support year 2030 projected traffic volumes were determined for all study intersections projected to operate at LOS E or F (listed and identified on **Figures 4.2-11** (Milpitas Station) and **4.2-12** and **4.2-13** (Berryessa Station)). The resulting 2030 No Project conditions with Improvements will serve as a base from which to determine significant impacts attributable to Phase 1. Without the improvements in place, level of service conditions with the project will not accurately reflect significant impacts due solely to station traffic, but rather show problem areas under 2030 No Project conditions compounded by Phase 1. The basis for determining significant impacts associated with Phase 1 was agreed upon by the study corridor cities (cities of Milpitas and San Jose).

The following describes the necessary improvements to improve 2030 No Project conditions levels of service to acceptable levels. The identified improvements are based on level of service calculations but their feasibility may be questionable at this time. It should be noted that the projected intersection levels of service and identified improvements are based on traffic projections some 20 years into the future. Intersections for which feasible improvements are not possible and intersections where feasible improvements do not improve the intersection to acceptable levels are also discussed. The statement 'Not feasible due to ROW constraints' refers to conditions where structures or parking would be displaced to provide sufficient area for the improvements. **Table 4.2-22** shows the resulting levels of service with the necessary improvements.

Table 4.2-22: 2030 No Project Conditions with Improvements Intersection LOS Results Summary

Station	Number of Study Intersections	2030 No Project Unacceptable LOS Intersections	Intersections With Possible Improvements	Improved but Unacceptable LOS	No Cost Effective Feasible Improvements
Milpitas	36	19	8	11	0
Berryessa	12	3	2	1	0
Total	48	21	10	12	0

Source: Hexagon Transportation Consultants, Inc., 2008.



Source: Hexagon Transportation Consultants, 2008.

Figure 4.2-11: Milpitas Station Freeway Level of Service Phase 1

Source: Hexagon Transportation Consultants, 2008.

Figure 4.2-12: Berryessa Station Freeway Level of Service Phase 1

Source: Hexagon Transportation Consultants, 2008.

Figure 4.2-13: Berryessa Station Freeway Level of Service Phase 1 (continued)

Milpitas Station

(1) Great Mall Parkway and Montague Expressway*

Necessary Improvements: The intersection is projected to operate at LOS F during both the AM and PM peak hours under 2030 No Project conditions. There are plans to widen Montague Expressway to four lanes in each direction. Montague Expressway is currently four lanes in each direction at this intersection. However, as part of the improvement, the HOV lanes would be eliminated, providing four mix-flow lanes in each direction on Montague. Another possible improvement includes the addition of an exclusive southbound right-turn lane. Though intersection operations would improve with the above improvements, the level of service would remain at an unacceptable LOS F. There are no feasible at-grade improvements to improve operation levels at this intersection. The necessary improvement to improve intersection operations to acceptable levels would require grade separation of the intersection. It should be noted that the grade separation of this intersection is included in the Valley Transportation Plan 2030 (VTP 2030) project list. However, this improvement was not included as part of the year 2030 roadway network since it was not included in the VTA 2030 (SVRTC) traffic model used for this analysis. Thus, as a conservative approach and in order to analyze the worst case scenario, this improvement was not considered to be implemented by the year 2030.

(5) Abel Street and Great Mall Parkway

Necessary Improvements: The intersection is projected to operate at LOS F during both the AM and PM peak hours under 2030 No Project conditions. Possible improvements include the addition of second northbound and southbound left-turn lanes and a separate eastbound right-turn lane. Though intersection operations would improve to an acceptable LOS D during the PM peak hour with these improvements, the level of service would remain at an unacceptable LOS F during the AM peak hour. The necessary improvement to improve intersection operations to acceptable levels consists of the conversion of the southbound right-turn lane to a free-right-turn lane. However, this improvement would require the widening of Great Mall Parkway, which is not feasible due to ROW constraints.

(6) I-880 NB ramps and Great Mall Parkway

Necessary Improvements*:* The intersection is projected to operate at LOS E and F during the AM and the PM peak hours, respectively, under 2030 No Project conditions. Possible improvements include the addition of a shared right-and-through lane on the northbound approach and a second westbound left-turn lane. Though intersection operations would improve with these improvements, the level of service would remain at an unacceptable LOS E during both peak hours. The necessary improvement to improve intersection operations to

acceptable levels consists of the widening of Great Mall Parkway to six lanes, three through lanes on each direction. However, this improvement is not feasible due to ROW constraints along Great Mall Parkway and the bridge structure over I-880.

(12) Milpitas Boulevard and Yosemite Drive

Necessary Improvements*:* The intersection is projected to operate at LOS F during both the AM and PM peak hours under 2030 No Project conditions. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of a second southbound left-turn lane, exclusive northbound right-turn lane, and modification of the westbound approach to provide two left-turn lanes, a through lane, and a right-turn lane. These improvements may not be feasible due to ROW constraints, but they are included as possible improvements. Intersection operation levels would improve to an acceptable LOS D with the implementation of these improvements. It should be noted that changes to the signal timing at this location to accommodate future traffic volumes may improve intersection levels of operation without physical improvements.

(13) Milpitas Boulevard and Montague Expressway*

Necessary Improvements*:* The intersection is projected to operate at LOS F during both the AM and PM peak hours under 2030 No Project conditions. There are plans to widen Montague Expressway to four lanes in each direction. As part of the improvement, the HOV lanes would be eliminated, providing four mix-flow lanes in each direction on Montague. Other possible improvements at this intersection include the addition of a left-turn, a through, and a right-turn lane on the south approach, a southbound through lane, and an eastbound right-turn lane. Though intersection operations would improve with these improvements, the level of service would remain at an unacceptable LOS F. Due to the relatively high conflicting turn movement volumes at this intersection, there are no feasible at-grade improvements to improve operation levels at this intersection.

(14) Dempsey Road and Landess Avenue

Necessary Improvements: The intersection is projected to operate at LOS F during the AM peak hour under 2030 No Project conditions. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of an exclusive northbound left-turn lane and a third westbound through lane. These improvements may not be feasible due to ROW constraints at this intersection, but they are included as possible improvements. Intersection operation levels would improve to an acceptable LOS C with the implementation of these improvements.

(15) Park Victoria Drive and Landess Avenue

Necessary Improvements*:* The intersection is projected to operate at LOS E during both the AM and PM peak hours under 2030 No Project conditions. Possible improvements include the addition of second northbound and southbound left-turn lanes, and the addition of an exclusive northbound right-turn lane. Though intersection operations would improve with these improvements, the level of service would remain at an unacceptable LOS E during the PM peak hour. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of a third southbound through lane on Park Victoria Drive or converting the eastbound right-turn lane on Landess Avenue to a free right-turn lane. However, the widening of Park Victoria Drive is not feasible due to ROW constraints.

(16) Park Victoria Drive and Yosemite Drive

Necessary Improvements: The intersection is projected to operate at LOS F during both the AM and PM peak hours under 2030 No Project conditions. Possible improvements include the addition of exclusive northbound and southbound right-turn lanes, and the addition of an exclusive eastbound left-turn lane. These improvements may not be feasible due to ROW constraints at this intersection, but they are included as possible improvements. Though intersection operations would improve with these improvements, the level of service would remain at an unacceptable LOS F and E during the AM and PM peak hours, respectively. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of a second northbound left-turn lane and a third southbound through lane on Park Victoria Drive. However, these improvements would require the widening of Park Victoria Drive, which is not feasible due to ROW constraints. It should be noted that changes to the signal timing at this location to accommodate future traffic volumes may improve intersection levels of operation without physical improvements.

(17) Old Oakland/Main Street and Montague Expressway*

Necessary Improvements: The intersection is projected to operate at LOS F during both the AM and PM peak hours under 2030 No Project conditions. There are plans to widen Montague Expressway to four lanes in each direction. As part of the improvement, the HOV lanes would be eliminated, providing four mix-flow lanes in each direction on Montague. Though intersection operations would improve with the proposed widening of Montague Expressway, the level of service would remain at an unacceptable LOS F. Due to the relatively high conflicting turn movement volumes at this intersection, there are no feasible at-grade improvements to improve operation levels at this intersection.

(18) Trade Zone Boulevard and Montague Expressway*

Necessary Improvements: The intersection is projected to operate at LOS F during both the AM and PM peak hours under 2030 No Project conditions. There are plans to widen Montague Expressway to four lanes in each direction. As part of the improvement, the HOV lanes would be eliminated, providing four mix-flow lanes in each direction on Montague. Other possible improvements include the addition of second northbound and southbound through lanes and the addition of a second westbound left-turn lane. Though intersection operations would improve with these improvements, the level of service would remain at an unacceptable LOS F. Due to the relatively high conflicting turn movement volumes at this intersection, there are no feasible at-grade improvements to improve operation levels at this intersection.

(19) Capitol Avenue and Cropley Avenue

Necessary Improvements: The intersection is projected to operate at LOS E and F during the AM and PM peak hours, respectively, under 2030 No Project conditions. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of second southbound, eastbound, and westbound left-turn lanes and exclusive northbound and southbound (on Capitol Avenue) right-turn lanes. Intersection operation levels would improve to an acceptable LOS D with the implementation of these improvements.

(20) Abbott Avenue and Calavera Boulevard

Necessary Improvements: The intersection is projected to operate at LOS E during the AM peak hour under 2030 No Project conditions. Possible improvements include the addition of an exclusive westbound right-turn lane on Calaveras Boulevard. Though intersection operations would improve with this improvement, the level of service would remain at an unacceptable LOS E. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of a fourth westbound through lane. However, this improvement would require the widening of Calaveras Boulevard, which is not feasible due to ROW constraints.

(22) Abel Street and Calaveras Boulevard*

Necessary Improvements: The intersection is projected to operate at LOS F during the PM peak hour under 2030 No Project conditions. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of second eastbound and westbound left-turn lanes and an exclusive eastbound right-turn lane. Intersection operation levels would improve to an acceptable LOS E during the PM peak hour with implementation of these improvements. It should be noted that the Valley Transportation Plan 2030 (VTP 2030) project list includes a project that would widen Calaveras Boulevard to six lanes from Abel Street to Milpitas Boulevard. However, since this improvement

was not included as part of the year 2030 roadway network used in the VTA 2030 (SVRTC) traffic model used for this analysis, and the analysis conservatively assumed the improvement would not be in place by 2030.

(23) Milpitas Boulevard and Calaveras Boulevard*

Necessary Improvements: The intersection is projected to operate at LOS F during the PM peak hour under 2030 No Project conditions. Possible improvements include the addition of a second westbound left-turn lane. Though intersection operations would improve with this improvement, the level of service would remain at an unacceptable LOS F during the PM peak hour. The necessary improvements to improve intersection operations to acceptable levels consist of the widening of both Milpitas Boulevard and Calaveras Boulevard to six lanes (three through lanes in each direction) and the addition of third northbound and eastbound left-turn lanes. It should be noted that the Valley Transportation Plan 2030 (VTP 2030) project list includes a project that would widen Calaveras Boulevard to six lanes from Abel Street to Milpitas Boulevard. However, since this improvement was not included as part of the year 2030 roadway network used in the VTA 2030 (SVRTC) traffic model used for this analysis, and the analysis conservatively assumed the improvement would not be in place by 2030. In addition, the widening of Milpitas Boulevard to this extend is not feasible due to ROW constraints.

(24) Hillview Drive and Calaveras Boulevard

Necessary Improvements: The intersection is projected to operate at LOS E during the PM peak hour under 2030 No Project conditions. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of an exclusive eastbound right-turn lane. Intersection operation levels would improve to an acceptable LOS D with implementation of this improvement.

(25) Park Victoria Drive and Calaveras Boulevard

Necessary Improvements: The intersection is projected to operate at LOS F and E during the AM and PM peak hours, respectively, under 2030 No Project conditions. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of a second southbound left-turn lane and an exclusive westbound right-turn lane. Intersection operation levels would improve to an acceptable LOS D with implementation of these improvements.

(26) Milpitas Boulevard and Jacklin Road

Necessary Improvements*:* The intersection is projected to operate at LOS F and E during the AM and PM peak hours, respectively, under 2030 No Project conditions. Possible improvements include the addition of second northbound and southbound left-turn lanes and an exclusive northbound right-turn lane. Though intersection operations would improve to an acceptable LOS D during

the PM peak hour with these improvements, the level of service would remain at an unacceptable LOS F during the AM peak hour. The necessary improvements to improve intersection operations to acceptable levels consist of the conversion of the southbound and the westbound right-turn lanes to free-right-turn lanes. However, these improvements would require the widening of both Milpitas Boulevard and Jacklin Road, which is not feasible due to ROW constraints.

(27) Milpitas Boulevard and Escuela Drive

Necessary Improvements: The intersection is projected to operate at LOS F during the PM peak hour under 2030 No Project conditions. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of exclusive northbound and southbound right-turn lanes and the conversion of the westbound through lane to a shared left-and-through lane. Intersection operation levels would improve to an acceptable LOS D with implementation of these improvements. It should be noted that changes to the signal timing at this location to accommodate future traffic volumes may improve intersection levels of operation without physical improvements.

(30) I-680 NB Ramps and Jacklin Road

Necessary Improvements: The intersection is projected to operate at LOS F during the AM peak hour under 2030 No Project conditions. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of a second eastbound left-turn lane and an exclusive westbound right-turn lane on Jacklin Road. Intersection operation levels would improve to an acceptable LOS D with implementation of these improvements.

Berryessa Station

(2) Flickinger Avenue and Berryessa Road

Necessary Improvements: The intersection is projected to operate at LOS E and F during the AM and PM peak hours, respectively, under 2030 No Project conditions. Possible improvements include the addition of second southbound, eastbound, and westbound left-turn lanes. Though intersection operations would improve to an acceptable LOS D during the AM peak hour with these improvements, the level of service would remain at an unacceptable LOS F during the PM peak hour. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of a third eastbound through lane and a third westbound left-turn lane on Berryessa Road. However, these improvements would require the widening of both Flickinger Avenue and Berryessa Road, which is not feasible due to ROW constraints.

(3) Lundy Avenue and Berryessa Road*

Necessary Improvements: The intersection is projected to operate at LOS F during both the AM and PM peak hours under 2030 No Project conditions. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of second eastbound and westbound left-turn lanes. Intersection operation levels would improve to an acceptable LOS E with the implementation of these improvements.

(9) Oakland Road and Commercial Street

Necessary Improvements: The intersection is projected to operate at LOS E during both the AM and PM peak hours under 2030 No Project conditions. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of a second westbound left-turn lane. Intersection operation levels would improve to an acceptable LOS D with the implementation of this improvement.

Phase 1

Phase 1 evaluates year 2030 traffic conditions with the addition of planned improvements identified in the Bay Area's RTP. Phase 1 proposes to include two BART Stations: the Milpitas Station and the Berryessa Station.

Traffic volumes under the project represent 2030 No Project conditions traffic volumes with the addition of traffic projected to be generated by the Milpitas and Berryessa stations, which include park-and-ride (PNR), kiss-and-ride (KNR), and bus trips to both stations, under Phase 1. The impacts of Phase 1 and the Milpitas and Berryessa stations on the roadway network were evaluated and compared to the 2030 No Project conditions with Improvements in order to identify significant impacts on the roadways network (both freeways and intersections) directly associated with Phase 1.

Station Access and Circulation

Milpitas Station. The proposed Milpitas Station site is located in the southeast quadrant of the Montague Expressway and Capitol Avenue intersection. As part of the proposed Milpitas Station, South Milpitas Boulevard would be extended from its intersection with Montague Expressway, continuing through the station area, to Capitol Avenue, just south of Montague Expressway. Primary access to the Milpitas Station site would be provided by the intersections of South Milpitas Boulevard with Montague Expressway and Capitol Avenue. The new intersection of Capitol Avenue and Milpitas Boulevard would be a full-access signalized intersection. Station facilities under Phase 1 would include an 8-level parking structure providing parking spaces for PNR commuters, KNR drop-off points, and bus services. A pedestrian connection would be provided to connect BART facilities to the Capitol LRT Station.

The VTA 2030 (SVRTC) traffic model was used to obtain station-generated traffic to and from the main gateways to the station area. The Milpitas Station is estimated to generate a total of 1,033 AM and PM peak hour trips (including PNR, KNR, and bus trips) under Phase 1.

Montague Expressway and Capitol Avenue will provide primary access to the Milpitas Station site from the local roadway system via their intersections with Milpitas Boulevard. Both roadways provide regional access from I-880 and I-680. From I-880, the station area is accessible via both the Montague Expressway and Tasman/Great Mall interchanges. Access to and from I-680 is provided via interchanges at Montague Expressway and Capitol Avenue.

The Milpitas Station would be primarily served by two intersections: the South Milpitas Boulevard/Montague Expressway and Capitol Avenue/South Milpitas Boulevard intersections. Both of these intersections would be signalized and provide full access to the station. In addition, a frontage road on the north side of the station, parallel to Montague Expressway, would provide right-in access and egress for passenger vehicles to and from the station.

Station facilities would be accessed via the South Milpitas Boulevard extension, which would run parallel to Montague Expressway along the station area, connecting Montague Expressway and Capitol Avenue. The new segment of South Milpitas Boulevard at the Milpitas Station is designed as a two-lane divided roadway. The Milpitas Station site plan also shows new signalized intersections within the station area at the intersections of South Milpitas Boulevard extension with the KNR access road and with the new access road providing access to the proposed parking structure.

All roadways within the station will be constructed to accommodate the projected year 2030 traffic volumes and operate at acceptable levels of service.

Berryessa Station. The proposed Berryessa Station site is located along the eastern edge of the existing Flea Market site, south of Berryessa Road. Station facilities would be located along a proposed new roadway (Berryessa Station Way) that would connect with Berryessa Road to the north and Mabury Road to the south.

Station entrances would be provided on the north, south, and east sides of the station. The station would include a BART security building, with accompanying surface parking, located north of the station and east of the UPRR ROW.

The design of the parking facilities has been modified to include an eight-level parking structure on 4.3 acres on the southern half of the site and to the east of the UPRR ROW. Additional surface parking and/or future transit facilities would be located as needed within the station area.

Berryessa Station Way would extend from Berryessa Road to Mabury Road on the east side of the UPRR ROW. Berryessa Station Way would be constructed as a four-lane public street with a median. Berryessa Station Way would provide access to the bus transit center, both surface and structured parking facilities, and passenger loading areas. Five signalized intersections would be located along Berryessa Station Way to provide access to these facilities. A northbound bus-only lane would run parallel to and east of Berryessa Station Way to facilitate bus movements to the transit center. A portion of Lenfest Avenue would be realigned to the east as part of a new signalized intersection at Mabury Road.

A bicycle and pedestrian connection would be provided at Salamoni Court. Dedicated bike paths and shared-use trails would be constructed east and west of Berryessa Station Way. Two bike storage facilities would be installed north and south of the station. **Figure 3-7** shows the Berryessa Station layout.

The Berryessa Station area would have either a 150-foot setback from the near banks of Upper Penitencia Creek and Coyote Creek or a 100-foot setback from the riparian tree dripline (outer edges of the tree canopy), whichever is greater. This setback distance conforms to the *San Jose Riparian Corridor Policy Study* guidelines (1999), which require "a minimum of 100 feet from the edge of the riparian corridor (or top of bank, whichever is greater)." Two exceptions to this setback would occur at the following locations: (1) where a new street on the east side of the UPRR ROW—Berryessa Station Way—crosses over Upper Penitencia Creek to/from Berryessa Road and (2) where an existing driveway would be reconstructed and pedestrian improvements made as requested by the City of San Jose at the northwest corner of DOT Way (a private street that leads to the San Jose Mabury Yard) and Mabury Road.

All roadways within the station, under either option, will be constructed to accommodate the projected year 2030 traffic volumes and operate at acceptable levels of service.

Freeway Volumes and Levels of Service

Phase 1 conditions traffic volumes on freeway segments were established by adding to 2030 No Project freeway volumes the estimated station trips on freeway segments. Since the Berryessa Station would be the end-of-the-line station for Phase 1, additional freeway segments other than those identified for the Berryessa Station under 2030 No Project conditions were analyzed. The additional segments will cover the wider area projected to be served by the Berryessa Station under Phase 1.

The results of the freeway segment analysis under Phase 1 for the proposed Milpitas and Berryessa Stations is summarized in **Table 4.2-23**. The results show that 34 of the 52 directional freeway segments analyzed would operate at

an unacceptable LOS F during at least one of the peak hours under Phase 1. Phase 1 would result in a significant impact on four of the 52 study freeway segments.

Overall, the freeway LOS is projected to remain unchanged from 2030 No Project conditions (there is no change in freeway segments' level of service with the addition of the station trips). The results are described by proposed station area below.

Table 4.2-23: Phase 1 Freeway Level of Service Results Summary

Station	Number of Study Freeway Segments	Phase 1 Unacceptable LOS Segments	Phase 1 Impacted Freeway Segments
Milpitas	20	10	0
Berryessa	32	24	4
Total:	52	34	4

Source: Hexagon Transportation Consultants, Inc., 2008.

Milpitas Station. In the vicinity of the Milpitas Station, the freeway segment analysis shows that 10 of the 20 directional freeway segments analyzed would operate at an unacceptable LOS F during at least one peak hour under Phase 1. The segments include:

I-680, Calaveras Boulevard to Jacklin Road, NB/PM peak hour

I-680, Jacklin Road to Scott Creek Road, NB/PM peak hour

I-880, SR 237 to Dixon Landing Road, NB/PM peak hour

I-880, Dixon Landing Road to SR 237, SB/AM peak hour

I-880, Great Mall Parkway to Montague Expressway, SB/PM peak hour

I-880, Montague Expressway to Brokaw Road, SB/PM peak hour

I-680, Calaveras Boulevard to Yosemite Drive, SB/PM peak hour

I-680, Yosemite Drive to Montague Expressway, SB/PM peak hour

I-680, Montague Expressway to Capitol Avenue, SB/PM peak hour

I-680, Capitol Avenue to Hostetter Road, SB/PM peak hour

Since Phase 1 would not add traffic representing one percent or more of the segment's capacity to any of the study freeway segments projected to operate at LOS F, none of the freeway segments analyzed in the vicinity of the Milpitas

Station would be significantly impacted by Phase 1, according to county CMP LOS standards for freeways. The study freeway segments projected to operate at an unacceptable LOS F under Phase 1 are shown graphically on **Figure 4.2-11**.

Berryessa Station. In the vicinity of the Berryessa Station, the freeway segment analysis shows that 24 of the 32 directional freeway segments analyzed would operate at an unacceptable LOS F during at least one peak hour under Phase 1.

Phase 1 is projected to have a significant impact on 4 of the 24 directional freeway segments identified to operate at LOS F, according to the CMP definition of freeway significance criteria. The segments include:

US 101, McKee Road to Mabury Road, NB/AM peak hour

US 101, Mabury Road to McKee Road, SB/PM peak hour (significant impact)

US 101, Mabury Road to Oakland Road, NB/AM peak hour

US 101, Oakland Road to Mabury Road, SB/PM peak hour

US 101, Oakland Road to I-880, NB/AM peak hour

US 101, I-880 to Oakland Road, SB/PM peak hour

I-680, Alum Rock Avenue to McKee Road, NB/AM peak hour

I-680, Hostetter Road to Berryessa Road, SB/PM peak hour

I-680, Berryessa Road to McKee Road, SB/PM peak hour

US 101, Tully Road to Story Road, NB/AM peak hour

US 101, Story Road to Tully Road, SB/PM peak hour

US 101, I-280 to Santa Clara Street, NB/AM peak hour (significant impact)

US 101, Santa Clara Street to I-280, SB/PM peak hour (significant impact)

US 101, Santa Clara Street to McKee Road, NB/AM peak hour

US 101, McKee Road to Santa Clara Street, SB/PM peak hour (significant impact)

I-680, Capitol Expressway to Alum Rock Avenue, NB/AM peak hour

I-680, Alum Rock Avenue to Capitol Expressway, SB/AM peak hour

I-680, Alum Rock Avenue to McKee Road, NB/AM peak hour

I-680, McKee Road to Alum Rock Avenue, SB/PM peak hour

I-680, Capitol Expressway to King Road, SB/AM peak hour

I-680, King Road to US 101, SB/AM peak hour

I-280, US 101 to McLaughlin Avenue, NB/AM peak hour

I-280, McLaughlin Avenue to 10th Street, NB/AM peak hour

US 101, I-280 to Story Road, SB/PM peak hour

The study freeway segments projected to operate at an unacceptable LOS F under Phase 1 are shown graphically on **Figures 4.2-12** and **4.2-13**.

The mitigation necessary to reduce significant impacts to these freeway segments is the widening of the freeway. Due to the substantial cost, this measure is not considered feasible, resulting in a significant and unavoidable impact to freeways.

Intersection Traffic Volumes and Levels of Service

Traffic volumes for Phase 1 represent 2030 No Project traffic conditions plus the addition of the estimated PNR, KNR, and bus station trips to the proposed stations. Under Phase 1, intersections potentially impacted by an end-of-the-line Berryessa Station were analyzed.

The results of the intersection level of service analysis under Phase 1 for the proposed BART Stations is summarized in **Table 4.2-24**. The results show that 20 of the 66 study intersections analyzed under Phase 1 would operate at an unacceptable level of service (LOS E or F for local intersections and LOS F for CMP intersections) during at least one of the peak hours. Fourteen of the 66 study intersections are projected to be significantly impacted by Phase 1. CMP intersections are denoted with an asterisk (*). The results are described by proposed station area.

Table 4.2-24: Phase 1 Intersection Level of Service Results Summary

Station	Number of Study Intersections	Phase 1 Unacceptable LOS Intersections	Impacted Intersections
Milpitas	36	11	5
Berryessa	30	9	9
Total:	66	20	14

Source: Hexagon Transportation Consultants, Inc., 2008.

The following describes the significant impacts on intersections and recommended mitigation measures. The identified improvements are based on level of service calculations and their implementation would need to be

coordinated with the cities of Milpitas and San Jose. It should be noted that the projected intersection levels of service and identified improvements are based on traffic projections 20 years into the future. The need for the improvements will necessitate further investigation at the time of their implementation. Intersections for which cost effective feasible mitigation measures are not possible and intersections where cost effective feasible mitigation measures do not improve the intersection to acceptable levels are also discussed and identified on **Figures 4.2-14** and **4.2-15** for the Milpitas Station and the Berryessa Station, respectively. The statement 'Not feasible due to ROW constraints' refers to conditions where structures or parking would be displaced to provide sufficient area for the improvements.

Milpitas Station. The intersection LOS results show that a total of 5 of the 36 study intersections would be significantly impacted by Phase 1 during at least one of the peak hours, according to City of Milpitas and CMP LOS standards. The intersections are:

(1) Great Mall Parkway and Montague Expressway* (AM only)

(13) Milpitas Boulevard and Montague Expressway* (PM only)

(16) Park Victoria Drive and Yosemite Drive (AM only)

(17) Old Oakland/Main Street and Montague Expressway* (AM only)

(18) Trade Zone Boulevard and Montague Expressway* (PM only)

All other CMP and local City of Milpitas signalized study intersections are projected to operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections).

Berryessa Station. The intersection LOS results show that a total of 9 of the 30 study intersections would be significantly impacted by Phase 1 during at least one of the peak hours, according to City of San Jose and CMP LOS standards. The intersections are:

(2) Flickinger Avenue and Berryessa Road (AM & PM)

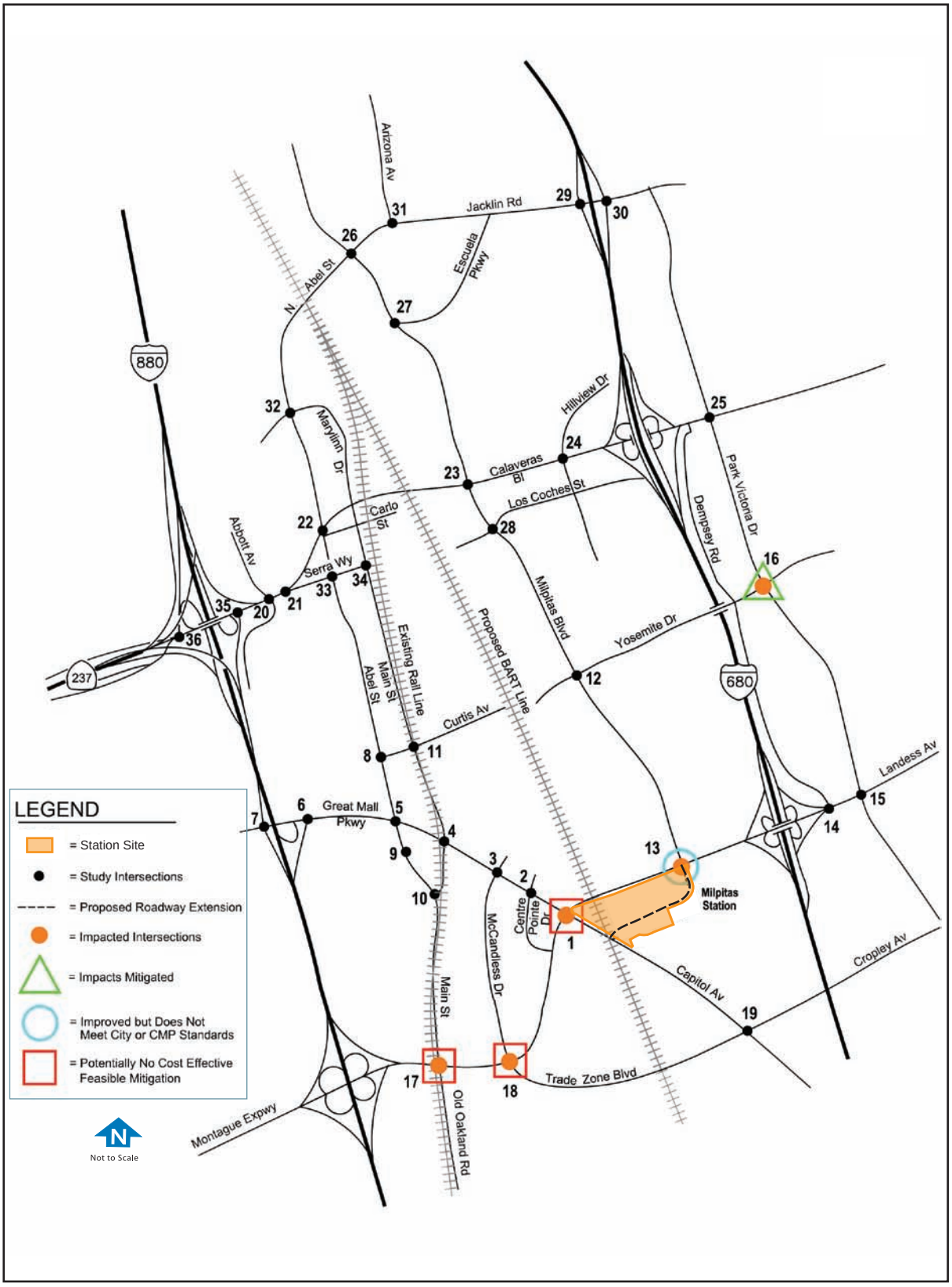
(3) Lundy Avenue and Berryessa Road* (AM only)

(5) King Road and Mabury Road (PM only)

(15) US 101 and Julian Street (PM only)

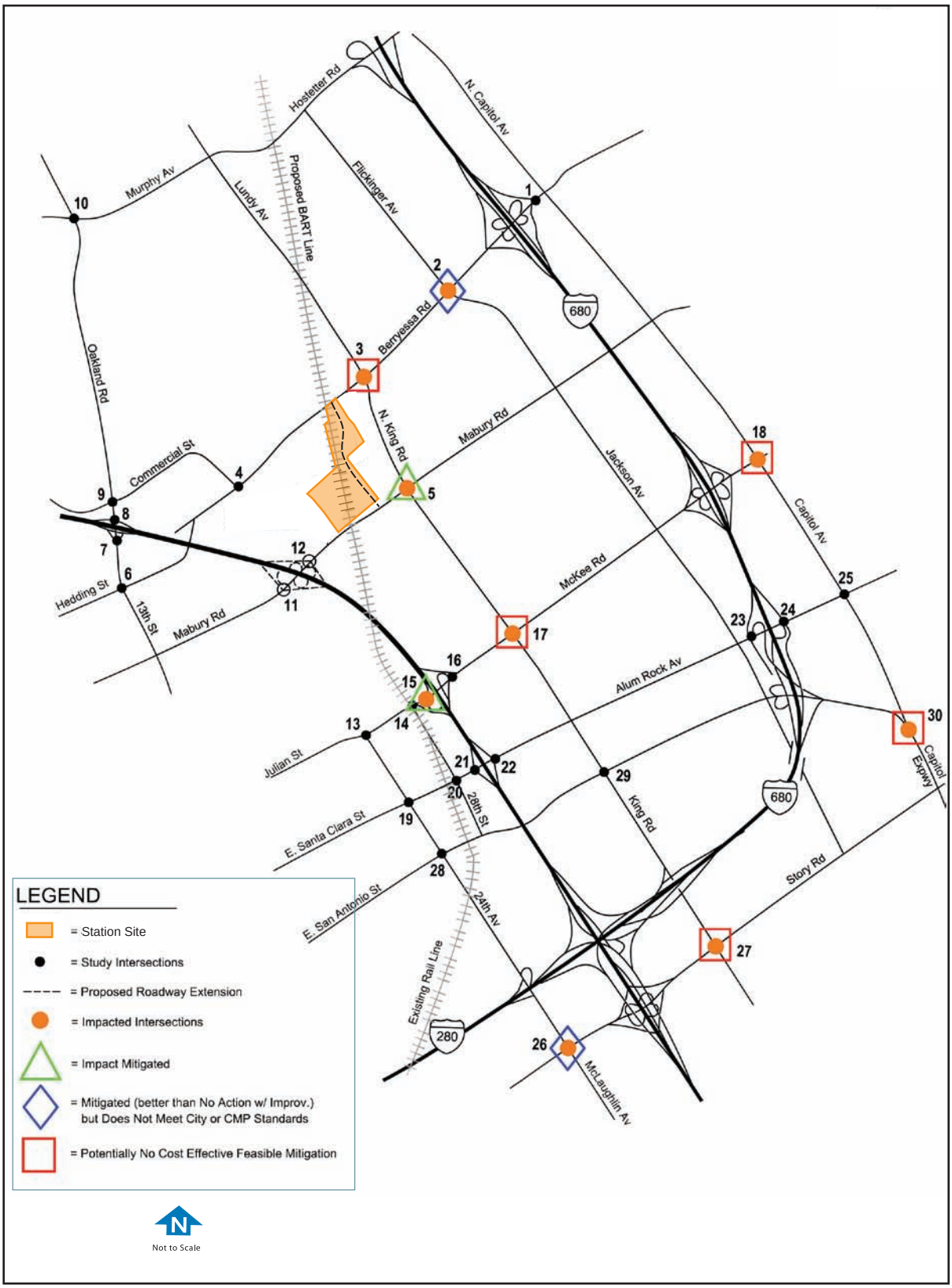
(17) King Road and McKee Road (PM only)

(18) Capitol Avenue and McKee Road (PM only)



Source: Hexagon Transportation Consultants, 2008.

Figure 4.2-14: Milpitas Station Phase 1 with Improvements Level of Service Conditions



Source: Hexagon Transportation Consultants, 2008.

Figure 4.2-15: Berryessa Station Phase 1 with Improvements Level of Service Conditions

(26) McLaughlin Avenue and Story Road (PM only)

(27) King Road and Story Road (AM only)

(30) Capitol Expressway and Capitol Avenue* (PM only)

All other CMP and local City of San Jose signalized study intersections are projected to operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections.)

Milpitas Station Impacts

(1) Great Mall Parkway and Montague Expressway* (No Cost Effective Feasible Mitigation)

The level of service would be an unacceptable LOS F during both the AM and PM peak hours under 2030 No Project conditions with Improvements and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the demand-to-capacity ratio (V/C) of 0.01 or more during the AM peak hour under Phase 1 conditions. This constitutes a significant impact by CMP standards.

> **Mitigation Measure TR-1:** There are no other cost effective feasible improvements that can be made at this intersection beyond those identified under the 2030 No Project conditions. The necessary improvement to mitigate the significant impact under Phase 1 at this intersection would require grade separation of the intersection. It should be noted that the grade separation of this intersection is included in the Valley Transportation Plan 2030 (VTP 2030) project list. However, this improvement was not included as part of the year 2030 roadway network since it was not included in the VTA 2030 (SVRTC) traffic model used for this analysis. Thus, as a conservative approach and in order to analyze the worst case scenario, this improvement was not considered to be implemented by the year 2030. Although Phase 1 would significantly impact this intersection, grade separation of this intersection was identified as the needed improvement under 2030 No Project conditions. Therefore, since Phase 1 would contribute to the need for grade separation of the Great Mall/Montague intersection, it would contribute a “fair share” amount toward the implementation of this improvement. Nonetheless, this impact remains significant and unavoidable.

(13) Milpitas Boulevard and Montague Expressway*

The level of service would be an unacceptable LOS F during both the AM and PM peak hours under 2030 No Project conditions with Improvements and the intersection would experience an increase in critical-movement delay of four or

more seconds and an increase in the V/C ratio of 0.01 or more during the PM peak hour under Phase 1 conditions. This constitutes a significant impact by CMP standards.

> **Mitigation Measure TR-2:** Possible improvements include a second westbound left-turn lane. Though intersection operations would slightly improve with this improvement, the significant impact to this intersection under Phase 1 would not be mitigated. Due to the relatively high projected volumes, there are no feasible at-grade improvements to mitigate significant impacts at this intersection. Because Phase 1 would contribute to traffic congestion at this intersection, it will contribute a 'fair share' amount toward the implementation of this traffic improvement. Should a feasible improvement be determined, a 'fair share' contribution would be evaluated at that time. This impact remains significant and unavoidable.

(16) Park Victoria Drive and Yosemite Drive

The level of service would be an unacceptable LOS F during the AM peak hour under 2030 No Project conditions with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more under Phase 1 conditions. This constitutes a significant impact by City of Milpitas standards.

> **Mitigation Measure TR-3:** The necessary improvement to mitigate the significant impacts under Phase 1 at this intersection consists of the addition of a second northbound left-turn lane. The implementation of this improvement would improve intersection level of service to an acceptable LOS D during the AM peak hour. It should be noted that changes to the signal timing at this location to accommodate future traffic volumes may improve intersection levels of operation without physical improvements. This mitigation would reduce the impact to a less-than-significant level.

(17) Old Oakland/Main Street and Montague Expressway* (No Cost Effective Feasible Mitigation)

The level of service would be an unacceptable LOS F under 2030 No Project conditions with Improvements and the intersection would experience an increase in the V/C ratio of 0.01 or more during the AM peak hour under Phase 1 conditions. This constitutes a significant impact by CMP standards.

> **Mitigation Measure TR-4:** There are no further feasible improvements beyond the planned Montague widening assumed under 2030 No Project conditions that can be implemented to improve intersection levels of service to acceptable levels. The North San Jose Development Plan (NSJDP) identified the impacts to the intersection associated with its development as significant and unavoidable due to the lack of feasible

mitigation measures. A traffic impact fee has been implemented as part of the NSJDP, but is only applicable to development within the NSJDP area. Development that impacts intersections within the NSJDP area is required to make a fair-share contribution towards identified improvements.

Because the project would contribute to traffic congestion at this intersection, the project will contribute a 'fair share' amount toward the implementation of the identified traffic improvement under 2030 No Project conditions. Should a feasible improvement be determined, a 'fair share' contribution would be evaluated at that time. This impact remains significant and unavoidable.

(18) Trade Zone Boulevard and Montague Expressway* (No Cost Effective Feasible Mitigation)

The level of service would be an unacceptable LOS F under 2030 No Project conditions with Improvements and the intersection would experience an increase in the V/C ratio of 0.01 or more during the PM peak hour under Phase 1 conditions. This constitutes a significant impact by CMP standards.

Mitigation Measure TR-5: There are no further feasible improvements beyond the planned Montague widening assumed under No Project conditions that can be implemented to improve intersection levels of service to acceptable levels. The NSJDP identified the impacts to the intersection associated with its development as significant and unavoidable due to the lack of feasible mitigation measures. A traffic impact fee has been implemented as part of the NSJDP, but is only applicable to development within the NSJDP area. Development that impacts intersections within the NSJDP area is required to make a fair-share contribution towards identified improvements.

Because the project would contribute to traffic congestion at this intersection, the project will contribute a 'fair share' amount toward the implementation of the identified traffic improvement under 2030 No Project conditions. Should a feasible improvement be determined, a 'fair share' contribution would be evaluated at that time. This impact remains significant and unavoidable.

Berryessa Station Impacts

(2) Flickinger Avenue and Berryessa Road (No Cost Effective Feasible Mitigation)

The level of service would be LOS D and F during the AM and PM peak hours, respectively, under 2030 No Project conditions with Improvements and the intersection would degrade to an unacceptable LOS E during the AM peak hour and it would experience an increase in critical-movement delay of four or more

seconds and an increase in the V/C ratio of 0.01 or more during the PM peak hour under Phase 1 conditions. This constitutes a significant impact by City of San Jose standards.

> **Mitigation Measure TR-6:** There are no other feasible improvements that can be made at this intersection beyond those described for 2030 No Project conditions to mitigate project impacts. Because the project would contribute to traffic congestion at this intersection, the project will contribute a 'fair share' amount toward the implementation of the identified traffic improvement under 2030 No Project conditions. Should a feasible improvement be determined, a 'fair share' contribution would be evaluated at that time. This impact remains significant and unavoidable.

(3) Lundy Avenue and Berryessa Road* (No Cost Effective Feasible Mitigation)

The level of service would be an acceptable LOS E under 2030 No Project conditions with Improvements and the intersection would degrade to an unacceptable LOS F during the AM peak hour under Phase 1 conditions. This constitutes a significant impact by CMP standards.

> **Mitigation Measure TR-7:** There are no cost effective feasible improvements that can be made beyond those described for 2030 No Project conditions to mitigate significant impacts of Phase 1. The necessary improvement to mitigate the Phase 1 significant impact at this intersection to an acceptable level consists of the addition of a fourth westbound through lane on Berryessa Road. This improvement is not feasible due to ROW constraints. Because Phase 1 would contribute to traffic congestion at this intersection, it will contribute a 'fair share' amount toward the implementation of this traffic improvement. Should a feasible improvement be determined, a 'fair share' contribution would be evaluated at that time. This impact remains significant and unavoidable.

(5) King Road and Mabury Road

The level of service would be an acceptable LOS D under 2030 No Project conditions with Improvements and the intersection would degrade to an unacceptable LOS E during the PM peak hour under Phase 1 conditions. This constitutes a significant impact by City of San Jose standards.

> **Mitigation Measure TR-8:** The necessary improvement to mitigate the significant impact resulting from Phase 1 at this intersection to an acceptable level consists of the addition of a second westbound left-turn lane. The implementation of this improvement would improve intersection level of service to an acceptable LOS D and this impact would be reduced to a less-than-significant level.

(15) US 101 and Julian Street (No Cost Effective Feasible Mitigation)

The level of service would be an acceptable LOS D during the PM peak hour under 2030 No Project conditions with Improvements and the intersection would degrade to an unacceptable LOS E under Phase 1 conditions. This constitutes a significant impact by City of San Jose standards.

> **Mitigation Measure TR-9:** There are no other feasible improvements that can be made at this intersection beyond those planned as part of the station development. VTA proposes that the intersection be added to the city's list of Protected Intersections and adhere to the Protected Intersection Policy. The LOS policy specifies that Protected Intersections consist of locations that have been built to their planned maximum capacity and where expansion of the intersection would have significant impact upon other transportation facilities (such as pedestrian, bicycle, and transit systems). If a development project has significant traffic impacts at a designated Protected Intersection, the project may be approved if offsetting Transportation System Improvements are provided that enhance pedestrian, bicycle and transit facilities to the community near the Protected Intersection. As part of the development of the station, surrounding pedestrian, bicycle and transit facilities will be enhanced to serve the station and surrounding community. This impact remains significant and unavoidable.

(17) King Road and McKee Road (No Cost Effective Feasible Mitigation)

The level of service would be LOS E during the PM peak hour under 2030 No Project conditions with Improvements and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more under Phase 1 conditions. This constitutes a significant impact by City of San Jose standards.

> **Mitigation Measure TR-10:** There are no cost effective feasible improvements that can be made beyond those described for 2030 No Project conditions to mitigate significant impacts from Phase 1. The necessary improvement to mitigate the significant impact resulting from Phase 1 at this intersection to an acceptable level consists of the addition of a third westbound through lane. However, this improvement would require the widening of McKee Road, which is not feasible due to ROW constraints. Because Phase 1 would contribute to traffic congestion at this intersection, it will contribute a 'fair share' amount toward the implementation of this traffic improvement. Should a feasible improvement be determined, a 'fair share' contribution would be evaluated at that time. This impact remains significant and unavoidable.

(18) Capitol Avenue and McKee Road (No Cost Effective Feasible Mitigation)

The level of service would be an unacceptable LOS F during the PM peak hour under 2030 No Project conditions with Improvements and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more under Phase 1 conditions. This constitutes a significant impact by City of San Jose standards.

This intersection has been identified by the City of San Jose as a Protected Intersection. The City of San Jose LOS policy specifies that Protected Intersections consist of locations that have been built to their planned maximum capacity and where expansion of the intersection would have a significant impact upon other transportation facilities (such as pedestrian, bicycle, and transit systems). The policy acknowledges that exceptions to the city's LOS policy of maintaining a LOS D at local intersections will be made for certain Protected Intersections that have been built to their planned maximum capacity. In this situation, if a development project has substantial significant impacts at a designated Protected Intersection, the project will be required to provide offsetting Transportation System Improvements. The offsetting improvements will include enhancements to pedestrian, bicycle, and transit facilities to the community near the Protected Intersection, as well as neighborhood traffic calming measures. The offsetting improvements are intended to provide other transportation benefits for the community adjacent to the significant traffic impact. The LOS policy has established a traffic fee to fund alternative transportation improvements. The values of the improvements will be equal to the established fees.

> **Mitigation Measure TR-11:** As described under the 2030 No Project conditions, there are no cost effective feasible improvements that can be made at this intersection to mitigate significant impacts from Phase 1. With the newly constructed Capitol LRT line, Capitol Avenue has been upgraded to its extent to allow for the operation of the LRT in its median. Further improvement of the intersection would not be compatible with LRT operations. VTA will comply with the Protected Intersection Policy as required including providing fair-share funding (amount to be negotiated) towards the construction of identified offsetting improvements. This impact remains significant and unavoidable.

(26) McLaughlin Avenue and Story Road

The level of service would be an unacceptable LOS E during the PM peak hour under 2030 No Project conditions with Improvements and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ration of 0.01 or more under Phase 1 conditions. This constitutes a significant impact by City of San Jose standards.

Mitigation Measure TR-12: Possible improvements include the addition of a second northbound left-turn lane. Though significant impacts would be mitigated and intersection level of service would improve with this improvement, the level of service would remain an unacceptable LOS E during the PM peak hour. The necessary improvement to improve intersection level of service to an acceptable level consists of the addition of a third southbound left-turn lane and widening of Story Road from six to eight through lanes. This improvement would require the widening of both McLaughlin Avenue and Story Road, which is infeasible due to ROW constraints. This impact remains significant and unavoidable.

(27) King Road and Story Road (No Cost Effective Feasible Mitigation)

The level of service would be an unacceptable LOS E under 2030 No Project conditions with Improvements and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more during the AM peak hour under Phase 1 conditions. This constitutes a significant impact by City of San Jose standards.

Mitigation Measure TR-13: As described under the 2030 No Project conditions, there are no cost effective feasible improvements that can be made at this intersection to mitigate significant impacts from Phase 1. The necessary improvement to mitigate the impact from Phase 1 at this intersection to an acceptable level consists of the widening of King Road from four to six through lanes. The widening of King Road is not feasible due to ROW constraints. Because Phase 1 would contribute to traffic congestion at this intersection, it will contribute a 'fair share' amount toward the implementation of this traffic improvement. Should a feasible improvement be determined, a 'fair share' contribution would be evaluated at that time. This impact remains significant and unavoidable.

(30) Capitol Expressway and Capitol Avenue* (No Cost Effective Feasible Mitigation)

The level of service would be an unacceptable LOS F during the PM peak hour under 2030 No Project conditions with Improvements and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more under Phase 1 conditions. This constitutes a significant impact by CMP standards.

Mitigation Measure TR-14: As described under the 2030 No Project conditions, there are no cost effective feasible improvements that can be made at this intersection to mitigate significant impacts from Phase 1. With the newly constructed Capitol LRT line, Capitol Avenue has been upgraded to its extent to allow for the operation of the LRT in its median. Further improvement of the intersection would not be compatible with LRT operations. VTA proposes that the intersection be added to the city's list

of Protected Intersections and adhere to the Protected Intersection Policy. The LOS policy specifies that Protected Intersections consist of locations that have been built to their planned maximum capacity and where expansion of the intersection would have an significant impact upon other transportation facilities (such as pedestrian, bicycle, and transit systems). If a project has significant traffic impacts at a designated Protected Intersection, the project should provide offsetting Transportation System Improvements that enhance pedestrian, bicycle and transit facilities to the community near the Protected Intersection. VTA will comply with the Protected Intersection Policy as required including providing fair-share funding (amount to be negotiated) towards the construction of identified offsetting improvements. This impact remains significant and unavoidable.

4.2.7.4 Conclusion

Potentially significant impacts resulting from Phase 1 were evaluated in accordance with the standards set forth by the cities of Milpitas and San Jose, and CMP of Santa Clara County. The analysis included evaluation of AM and PM peak-hour traffic conditions for a total of 66 signalized intersections and 30 directional freeway segments.

The project includes two proposed BART Stations: the Milpitas Station and the Berryessa Station. A total of four directional freeway segments in the vicinity of the Berryessa Station would have a significant and unavoidable impact under Phase 1.

As shown in **Table 4.2-25**, the results of the intersection LOS analyses indicate that a total of 14 of the 66 study intersections would be significantly impacted by the project. Out of the 14 study intersections projected to be significantly impacted by Phase 1, significant impacts would be mitigated at two intersections to a less-than-significant level. Although one intersection would be mitigated to better than 2030 No Project conditions, it would continue to operate at an unacceptable level. Another intersection would be improved but would continue to operate at an unacceptable level, and 10 intersections would potentially have no cost effective feasible mitigation. A total of 12 intersections have no feasible mitigation measures to improve the intersections to acceptable LOS, therefore, these impacts would remain significant and unavoidable.

The project would not cause a substantial increase in regional VMT or VHT, cause a substantial diversion of traffic onto residential streets, or substantially disrupt traffic operations and/or significantly impact emergency vehicle response.

Table 4.2-25: Phase 1 with Mitigations Intersection Level of Service Results Summary

Station	Number of Study Intersections	Impacted Intersections	Mitigated Intersections	Mitigated but Unacceptable LOS	Improved but Unacceptable LOS	No Cost Effective Feasible Mitigation
Milpitas	36	5	1	0	1	3
Berryessa	30	9	1	1	0	7
Total:	66	14	2	1	1	10

Source: Hexagon Transportation Consultants, Inc., 2008.

This page intentionally left blank.