Capitol Expressway Corridor

DOWNTOWN EAST VALLEY

Downtown East Valley

Final

Environmental Impact Report

Volume I
(EIS/EIR Text)

April 2005

SANTA CLARA
Valley Transportation Authority

Final
Environmental Impact Report
for the Capitol Expressway Corridor

Volume I of III:
EIR Text

State Clearinghouse #2001092014

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ABSTRACT

The Santa Clara Valley Transportation Authority (VTA) proposes to improve transit services in the Capitol Expressway corridor in the City of San Jose in the County of Santa Clara, California. Alternatives evaluated include a No-Project Alternative, a Baseline Alternative and a Light Rail Transit (LRT) Alternative. On August 5, 2004, the Downtown East Valley Policy Advisory Board (PAB) approved staff recommendations regarding preferred design options and phasing for the Light Rail Alternative based on conceptual engineering work, environmental technical studies, and public and policy-level input. In doing so, it deferred all project-level decisions, including design options and project phasing, on Phase 2, between Nieman Boulevard and State Route (SR) 87, until land use and transportation decisions associated with the U.S. 101 Central Corridor Study and Evergreen Smart Growth Strategy have been further developed and approved. The Recommended Light Rail Alternative would extend 3.1 miles south from the terminus of the Capitol Avenue Light Rail Transit (LRT) Line at the existing Alum Rock Station to the proposed Nieman Boulevard Station. Existing HOV lanes south of Capitol Avenue to Nieman Boulevard would be removed to accommodate light rail.

The Recommended Light Rail Alternative could be constructed in two phases: an initial phase terminating in the vicinity of the Eastridge Transit Center, and a subsequent phase terminating in the vicinity of Nieman Boulevard. The initial phase, or Minimum Operating Segment (MOS), is known as MOS-Phase 1A. Under MOS-Phase 1A, light rail would be constructed between the Alum Rock Station and the Eastridge Transit Center, a distance of approximately 2.3 miles. MOS-Phase 1A includes new light rail stations at Story Road, in the vicinity of Ocala and Cunningham Avenues, and at the Eastridge Transit Center; an expanded park-and-ride facility would be constructed at the Eastridge Transit Center. Five major overhead electrical towers would require relocation between Story Road and the Eastridge Transit Center. No additional vehicles would be required to serve the Recommended Light Rail Alternative.

Light rail continuing from Eastridge Transit Center to Nieman Boulevard, (Phase 1B) a distance of approximately 0.8 mile, could be constructed in a subsequent phase, or included as one project with MOS-Phase 1A. Under Phase 1B, a new light rail station would be constructed north of Nieman Boulevard.

Environmental impacts include increased traffic congestion at intersections and grade crossings near proposed stations, effects on special-status species, and relocation of residents and businesses. Mitigation measures to reduce anticipated impacts are identified in the document and include intersection improvements, habitat restoration and relocation assistance.

This environmental impact report was initially prepared as a joint federal and state environmental impact statement/environmental impact report (EIS/EIR) in accordance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). However, subsequent to the public review of the draft EIS/EIR, VTA decided to complete the state environmental process only because no federal involvement in this project is anticipated. While modifications have been made to the text of the EIR to reflect this change, some references to the federal process remain. These references do not affect the conclusions of this EIR.

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1.1 Overview, Purpose, and Need

1.1.1 Overview

The Santa Clara Valley Transportation Authority (VTA) is considering three alternatives for improving direct transit service in the Capitol Expressway Corridor in the City of San Jose (City) in Santa Clara County (County): the No-Project Alternative, Baseline Alternative, and Light Rail Alternative. The proposed alternatives are located entirely within San Jose, which is located in the southern region of the San Francisco Bay Area. These alternatives are summarized below in Section 1.3, *Description of the Proposed Alternatives*.

Planning for a light rail alignment along Capitol Expressway has been ongoing since the 1990s. Transportation 2010, the countywide transportation plan for Santa Clara County adopted in 1992, reaffirmed previous priorities for light rail corridors established in earlier plans and identified a second tier of candidate corridors for continued planning and potential construction, which included the Capitol/Downtown-Evergreen and Stevens Creek/Alum Rock Corridors. A Project Definition Study was initiated on the Capitol/Downtown-Evergreen Corridor and, because of funding constraints and policy input, the Alum Rock Corridor was folded into the Downtown-Evergreen investigation. Work progressed on the Project Definition Study until 1994 when funding shortfalls curtailed the Downtown-Evergreen (and Alum Rock) investigation. Work proceeded for the Capitol Corridor in defining a light rail project extending from the terminus of the Tasman East Light Rail Transit (LRT) Line along Capitol Avenue and Capitol Expressway to Eastridge Mall (Eastridge Transit Center).

Subsequent policy decisions and the resulting language contained as Measure A in the approved Santa Clara County November 5, 1996, ballot defined the Capitol LRT Line as "Building the Capitol Light Rail Line from northeast San Jose – the connection to the Tasman Line – down Capitol Avenue through east San Jose to the Alum Rock area, with eventual service to Eastridge."

A Major Investment Study (MIS) was initiated in 1999 for the Downtown/East Valley study area that encompassed the Evergreen-Downtown Corridor, the Capitol Avenue Corridor extension to the Eastridge Mall and the Alum Rock Corridor. The Downtown/East Valley MIS study area encompassed 30-square-miles extending from McKee Road/East Julian Street on the north to Capitol Expressway and Yerba Buena Road on the south, and from Market Street/Monterey Highway on the west to the foothills of the Diablo Range on the east.

Given the identified transportation needs and input received from the community, the following goals were established in the MIS:

- improve mobility,
- increase transit ridership,
- target the highest commute corridors, with emphasis on work trips and school trips,
- promote livable neighborhoods, and
- engage community support.

The overall Downtown/East Valley study area was recognized as a large geographic area with diverse travel needs and multiple travel markets. Three general travel corridors emerged from the study; the Santa Clara/Alum Rock corridor, the Capitol/Evergreen Corridor, and the south San Jose Corridor. Following an intensive study process, it was concluded that major transit improvements were warranted in three distinct corridors as part of the solution to travel and mobility problems. In August 2000, the VTA Board of Directors approved a “Preferred Investment Strategy” for the Downtown/East Valley study area, which included light rail transit to serve what was referred to as the "Capitol Expressway/Evergreen Corridor", hereinafter referred to as the "Capitol Expressway Corridor".

The Capitol Expressway Corridor is one of several projects that were included in VTA’s current countywide transportation plan, Valley Transportation Plan 2030 (VTP 2030), which was adopted by the VTA Board of Directors in February 2005. To address the funding issues, VTA has embarked on a program of financial analysis and plans for achieving a stable and reliable funding program for these projects. VTA is not seeking federal New Start funding for the Capitol Expressway Corridor.

1.1.2 Purpose and Need

Need

The proposed alternatives are needed to meet projected growth and associated development in the Capitol Expressway Corridor and to meet transit needs in the corridor.

The overall Downtown/East Valley study area contains approximately 20% of the county population. The study area has neighborhoods with an average household size in this area that is larger than in either the city or county as a whole. The population of Santa Clara County is expected to increase approximately 16% by 2020 and in the study area by 15% by the same year. Increases in population tend to correlate with increases in traffic and congestion, particularly when roadway capacity falls short of population growth. Although plans and studies are underway to enhance roadway capacity in the study area, the estimated capacity increase from programmed projects countywide is only about 4%.

In addition to growth within the Downtown/East Valley study area, growth in areas outside the Capitol Expressway Corridor (generally to the south in areas such as Edenvale, Coyote Valley, and the south part of the county) is expected to increase congestion on I-680 and U.S. 101, and Capitol Expressway. Few employment centers are located within the Downtown/East Valley study area, which contains only about 5% of countywide employment. Therefore, these roadways are used by commuters from within and outside the study area to reach the major employment centers in the region, which are located northwest of the study area and in downtown San Jose. There are few or no direct linkages to these employment areas from the Capitol Expressway Corridor. Automobile ownership rates in this area are below the county average, and transit service between the Capitol Expressway Corridor and employment centers is limited to two routes and a few express routes that do not serve the entire corridor.

Purpose

The basic purpose of the proposed alternatives is to improve public transit service in the Capitol Expressway Corridor. More specifically, the purpose of the proposed alternatives is to:

- improve public transit service in the Capitol Expressway Corridor by providing increased capacity and faster, convenient access to downtown San Jose and major employment and activity centers;
- make transit an attractive alternative to the automobile for travel along the expressway;
- enhance regional connectivity through expanded, interconnected transit services along some of the primary travel corridors in Santa Clara County, including U.S. 101 (Guadalupe Corridor) and I-680 (Tasman East, Capitol Avenue, and Capitol Expressway Corridors);
- improve regional air quality by reducing the growth in automobile emissions;
- improve mobility options to employment, education, medical and retail centers for all corridor residents and in particular, low-income, transit-dependent, youth, elderly, disabled, and ethnic minority populations; and
- support local economic and land development goals.

The improvement of transit service in the Capitol Expressway Corridor would provide additional capacity to address the increases in travel demand in this part of Santa Clara County. The expanded transit system would link the residents of east and south San Jose with the existing light rail system, and provide improved connections and greater mobility options throughout the Santa Clara Valley. Access from the Capitol Expressway Corridor to the employment centers now served by the Guadalupe and Tasman LRT Lines would be provided with the proposed linkage.

Because expanded transit service would be available in the corridor, parking and circulation effects could be reduced. The reduction in automobile trips could result in improved regional air quality because of reduced growth in automobile emissions.

The proposed alternatives would serve two high schools, two middle schools, a regional shopping facility (Eastridge Mall), three libraries, recreational facilities, and two colleges/universities.

The purpose of the proposed alternatives is consistent with the goals set forth in the MIS. The proposed alternatives conform to stated policies of the City and County. The Capitol/Downtown-Evergreen corridor is identified in the Santa Clara County General Plan as a priority "New Rail Start" in the long-range rail master plan. Policy C-TR-15 states that there should be "increased transit system capacity and service levels for light rail passenger rail and bus transit." In addition, county general plan policies call for "a balanced and integrated transportation system, which will allow for alternative means of travel and opportunities for transfer between alternative means."

VTA's Valley Transportation Plan 2030 (VTP 2030), adopted by the Board of Directors in February 2005, includes light rail along Capitol Expressway in its capital investment program. This program identifies those specific transit projects that would be implemented during the 20-year time frame of VTP 2030.

The San Jose 2020 General Plan designates the Capitol Avenue/Expressway corridor, as one in which an intensification of land uses related to transportation should occur. However, it acknowledges that intensification within this corridor is expected to occur more slowly than in other corridors designated for intensification. It states that intensification will occur as sufficient transportation system capacity can be identified that is consistent with the City's transportation level of service policies.

The projects included in the Baseline Alternative are also included in the Metropolitan Transportation Commission's (MTC's) Regional Transportation Plan (RTP). The Light Rail Alternative, as well as other light rail extensions in VTA's 2000 Measure A Improvement Program, are included the RTP.

1.2 Project Benefits

The Capitol Expressway Light Rail Alternative provides several benefits to the community that address identified transportation and community needs. As an extension of the Tasman/Capitol Light Rail Project, it would maximize and enhance the investments already made and provide additional transit options and mobility for residents and businesses in east San Jose.

With significant and growing commuter volumes in the corridor, the transit alternative provides increased capacity and regional connectivity to major employments and activity centers. It links with other travel modes, including automobiles, buses, existing and proposed light rail lines, public and private shuttles, bicycles, pedestrians and regional trails. Several park-and-ride lots and additional bus bays proposed near stations will provide additional access to transit users.

The Light Rail Alternative addresses transit and traffic operations while accommodating pedestrian and bicycle use. With a multipurpose path, increased landscaping and lighting, improved and more extensive sidewalks along the corridor, signalized crosswalks, and grade-separated pedestrian crossings, there would be greatly improved pedestrian access.

The Light Rail Alternative's vision creates a multimodal boulevard by transforming the current "highway" environment into a multimodal street with cars, light rail, bicycles, and pedestrians. It would create a "greener street" by enhancing the visual quality and create a more attractive and hospitable environment. The Light Rail Alternative supports and enhances identified economic and land development goals. It would provide environmental benefits by improving air quality by reducing the growth in automobile emissions. The light rail stations would serve as gateways to commercial, residential, recreational, and community-oriented activities. The Light Rail Alternative would provide opportunities at the stations to incorporate art features to enhance the visual appearance of the stations.

The Light Rail Alternative would reduce automobile trips and improve transit ridership systemwide. Compared to the No-Project Alternative, the Light Rail Alternative MOS-1 would increase daily transit ridership to 72,000 boardings in 2010 and to 91,000 boardings in 2025. The Light Rail Alternative Phase 2 would increase the daily boardings to 80,000 boardings in 2010 and to 97,000 boardings in 2025.

The Light Rail Alternative would also provide travel time benefits compared to the automobile and bus modes of travel. In 2010, travel time for the Light Rail Alternative from Alum Rock Avenue to State Route 87 would range from three minutes faster than autos in the northbound AM peak direction to 5.5 minutes faster than autos in the southbound PM peak direction. In 2025, travel time benefits for the Light Rail Alternative would increase from 4.1 minutes faster than buses in the northbound PM peak direction, to 8.1 minutes faster than autos for the southbound AM peak direction.

1.3 Purpose of the EIR

The purpose of this environmental impact report (EIR) is to fully disclose the environmental consequences of building and operating the proposed alternatives in advance of any decisions to commit substantial financial or other resources toward its implementation. This EIR has been prepared pursuant to the requirements of the California Environmental Quality Act of 1970 (CEQA).

CEQA requires that the resources potentially affected by a project be identified and evaluated. CEQA requires that all state and local government agencies consider the environmental consequences of projects over which they have discretionary authority, and requires that a determination of significant impacts be made in an EIR and mitigation measures identified and implemented where feasible. The CEQA significance criteria and the specific determination of the level of significance as defined by CEQA are contained in Chapter 5, *Other CEQA Considerations*.

1.4 Description of the Proposed Alternatives

The following is a summary description of the three proposed alternatives. A detailed discussion of these alternatives is provided in Chapter 3, *Alternatives Considered*.

1.4.1 No-Project Alternative

CEQA requires that an EIR evaluate and analyze the impacts of a no-project alternative. The purpose of evaluating a no-project alternative is to allow decision-makers to compare the impacts of approving a project with the impacts of not approving the project. The No-Project Alternative represents the conditions that would be reasonably expected to occur in the foreseeable future if none of the proposed alternatives were implemented. These conditions are based on current plans and are consistent with available infrastructure and community services. For the purposes of this analysis, it is assumed that transit services provided by VTA within the Capitol Expressway Corridor will continue at September 2001 levels, except for limited improvements in service frequency.

The existing high occupancy vehicle (HOV) lanes along Capitol Expressway between I-680 and U.S. 101 were approved and constructed in the mid-1990s as temporary transportation improvements to mitigate the impacts of the development included in the Evergreen Specific Plan and Evergreen Development Policy. The Evergreen Specific Plan provided for the construction of approximately 2,856 dwelling units, commercial uses, and associated infrastructure improvements on an 865-acre site in the Evergreen area of San Jose. In addition, there were 1,353 additional residential units planned for the remainder of the Evergreen area for which additional traffic capacity improvements would be required in order to comply with the Evergreen

Development Policy. According to the Evergreen Specific Plan, the HOV lanes were to be replaced by a future light rail transit project. The eight-lane facility that was ultimately approved for Capitol Expressway, was to be designed in such a manner as to provide for the future elimination of the two inside lanes and the installation of a future double track light rail system (with stations). The light rail system was to be constructed in the median of the roadway, while minimizing the need to reconstruct the six lanes of the expressway that would remain. The Light Rail Alternative is consistent with these prior policy decisions. Therefore, for the purposes of this analysis, the No-Project Alternative includes HOV lanes.

1.4.2 Baseline Alternative

While the Capitol Expressway Corridor is not a FTA New Starts project, the Baseline Alternative has been defined in accordance with that program. Under the requirements of the Federal Transit Administration's (FTA's) New Starts program, the proposed New Starts project is compared to an alternative includes transit improvements lower in cost than the proposed New Start project and is referred to as the "Baseline Alternative." The Baseline Alternative evaluated in this EIR includes existing transit conditions and programmed transportation projects that will be constructed by 2025, as well as enhancements to existing bus service above existing and planned levels. The existing HOV lanes are included in the Baseline Alternative, as well as the following projects, some of which are programmed in the approved 1996 Measure B Improvement Program.

- light rail extensions in the Tasman, Vasona, and Capitol Avenue Corridors;
- additional commuter rail service along the Capitol Corridor Intercity Rail, Caltrain, and Altamont Commuter Express (ACE) lines;
- extension of Bay Area Rapid Transit service from the terminus at the existing Fremont Station to the Warm Springs District;
- I-880 Widening Project in north San Jose;
- Routes 85/87 Interchange Project in San Jose;
- Route 87 (South) HOV Lanes Project in San Jose; and
- Route 87 (North) HOV Lanes Project in San Jose.

The Baseline Alternative would address mobility in the Capitol Expressway Corridor by enhancing the existing bus system. It represents the optimal level of bus service that could be provided in the corridor without an investment in major new infrastructure. The bus service improvements in the Baseline Alternative would operate using the existing service structure, maintaining the existing route network and bus stop locations. To reduce costs, new routes would partially or fully overlay existing routes and would use existing bus stop locations. Enhancements to the existing service structure would consist primarily of modest, cost-effective facility improvements and operations expansions. The

Baseline Alternative would include slight modifications to the existing route network, bus-stop locations, and feeder network.

1.4.3 Light Rail Alternative

The Light Rail Alternative would extend for 8.2 miles along Capitol Expressway south and west from the terminus of the Capitol Avenue LRT Line at the Alum Rock Station to the Eastridge Transit Center, and continue to connect with the existing Guadalupe LRT Line at State Route (SR) 87. The Light Rail Alternative would have nine stations, located near Story Road, Ocala/Cunningham Avenue, Eastridge Mall, Nieman Boulevard, McLaughlin Avenue, Senter Road, Monterey Highway, Vista Park Drive, and SR 87. The alternative includes an optional future station at Silver Creek Road.

If selected as the preferred project, the Light Rail Alternative would likely be constructed and operated in two or more phases as funding permits: the Minimum Operating System (MOS) or initial phase, would terminate in the vicinity of the Eastridge Transit Center (Figure 3-4), and subsequent phases would extend from the Eastridge Transit Center to the Guadalupe LRT Line at SR 87. The environmental effects of the design features and options of both phases are analyzed in this EIR; however, it should be recognized that other ongoing transportation planning efforts could influence this alternative, particularly in the segment south and west of the Eastridge Transit Center/Nieman Boulevard.

Park-and-Ride facilities are proposed for Ocala Avenue, Eastridge Transit Center, Monterey Road, and State Route 87 with a small short-term parking lot with adjacent bus bays proposed for Story Road. Three locations for a vehicle storage facility are under consideration at Ocala Avenue, Quimby Road, and State Route 87. Ancillary facilities would be required to support the safe operation of the Light Rail Alternative and would include approximately seven new traction power substations, an overhead contact system, a communications system, and a signaling and gates system. No additional vehicles are anticipated for the Minimum Operating System (MOS). However, four additional vehicles will be required to serve the full alignment to State Route 87.

The alignment would operate in exclusive and semi-exclusive rights-of-way, and would include both grade-separated and at-grade intersection crossings. The alignment would operate primarily in the median of Capitol Expressway; however, some short alignment sections and options would deviate from the median to a side-running operation. Additional right-of-way would be required for the Light Rail Alternative. The MOS would require a total of 44 acquisitions, including nine full acquisitions and 35 partial acquisitions. Phase 2 would require a total of 112 acquisitions, including one full acquisition and 111 partial acquisitions.

The Light Rail Alternative is designed to reduce transit travel time, with signal priority at intersections and grade separation at congested intersections.

Crossings at freeways, expressways, and some major arterials would also be grade-separated (either elevated or depressed) to further support higher-speed transit operations. Crossing gates would be required at intersections for side-running operations. Travel time benefits would range from three to eight minutes saved in comparison to automobiles, and from four to six minutes compared to buses. The estimated daily ridership for the Light Rail Alternative is 9,790 riders in 2010 and 11,075 in 2025.

Construction of the light rail guideway and grade-separated structures under this alternative would alter the roadway geometry along some portions of Capitol Expressway. Perhaps the most dramatic design change to the expressway would be the removal of existing HOV lanes between Capitol Avenue and U.S. 101 to provide the additional right-of-way to accommodate the light rail alignment. This would minimize the need to acquire additional property for the Light Rail Alternative. Except for restriping and a slight reduction in lane width, minimal modifications to the remaining traffic lanes would be required. Left turns and through movements would not be affected, and all three existing through traffic lanes would remain in place.

1.5 Environmental Consequences

This EIR evaluates the environmental consequences of the proposed alternatives. A summary of the anticipated effects of these alternatives is presented at the end of this chapter in Table 1-1. The primary areas of concern with regard to environmental consequences include:

- effects of acquiring right-of-way lands from adjacent residential, commercial, utility, and public properties;
- potential indirect and direct effects on biological resources, including special-status species that could inhabit the natural areas located within the corridor;
- construction-related disruptions of existing traffic operations;
- disruption to and potential relocation of utilities located within or directly adjacent to the corridor; and
- temporary disturbances to known and unknown sensitive cultural resources resulting from earthmoving activities

1.6 Next Steps

The draft EIS/EIR was circulated from April 28, 2004 to June 28, 2004 for public review in order to disclose the environmental impacts associated with proposed project and alternatives. A public hearing was held on May 27, 2004. During the public review period, a total of 316 written and oral comments were received on the draft EIS/EIR. Volume II, Chapter 3, *Comments and Responses on the Draft*

EIS/EIR, includes a list of all commenters, copies of the written comments and the public hearing transcript, and responses to all comments received. The responses and proposed mitigation measures will be presented to the VTA Board of Directors, which will consider them when it votes on whether to certify the Final EIR, in accordance with CEQA. If there are adverse effects that cannot be mitigated, and the board determines that the project should be approved and that the document should be certified, the board will need to make a statement of overriding considerations that explains why the project was approved and the document certified although there were impacts that could not be mitigated as required under CEQA. The board would consider this statement and make findings regarding the adequacy of the document when it votes on whether to approve the project and certify the document.

Resource	Adverse Effect	Mitigation
No-Project Alternative		
Transportation	None.	None.
Air Quality	AQ-2: Potential Net Increase in Emissions of Reactive Organic Gases, Oxides of Nitrogen, and PM10	No mitigation is available.
Biological Resources	None.	None.
Community Services	None.	None.
Cultural Resources	None.	None.
Electromagnetic Fields	None.	None.
Energy	E-1: Place a Substantial Demand on Regional Energy Supply	No mitigation is available.
Environmental Justice	A disproportionately high and adverse human health or environmental effect would occur to minority or low-income populations within the meaning of Executive Order 12898.	None.
Geology, Soils, and Seismicity	None.	None.
Hazardous Materials	None.	None.
Hydrology and Water Quality	None.	None.
Land Use	LU-3: Conflicts with Any Applicable Land Use Plan, Policy, or Regulation of an Agency with Jurisdiction	No mitigation is available.
Noise and Vibration	None.	None.
Safety and Security	None.	None.
Socioeconomics	SOC-2: Detraction from Efforts to Economically Revitalize the Study Area	No mitigation is feasible.
Utilities	None.	None.
Visual Quality	None.	None.
Construction Impacts	None.	None.

Resource	Adverse Effect	Mitigation
Baseline Alternative		
Transportation	TRN-1a Traffic Impacts at the Capitol Expressway/Story Road Intersection. (2010)	Mitigation Measure TRN-1a: Addition of a Third Southbound Left Turn Lane to Capitol Expressway at Story Road
	TRN-1b: Traffic Impacts at the Capitol Expressway/Senter Road Intersection (2010)	Mitigation Measure TRN-1b: Addition of Left-Turn and Through Lanes on Capitol Expressway at Senter Road
	TRN-7a: Traffic Impacts at the Capitol Expressway/Capitol Avenue Intersection (2025)	Mitigation Measure TRN-7a: Addition of a Shared Third Left - Turn/Through Lane
	TRN-7b: Traffic Impacts at the Capitol Expressway/Ocala Avenue Intersection (2025)	Mitigation Measure TRN-7b: Signal Modifications to the Capitol Expressway/Ocala Avenue Intersection
	TRN-7c: Traffic Impacts at the Capitol Expressway/Aborn Road Intersection (2025)	Mitigation Measure TRN-7c: Addition of Left- and Right-Turn Lanes from Aborn Road to Capitol Expressway
	TRN-7d: Traffic Impacts at the Capitol Expressway/Senter Road Intersection (2025)	Mitigation Measure TRN-2b: Addition of Left-Turn and Through Lanes on Capitol Expressway at Senter Road
Air Quality	None.	None.
Biological Resources	None.	None.
Community Services	None.	None.
Cultural Resources	None.	None.
Electromagnetic Fields	None.	None.
Energy	None.	None.
Environmental Justice	A disproportionately high and adverse human health or environmental effect would occur to minority or low-income populations within the meaning of Executive Order 12898.	None.
Geology, Soils, and Seismicity	None.	None.
Hazardous Materials	None.	None.
Hydrology and Water Quality	None.	None.
Land Use	None.	None.
Noise and Vibration	None.	None.
Safety and Security	None.	None.
Socioeconomics	SOC-8: Detractions of Efforts to	No mitigation is feasible.

Resource	Adverse Effect	Mitigation
	Economically Revitalize the Study Area	
Utilities	None.	None.
Visual Quality	None.	None.
Construction Impacts	None.	None.
Light Rail Alternative		
Transportation	TRN-2a: Traffic Impacts at the Capitol Expressway/Story Road Intersection (2010)	No mitigation is feasible.
	TRN-2b: Traffic Impacts at the Capitol Expressway/Ocala Avenue Intersection (2010)	No mitigation is feasible.
	TRN-2c: Traffic Impacts at the Capitol Expressway/Tully Road Intersection (2010)	Mitigation Measure TRN-2c: Maintain HOV Lane on Capitol Expressway as an HOV Bypass Lane
	TRN-2d: Traffic Impacts at the Capitol Expressway/Aborn Road Intersection (2010)	Mitigation Measure TRN-2d: Addition of a Third Left-Turn Lane to Aborn Road at Capitol Expressway
	TRN-2e: Traffic Impacts at the Capitol Expressway/Silver Creek Road Intersection (2010)	Mitigation Measure TRN-2e: Construct Interchange at Silver Creek Road
	TRN-2f: Traffic Impacts at the Capitol Expressway/McLaughlin Avenue Intersection (2010)	Mitigation Measure TRN-2f: Change Intersection Approaches at McLaughlin Avenue
	TRN-5: Changes to Park-and-Ride Lot Demand and Capacity (2010)	Mitigation Measure TRN-5: Supply Additional Parking Warranted by Demand
	TRN-8a: Traffic Impacts at the Capitol Expressway/Capitol Avenue Intersection (2025)	Mitigation Measure TRN-8a: Addition of Shared Left-Turn and Through Lane on Capitol Expressway at Capitol Avenue
	TRN-8b: Traffic Impacts at the Capitol Expressway/Story Road Intersection (2025)	No mitigation is feasible.
	TRN-8c: Traffic Impacts at the Capitol Expressway/Ocala Avenue Intersection (2025)	No mitigation is feasible.
	TRN-8d: Traffic Impacts at the Capitol Expressway/Tully Road Intersection (2025)	Mitigation Measure TRN-2c: Maintain HOV Lane on Capitol Expressway as an HOV Bypass Lane
	TRN-8e: Traffic Impacts at the Capitol Expressway/Quimby Road Intersection (2025)	No mitigation is feasible.
	TRN-8f: Traffic Impacts at the Capitol Expressway/Aborn Road Intersection (2025)	Mitigation Measure TRN-8f: Addition of Third Left-Turn Lane on Aborn Road at Capitol Expressway

Resource	Adverse Effect	Mitigation
	TRN-8g: Traffic Impacts at the Capitol Expressway/Silver Creek Road Intersection (2025)	Mitigation Measure TRN-2e: Construct Interchange at Silver Creek Road
	TRN-8h: Traffic Impacts at the Capitol Expressway/McLaughlin Avenue Intersection (2025)	Mitigation Measure TRN-2f: Change Intersection Approaches at McLaughlin Avenue
Air Quality	None.	None.
Biological Resources	BIO-7: Permanent Loss of Biological Habitats and Disturbance to Inhabiting Species	Mitigation Measure BIO-7: Conduct Preconstruction Surveys for Nesting and Wintering Western Burrowing Owls and Implement Measures to Avoid or Minimize Adverse Effects if Owls Are Present
	BIO-8: Temporary Disturbance of Riparian Forest during Construction	Mitigation Measure BIO-8a: Conduct Pre-construction Surveys to Identify Environmentally Sensitive Habitat Areas
		Mitigation Measure BIO-8b: Compensate for Disturbed Riparian Forest
	BIO-9: Placement of Fill within Open Waters of the United States and Aquatic and Bare Soil (Ruderal) Habitats under the Jurisdiction of the California Department of Fish and Game	Mitigation Measure BIO-9: Restore or Create Jurisdictional Waters of the United States
	BIO-10: Temporary Degradation of Water Quality	Mitigation Measure BIO-10: Implement Water Quality Control Measures
	BIO-11: Permanent Loss or Temporary Disturbance of Potential Habitat for California Red-Legged Frog	Mitigation Measure BIO-8b: Compensate for Disturbed Riparian Forest
		Mitigation Measure BIO-9: Restore or Create Jurisdictional Waters of the United States
		Mitigation Measure BIO-10: Implement Water Quality Control Measures
		Mitigation Measure BIO-11a: Avoid and Minimize Effects to California Red-Legged Frog Habitat
		Mitigation Measure BIO-11b: Compensate for Loss of Aquatic Habitat through Protection or Enhancement of Suitable California Red-Legged Frog Habitat
	BIO-12: Permanent Loss of Aquatic, Temporary Disturbance of Riparian	Mitigation Measure BIO-8a: Conduct Pre-construction Surveys to Identify

Resource	Adverse Effect	Mitigation
	Habitat, and Temporary Disturbance of Southwestern Pond Turtle	Environmentally Sensitive Habitat Areas
		Mitigation Measure BIO-8b: Compensate for Disturbed Riparian Forest
		Mitigation Measure BIO-9: Restore or Create Jurisdictional Waters of the United States
		Mitigation Measure BIO-10: Implement Water Quality Control Measures
		Mitigation Measure BIO-12: Conduct Preconstruction Surveys for Western Pond Turtles and Implement Measures to Avoid or Minimize Adverse Effects if Turtles are Present
	BIO-13: Temporary Disturbance of Steelhead and Chinook Salmon in Coyote Creek	Mitigation Measure BIO-8b: Compensate for Disturbed Riparian Forest
		Mitigation Measure BIO-9: Restore or Create Jurisdictional Waters of the United States
		Mitigation Measure BIO-10: Implement Water Quality Control Measures
		Mitigation Measure BIO-13a: Limit In-Water Construction Activities to Dry Season
		Mitigation Measure BIO-13b: Divert Live Flow around Active Construction Area
	BIO-14: Temporary Disturbance of Nesting Raptors during Construction	Mitigation Measure BIO-14a: Conduct a Preconstruction Survey for Nesting Raptors
		Mitigation Measure BIO-14b: Avoid Active Raptor Nests during the Nesting Season
	BIO-15: Temporary Disturbance to Nesting Habitat for Migratory Birds, Including Swallows	Mitigation Measure BIO-8a: Conduct Preconstruction Surveys to Identify Environmentally Sensitive Habitat Areas
		Mitigation Measure BIO-8b: Compensate for Disturbed Riparian Forest
		Mitigation Measure BIO-15: Conduct Preconstruction Surveys for Nesting Migratory Birds

Resource	Adverse Effect	Mitigation
	BIO-16: Temporary Disturbance of Roosting and Foraging Habitat for Special-Status Bat Species	Mitigation Measure BIO-16: Conduct Preconstruction Survey of Coyote Creek Overpass
	BIO-18: Loss of Urban Trees	Mitigation Measure BIO-18a: Conduct a Tree Survey to Assess Tree Resources Impacted by the Light Rail Alternative
		Mitigation Measure BIO-18b: Replace Trees
Community Services	None.	None.
Cultural Resources	CR-5: Direct or Indirect Impacts to an Archaeological Resource	Mitigation Measure CR-5a: Retain Qualified Archaeologist and Native American Representative to Monitor Surface-Disturbing Construction Activities
		Mitigation Measure CR-5b: Develop Historic Properties Treatment Plan
Electromagnetic Fields	None.	None.
Energy	None.	None.
Environmental Justice	None.	None.
Geology, Soils, and Seismicity	GEO-4: Risk to People or Structures Caused by Strong Seismic Ground Shaking	Mitigation Measure GEO-4: Incorporate Caltrans Seismic Design Criteria
	GEO-5: Risk to People or Structures Caused by Seismic-Related Ground Failure, Including Liquefaction	Mitigation Measure GEO-5: Incorporate Liquefaction Minimization Methods to Prevent Localized Liquefaction Zones
	GEO-6: Risk to People or Structures from Lateral Spreading, Subsidence, and Collapse Caused by Underlying Unstable Geologic Units	Mitigation Measure GEO-6: Implement Proper Construction Methods to Minimize Risk of Lateral Spreading, Subsidence, and Collapse Hazards
	GEO-7: Risk to People or Structures Caused by the Presence of Expansive Soil	Mitigation Measure GEO-7: Reinforce Foundations or Excavate Expansive Soil to Minimize Risk of Soil Expansivity
Hazardous Materials	HAZ-9: Hazard to the Public or Environment through Reasonable Foreseeable Upset and Accident Conditions Caused by the Release of Hazardous Materials	Mitigation Measure HAZ-9a: Conduct Subsurface Investigations in Areas of the Corridor That May Be Underlain by Contaminated Soil or Groundwater
		Mitigation Measure HAZ-9b: Control Contamination Resulting from Previously Unidentified Hazardous Waste Materials
Hydrology and Water Quality	HYD-11: Violation of Water Quality Standards or Waste Discharge Requirements	Mitigation Measure HYD-11: Comply with All Applicable Regulations and Subsequent Permit Programs Related

Resource	Adverse Effect	Mitigation
		to Water Quality Control
	HYD-12: Creation or Contribution of Additional Runoff, Including Increasing Additional Sources of Polluted Runoff	Mitigation Measure HYD (Construction)-1: Implement Water Quality Control Measures during Construction Activities
		Mitigation Measure HYD-11: Comply with All Applicable Regulations and Subsequent Permit Programs Related to Water Quality Control
		Mitigation Measure HYD-12: Implement Measures to Maintain Operational Water Quality
	HYD-13: Alterations in Existing Drainage Patterns	Mitigation Measure HYD (Construction)-1: Implement Water Quality Control Measures during Construction Activities
	HYD-14: Exposure of People or Structures to Flood Hazards	Mitigation Measure HYD-14: Construct Facilities to Minimize Flood Impacts
Land Use	None.	None.
Noise and Vibration	NV-4: Vibration Levels in Buildings from Transit Operations That Exceed Federal Transit Administration Criteria	Mitigation Measure NV-4a: Conduct Follow-Up Vibration Mitigation Assessments
		Mitigation Measure NV-4b: Use Vibration-Dampening Track Construction Materials
Safety and Security	SS-3: Pedestrian and/or Bicycle Safety Risks at Gated Crossings	Mitigation Measure SS-3: Minimize Accident Risks by Incorporating Pedestrian-Friendly Features
	SS-4: Inadequate Lighting of Visual Obstructions at Park-and-Ride Lots	Mitigation Measure SS-4a: Implement Safety and Security Measures to Deter Crime
		Mitigation Measure SS-4b: Use Lighting, Cameras, and Security Patrols to Enhance Safety
		Mitigation Measure SS-4c: Define Fire and Life Safety Procedures and Develop Evacuation Plans
Socioeconomics	SOC-16: Displacement of Existing Businesses or Housing, Especially Affordable Housing	Mitigation Measure SOC-16a: Comply with the Applicable Legislation Governing Acquisition and Relocation
		Mitigation Measure SOC-16b: Implement Community Information and Outreach Program to Effectively Inform Residents and Business Owners of the Proposed Transit Developments

Resource	Adverse Effect	Mitigation
Utilities	UTL-3: Require or Result in the Construction of New Stormwater Drainage Facilities or Expansion of Existing Facilities	Mitigation Measure HYD-14: Implement Measures to Maintain Operational Water Quality
Visual Quality	VQ-1: Creation of a New Source of Substantial Light or Glare	Mitigation Measure VQ-1: Incorporate Lighting Design Standards to Minimize Fugitive Light and Glare
	VQ-3: Degradation of Existing Visual Quality	Mitigation Measure VQ-3: Refine Project Design for Consistency within the Community
		Mitigation Measure VQ-4: Incorporate Landscaping in the Project Design
Construction Impacts		
	TRN (Construction)-1: Long-Term (1 Month or More) Street Closure, Lane Closure, or Interference of Traffic Flow	Mitigation Measure TRN (Construction)-2a: Prepare Traffic Management Plan
		Mitigation Measure TRN (Construction)-2b: Provide Public Information Regarding Proposed Traffic Detours
		Mitigation Measure TRN (Construction)-2c: Provide the Public and Transit Users with Advanced Notice of Reroutes and Changes in Stops and Service
	TRN (Construction)-2: Long-Term (3 Months or More) Loss of Parking or Pedestrian Access Essential for Continue Operation of Business	Mitigation Measure TRN (Construction)-2a: Prepare Traffic Management Plan
		Mitigation Measure TRN (Construction)-2b: Provide Public Information Regarding Proposed Traffic Detours
		Mitigation Measure TRN (Construction)-2c: Provide the Public and Transit Users with Advanced Notice of Reroutes and Changes in Stops and Service
	AQ (Construction)-1: Temporary Increase in Construction-Related Emissions during Grading and Construction Activities	Mitigation Measure AQ (Construction)-1: Implement Dust and Vehicle Emission Control Measures (Best Management Practices) during Construction Activities
	BIO-7 to BIO-16, BIO-18	Mitigation Measures BIO-7 to BIO-16, BIO-18
	CS (Construction)-1: Temporary	Mitigation Measure CS

Resource	Adverse Effect	Mitigation
	Disruption of Emergency Access	(Construction)-1: Coordinate Construction and Operational Activities with Emergency Service Providers
	E (Construction)-1: Consumption of Nonrenewable Energy Resources in a Wasteful, Inefficient, and/or Unnecessary Manner from Project Construction	Mitigation Measure E (Construction)-1: Adopt Energy Conservation Measures
	GEO (Construction)-1: Lateral Spreading, Subsidence, and Collapse Caused by Underlying Unstable Geologic Units	Mitigation Measure GEO (Construction)-1: Implement Proper Construction Methods to Minimize Risk of Lateral Spreading, Subsidence, and Collapse Hazards
	GEO (Construction)-2: Presence of Expansive Soil	Mitigation Measure GEO (Construction)-2: Reinforce Foundations or Excavate Expansive Soil to Minimize Risk of Soil Expansivity
	HAZ (Construction)-1: Significant Hazard to the Public or the Environment through Reasonable Foreseeable Upset and Accident Conditions Involving the Release of Hazardous Materials into the Environment	Mitigation Measure HAZ (Construction)-1a: Conduct Subsurface Investigations in Areas of the Corridor That May Be Underlain by Contaminated Soil or Groundwater
		Mitigation Measure HAZ (Construction)-1b: Control Contamination Resulting from Previously Unidentified Hazardous Waste Materials
		Mitigation Measure HAZ (Construction)-1c: Conduct Surveys for Lead and Asbestos prior to Demolition or Renovation
	HYD (Construction)-1: Water Quality Impairment Caused by Grading and Construction Activities	Mitigation Measure HYD (Construction)-1: Implement Water Quality Control Measures during Construction Activities
	HYD (Construction)-2: Depletion of Groundwater Supplies or Interference with Groundwater Recharge	Mitigation Measure HYD (Construction)-2: Use Non-Potable Water for Construction Activities
	NV (Construction)-1: Generation of Noise or Vibration That Substantially Affects Nearby Sensitive Receptors	Mitigation Measure NV (Construction)-1a: Notify Residents Adjacent to the Construction Sites
		Mitigation Measure NV (Construction)-1b: Construct Noise Barriers to Provide Noise Reduction during Construction
		Mitigation Measure NV (Construction)-1c: Restrict Pile

Resource	Adverse Effect	Mitigation
		Driving Activities Mitigation Measure NV (Construction)-1d: Use Noise Suppression Devices and Mufflers on Construction Equipment Mitigation Measure NV (Construction)-1e: Locate Stationary Construction Equipment as Far as Possible from Noise-Sensitive Sites Mitigation Measure NV (Construction)-1f: Reroute Construction-Related Truck Traffic along Roadways That Will Cause the Least Disturbance to Residents
	SS (Construction)-1: Potential for Safety Risks during Construction	Mitigation Measure SS (Construction)-1: Implement Construction BMPs to Protect Workers and the Public
	UTL (Construction)-1: Disrupt a Utility Service for a Period of 24 Hours or More	Mitigation Measure UTL (Construction)-1: Coordinate with Utility Service Providers Prior to Construction of Light Rail Facilities
	VQ (Construction)-1: Creation of a New Source of Substantial Light or Glare	Mitigation Measure VQ (Construction)-1: Direct Lighting toward Construction Areas
Proposed Options		
Biological Resources		
-- Cunningham Avenue Station Option	BIO-7: Permanent Loss of Biological Habitats and Disturbance to Inhabiting Species	Mitigation Measure BIO-7: Conduct Preconstruction Surveys for Nesting and Wintering Western Burrowing Owls and Implement Measures to Avoid or Minimize Adverse Effects if Owls Are Present
-- Monterey Highway Station Park-and-Ride Options		Mitigation Measure BIO-7: Conduct Preconstruction Surveys for Nesting and Wintering Western Burrowing Owls and Implement Measures to Avoid or Minimize Adverse Effects if Owls Are Present
Hazardous Materials	HAZ-9: Hazard to the Public or Environment through Reasonable Foreseeable Upset and Accident Conditions Caused by the Release of Hazardous Materials.	Mitigation Measure HAZ-9a: Conduct Subsurface Investigations in Areas of the Corridor That May Be Underlain by Contaminated Soil or Groundwater Mitigation Measure HAZ-9b: Control Contamination Resulting from Previously Unidentified Hazardous Waste Materials
Noise and Vibration	NV-5: Noise Levels from Light Rail Alternative Proposed Options That Would Be Considered a Severe Impact	Mitigation Measure NV-5: Provide Noise Barriers or Other Mitigation between Quimby Road and Aborn

Resource	Adverse Effect	Mitigation
	by Federal Transit Administration Criteria	Road
	NV-6: Vibration Levels in Buildings from Light Rail Alternative Proposed Options That Exceed Federal Transit Administration Criteria	Mitigation Measure NV-4a: Conduct Follow-Up Vibration Mitigation Assessments
		Mitigation Measure NV-6: Use Vibration-Dampening Track Construction Materials
Socioeconomics	SOC-18 Displacement of Existing Businesses or Housing, Especially Affordable Housing	Mitigation Measure SOC-16a: Comply with the Applicable Legislation Governing Acquisition and Relocation
		Mitigation Measure SOC-16b: Implement Community Information and Outreach Program to Effectively Inform Residents and Business Owners of the Proposed Transit Developments

Chapter 2.0
Introduction

2.1 Overview

The Santa Clara Valley Transportation Authority (VTA) is considering three alternatives for improving direct transit service in the Capitol Expressway Corridor in the City of San Jose (City) in Santa Clara County (County): the No-Project Alternative, Baseline Alternative, and Light Rail Alternative. These alternatives are described in detail in Chapter 3, *Alternatives Considered*.

2.2 Overview of the Capitol Expressway Corridor

The proposed alternatives are located entirely within San Jose, which is located in the southern region of the San Francisco Bay Area (Figure 2-1). The overall Downtown East Valley study area is a 30-square-mile area extending from McKee Road/East Julian Street on the north to Capitol Expressway and Yerba Buena Road on the south, and from Market Street/Monterey Highway on the west to the foothills of the Diablo Range on the east. The study area contains approximately 300,000 residents and 51,000 jobs. (VTA,1999.) Within the larger study area, the corridor in which the proposed alternatives would be constructed is referred to as the "Capitol Expressway Corridor." The Capitol Expressway Corridor is approximately 8 miles long and generally parallels Interstate 680 (I-680) and U.S. Highway 101 (U.S. 101). Three creeks cross the corridor: Coyote Creek, Silver Creek, and Canoas Creek. The general study area and corridor are shown in Figure 2-2. The specific study areas for the proposed alternatives vary by resource and are described in the respective sections of Chapter 4, *Environmental Analysis*.

2.2.1 Regional Roadways

Freeways

Important regional transportation facilities that serve San Jose are U.S. 101 and I-680/I-280, State Route 82 (SR 82), and State Route 87 (SR 87). U.S. 101, an eight-lane freeway, located west and north of the Capitol Expressway Corridor, is the principal north–south freeway connecting San Jose to areas along the San Francisco Peninsula, including San Mateo County, and San Francisco. I-680/I-280, also an eight-lane facility is west and north of the Capitol Expressway Corridor and connects San Jose to eastern Alameda and Contra Costa Counties to the northeast; it runs through downtown San Jose to the west. SR 82, also called Monterey Highway, is a six-lane arterial that runs north–south and connects downtown San Jose to southern Santa Clara County. SR 87 is a six-lane freeway that runs north–south from the Norman Y. Mineta San Jose International Airport (SJIA) to State Route 85 (SR 85) south of the Capitol Expressway Corridor. All of these facilities have on-ramps or interchanges with Capitol Expressway.

Arterials

Capitol Expressway is a six- to eight-lane limited access expressway linking east and south San Jose. In the project corridor, the expressway typically consists of three general purpose lanes in each direction, a high-occupancy vehicle (HOV) lane as a fourth outside lane from U.S. 101 northward to I-680, and a median strip that divides traffic and directs left-turn lanes. The posted speed limit is 45 miles per hour (mph). Bicyclists are permitted to ride on the shoulders of the expressway. Sidewalks are provided along portions of the expressway, but are not continuous. On-street parking is not allowed.

Capitol Avenue begins at an intersection with Capitol Expressway near the corridor's northern end and extends north. There are two travel lanes in each direction. The Capitol Avenue Light Rail Transit (LRT) Line is currently being constructed within the median of Capitol Avenue. Bicycle lanes are designated and signed in both directions on Capitol Avenue. The posted speed limit is 35 mph.

Story Road crosses Capitol Expressway just south of Capitol Avenue. Story Road is a six-lane divided arterial west of Capitol Expressway with a posted speed of 35 mph. To the east of Capitol Expressway, Story Road is a four-lane divided arterial, also with a posted speed limit of 35 mph. Story Road provides local east–west access in southeast San Jose.

Ocala Avenue crosses Capitol Expressway south of Story Road. Ocala Avenue is a four-lane, undivided roadway to the east of Capitol Expressway with a posted speed limit of 35 mph. Ocala Avenue becomes Marten Avenue at White Road. To the west of Capitol Expressway, Ocala Avenue has a single lane in each direction, with a two-way left turn lane in the center. Immediately at the intersection with Capitol Expressway, Ocala widens to accommodate turning lanes. This portion of Ocala is also posted for 35 mph and extends to King Road.

Cunningham Avenue provides access to Reid-Hillview Airport from Capitol Expressway and extends to White Road to the east along the northern boundaries of Lake Cunningham Park. This section of Cunningham Avenue is a single lane in each direction with a posted speed limit of 35 mph.

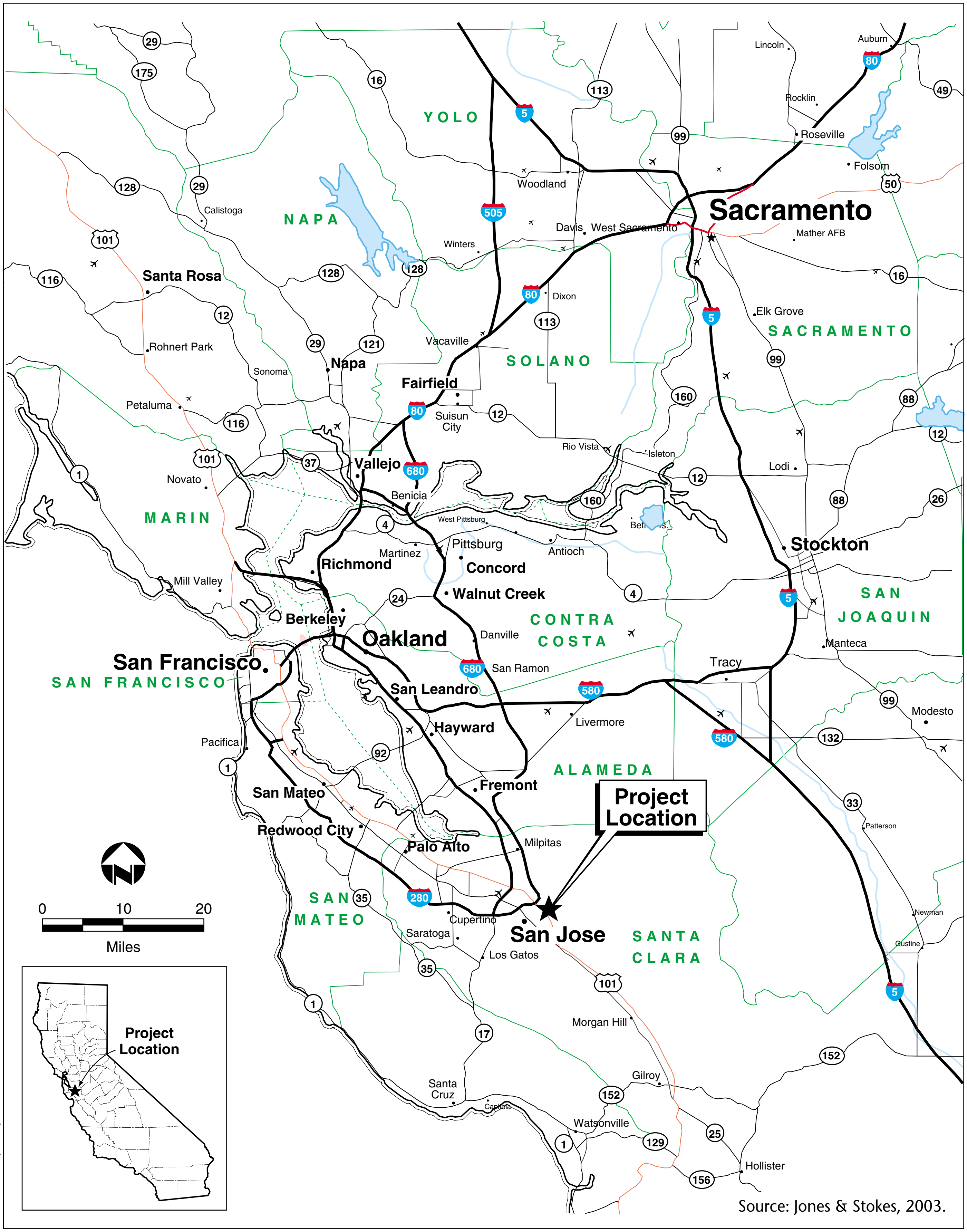

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Figure 2-1
Regional Location

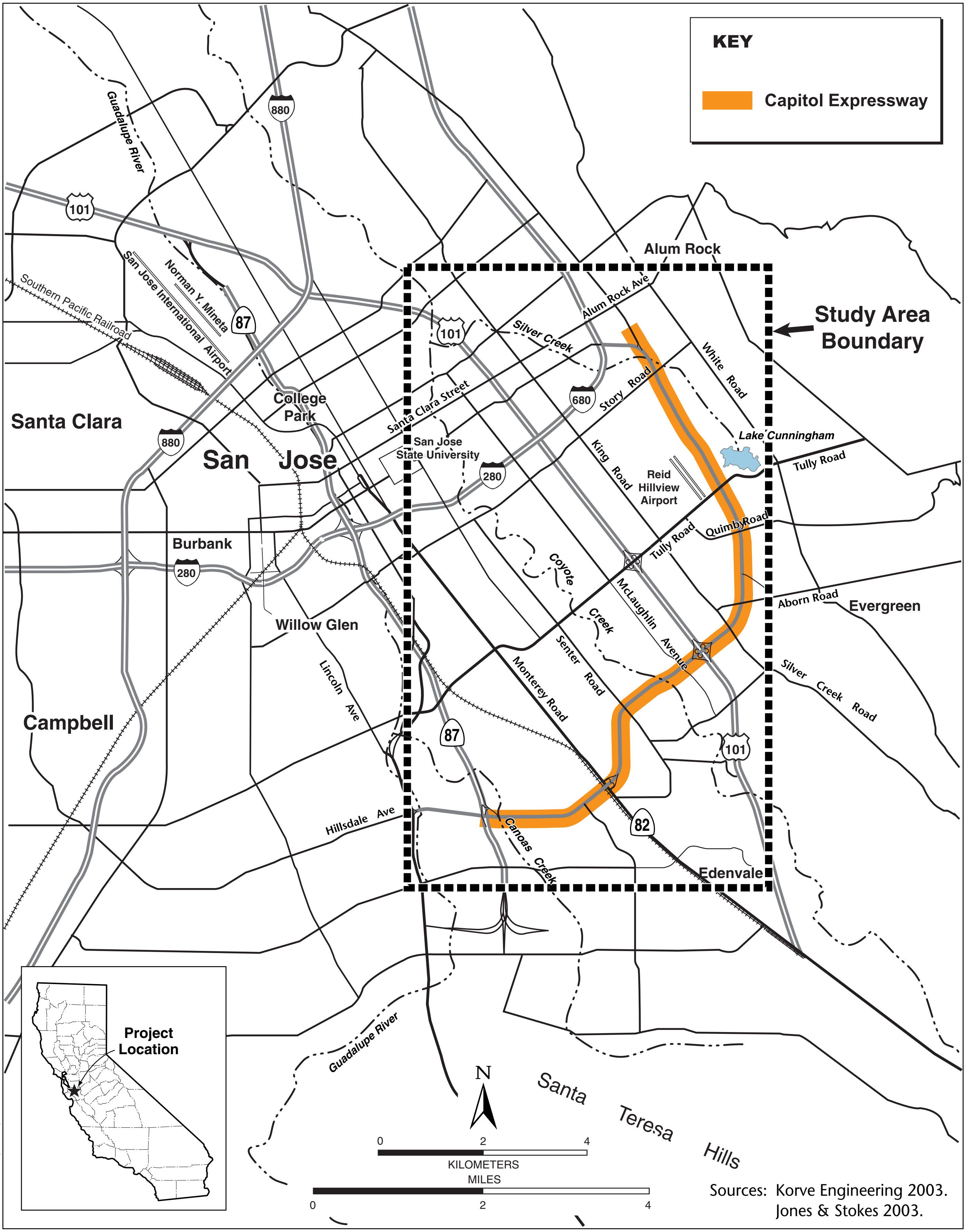


Figure 2-2
Downtown/East Valley Study Area

Tully Road is a principal arterial that runs generally east–west through the study area. On both sides of Capitol Expressway, Tully Road has three lanes in each direction separated by a raised median. The posted speed limit on the west side of Tully Road at Capitol Expressway is 40 mph, and the posted speed limit on the east side of Tully Road is 45 mph. Tully Road extends from the foothills on the east to Monterey Highway on the west, where it becomes Curtner Avenue.

Quimby Road connects from Mount Hamilton Road (State Route 130) in the foothills to Tully Road adjacent to Eastridge Mall. East of Capitol Expressway, Quimby Road has two travel lanes in each direction. At the intersection with Capitol Expressway, the median is raised. Farther to the east, the raised median is replaced by a two-way left-turn lane. The posted speed limit is 40 mph. To the west of Capitol Expressway along the shopping center frontage, Quimby Road has two lanes in each direction, a raised median, and has a posted speed limit of 35 mph.

Nieman Boulevard extends from a ‘T’ intersection at Capitol Expressway southeastward to Yerba Buena Road, where it transitions into Silver Creek Road. At Capitol Expressway, Nieman Boulevard provides one travel lane in each direction and a continuous left-turn lane. Left turns from Nieman Boulevard to Capitol Expressway are not permitted. The posted speed limit is 35 mph.

Aborn Road extends from King Road to the foothills to the east. East of Capitol Expressway, Aborn Road has three lanes in each direction, a raised median, and a posted speed limit of 40 mph. To the west of Capitol Expressway, Aborn Road has two lanes in each direction, a raised median, and a posted speed limit of 40 mph.

Silver Creek Road extends from Yerba Buena Road to the south of Capitol Expressway and becomes King Road to the north of Capitol Expressway. In the vicinity of the expressway, Silver Creek Road has two lanes in each direction with a raised median. The posted speed limit is 35 mph.

McLaughlin Avenue extends from south of Yerba Buena Road at Coyote Creek Park to the point at which it transitions to 24th Street at San Antonio Street north of I-280. South of Capitol Expressway, McLaughlin Avenue has two lanes in each direction and a raised median. The posted speed limit is 40 mph. North of Capitol Expressway, McLaughlin Avenue is also two lanes in each direction with a raised median. The posted speed limit to the north of Capitol Expressway is reduced to 35 mph.

Senter Road extends from its terminus at Monterey Highway across Capitol Expressway to its northern terminus at Keyes Street near Spartan Stadium. South of Capitol Expressway, Senter Road is two lanes in each direction with a two-way left-turn lane to Singleton Road, at which it becomes a single lane in each direction. The posted speed limit is 35 mph. To the north of Capitol Expressway, Senter Road has two lanes in each direction and has a posted speed limit of 40 mph.

Snell Avenue extends from south of SR 85 to just north of Capitol Expressway, terminating at Hillsdale Avenue. South of Capitol Expressway, Snell Avenue has three travel lanes in each direction with a raised median. The posted speed limit is 40 mph. North of Capitol Expressway, Snell Avenue has two lanes in each direction with a raised median. The posted speed limit is also 40 mph.

Vista Park Drive extends from just south of Branham Lane to Hillsdale Avenue immediately north of Capitol Expressway. South of Capitol Expressway, Vista Park Drive has one lane in each direction with a two-way left-turn lane in the median. The posted speed limit is 35 mph.

Narvaez Avenue extends from south of Branham Lane to north of Hillsdale Avenue. Narvaez Avenue serves as a frontage road to SR 87, with a single lane in each direction and a posted speed limit of 35 mph. North of Capitol Expressway, Narvaez Avenue provides access to the northbound on-ramp to SR 87.

2.2.2 Land Uses

Existing land uses along the Capitol Expressway include residential uses (low-, medium-, and high-density), retail/commercial uses, neighborhood commercial centers, and a regional shopping mall (Eastridge Mall). Commercial uses are generally found at major intersections. The Quimby/White/San Felipe area of the corridor, between Eastridge Mall and Evergreen Valley College, is characterized by relatively low-density, single-family residential development. Residential uses along Capitol Expressway occur in various densities and are usually separated from the roadway by a soundwall or frontage road. Industrial, commercial, and public uses, as well as vacant lots, are also located along Capitol Expressway. Reid-Hillview Airport, a general aviation airport, is also located along the expressway north of Eastridge Mall. A regional recreation center is located at Lake Cunningham Park east of Reid-Hillview Airport. City and County parklands are also located along Capitol Expressway. One of these parklands includes the Coyote Creek Parkway, a 15-mile multi-use trail that meanders along Coyote Creek. The Coyote Creek Parkway passes under Capitol Expressway between Senter Road and McLaughlin Avenue.

2.2.3 Existing Transit Services

Transit services provided by VTA comprise LRT, fixed-route bus service, paratransit service for disabled and mobility-impaired residents, and commuter rail partnerships. VTA's light rail system is approximately 30.5 miles long in total and operates with a fleet of 50 light rail vehicles. VTA operates a fleet of over 500 buses that serve a 326-square-mile urbanized area. The transit service descriptions that follow are based on when the Notice of Intent and Notice of Preparation were circulated in September 2001. Service levels may fluctuate depending on the economy and ridership demand.

Bus service routes within the Capitol Expressway Corridor are shown in Figure 2-3. Routes 22, 70, 71, and 77 provide local bus service within the corridor. Route 22 operates from Eastridge Mall to the Palo Alto/Menlo Park Caltrain Station. This routes operates 24 hours a day, with headways ranging from 10 to 60 minutes, depending upon the time of day. Route 70 operates along Capitol Expressway at 15-minute headways on weekdays until 6:00 p.m.; after 6:00 p.m. weekdays and on weekends, service is offered with 20- to 60-minute headways, and all services operate daily until after 11:00 p.m. Routes 71 and 77 operate along parallel arterials (King Road/Silver Creek Road and White Road) within the Capitol Expressway Corridor, but offer a shorter service span on weekends until after 9:00 p.m.

Express bus service is provided by Route 503, which operates from the Eastridge Transit Center to Palo Alto, during the AM and PM peak periods with 30- to 60-minute headways. Express service is also provided to parts of the corridor by Route 122, which operates between south San Jose and Lockheed Martin/Moffett Park in Sunnyvale during the AM and PM peak periods at 30- and 60-minute headways. Routes 321 provide limited-stop service during peak periods. Route 321 serves Lockheed Martin/Moffett Park from the Eastridge Transit Center. No service is offered on weekends for express and limited stop services.

VTA partners with several other agencies in operating commuter rail services throughout the region, including Caltrain, Capitol Corridor, and Altamont Commuter Express (ACE). VTA provides connecting feeder and shuttle service to all of these services.

2.3 Purpose and Need

In August 2000, the VTA Board of Directors chose a “Preferred Investment Strategy” (Santa Clara Valley Transportation Authority 2000a) at the conclusion of the Downtown East Valley Major Investment Study (MIS) (Santa Clara Valley Transportation Authority 2000b). The study concluded that major transit improvements were warranted as part of the solution to travel and mobility problems. Given the identified transportation needs and input received from the community, the following goals were established in the MIS:

- improve mobility,
- increase transit ridership,
- target the highest commute corridors, with emphasis on work trips and school trips,
- promote livable neighborhoods, and
- engage community support.

The Preferred Investment Strategy approved by the VTA Board included light rail transit to serve what was referred to as the “Capitol Expressway/Evergreen Corridor,” hereinafter referred to as the “Capitol Expressway Corridor.”

2.3.1 Need

The proposed alternatives are needed to meet projected growth and associated development in the Capitol Expressway Corridor and to meet transit needs in the corridor. The information below is based on data generated during the MIS in 1999 and 2000, and describes the need for the project.

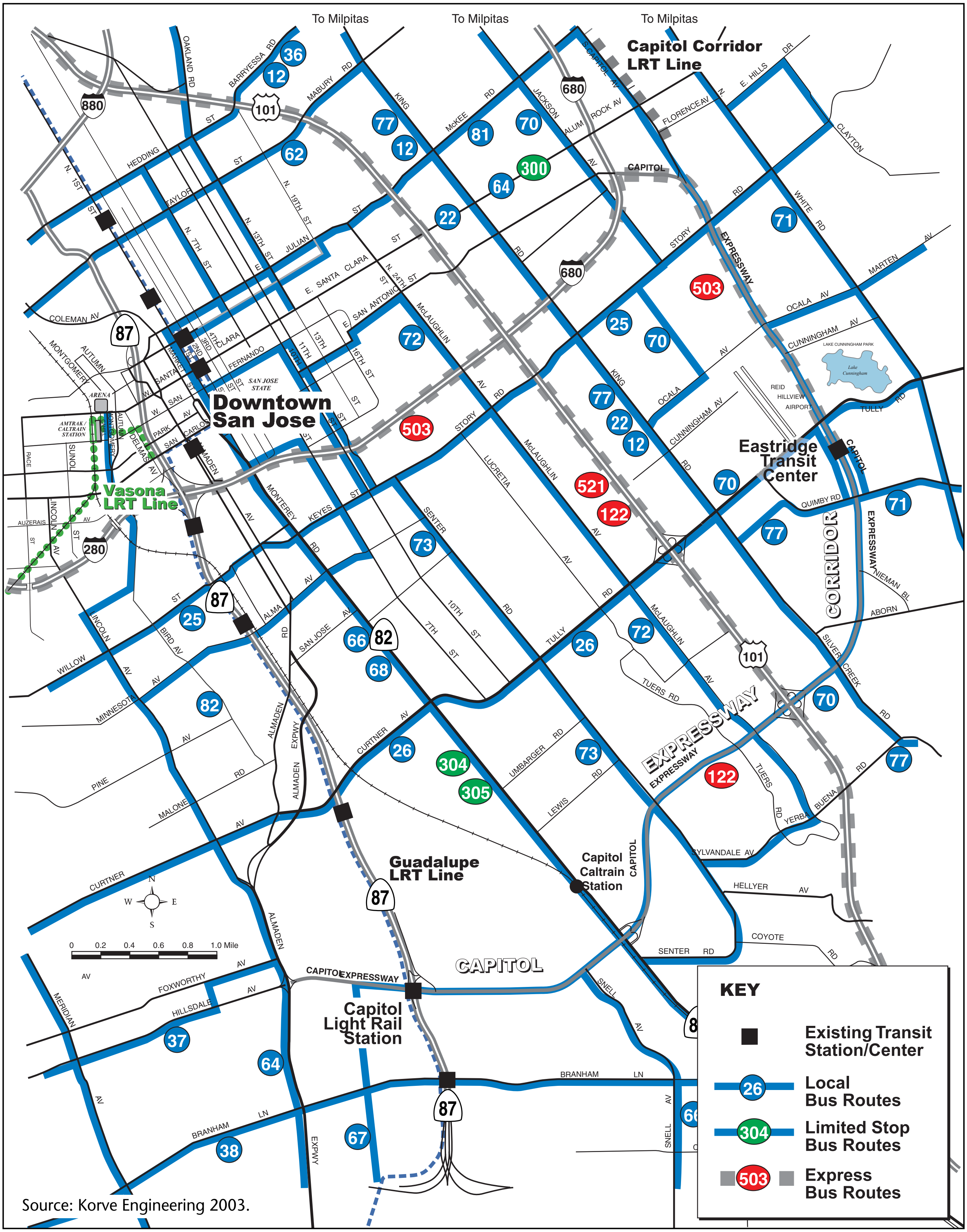
The overall Downtown/East Valley study area contains approximately 20% of the county population. The study area has neighborhoods with an average household size in this area that is larger than in either the city or county as a whole. The population of Santa Clara County is expected to increase approximately 16% by 2020 and in the study area by 15% by the same year. Increases in population tend to correlate with increases in traffic and congestion, particularly when roadway capacity falls short of population growth. Although plans and studies are underway to enhance roadway capacity in the study area, the estimated capacity increase from programmed projects countywide is only about 4%.

In addition to growth within the Downtown East Valley study area, growth in areas outside the Capitol Expressway Corridor (generally to the south in areas such as Edenvale, Coyote Valley, and the south part of the county) is expected to increase congestion on I-680 and U.S. 101, and Capitol Expressway. Few employment centers are located within the Downtown East Valley study area, which contains only about 5% of countywide employment. Therefore, these roadways are used by commuters from within and outside the study area to reach the major employment centers in the region, which are located northwest of the study area and in downtown San Jose. There are few or no direct linkages to these employment from the Capitol Expressway Corridor. Automobile ownership rates in this area are below the county average, and transit service between the Capitol Expressway Corridor and employment centers is limited to two routes and a few express routes that do not serve the entire corridor.

2.3.2 Purpose

The basic purpose of the proposed alternatives is to improve public transit service in the Capitol Expressway Corridor. More specifically, the purpose of the proposed alternatives is to:

- improve public transit service in the Capitol Expressway Corridor by providing increased capacity and faster, convenient access to downtown San Jose and major employment and activity centers;
- make transit an attractive alternative to the automobile for travel along the expressway;
- enhance regional connectivity through expanded, interconnected transit services along some of the primary travel corridors in Santa Clara County, including U.S. 101 (Guadalupe Corridor) and I-680 (Tasman East, Capitol Avenue, and Capitol Expressway Corridors);



Source: Korve Engineering 2003.

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Figure 2-3
Existing Bus Services (2001)

- improve regional air quality by reducing the growth in automobile emissions;
- improve mobility options to employment, education, medical and retail centers for all corridor residents and in particular, low-income, transit-dependent, youth, elderly, disabled, and ethnic minority populations; and
- support local economic and land development goals.

The improvement of transit service in the Capitol Expressway Corridor would provide additional capacity to address the increases in travel demand in this part of Santa Clara County. The expanded transit system would link the residents of east and south San Jose with the existing light rail system, and provide improved connections and greater mobility options throughout the Santa Clara Valley. Access from the Capitol Expressway Corridor to the employment centers now served by the Guadalupe and Tasman LRT Lines would be provided with the proposed linkage.

Because expanded transit service would be available in the corridor, parking and circulation effects could be reduced. The reduction in automobile trips could result in improved regional air quality because of reduced growth in automobile emissions.

The proposed alternatives would serve two high schools, two middle schools, a regional shopping facility (Eastridge Mall), three libraries, recreational facilities, and two colleges/universities.

The purpose of the proposed alternatives is consistent with the goals set forth in the MIS. The proposed alternatives conform to stated policies of the City and County. The Capitol/Downtown-Evergreen corridor is identified in the Santa Clara County General Plan (Santa Clara County 1994) as a priority “New Rail Start” in the long-range rail master plan. Policy C-TR-15 states that there should be “increased transit system capacity and service levels for light rail passenger rail and bus transit.” In addition, county general plan policies call for “a balanced and integrated transportation system, which will allow for alternative means of travel and opportunities for transfer between alternative means.”

VTA's Valley Transportation Plan 2030 (VTP 2030) (Santa Clara Valley Transportation Authority 2000c), adopted by the Board of Directors in February 2005, includes light rail along Capitol Expressway in its capital investment program. This program identifies those specific transit projects that would be implemented during the 20-year time frame of VTP 2030.

The San Jose 2020 General Plan (City of San Jose 1994) designates the Capitol Avenue/Expressway corridor, as one in which an intensification of land uses related to transportation should occur. However, it acknowledges that intensification within this corridor is expected to occur more slowly than in other corridors designated for intensification. It states that intensification will occur as sufficient transportation system capacity can be identified that is consistent with the City’s transportation level of service policies.

The projects included in the Baseline Alternative are also included in the Metropolitan Transportation Commission's (MTC's) Regional Transportation Plan (RTP) (Metropolitan Transportation Commission 2002). The Light Rail Alternative, as well as other light rail extensions in VTA's 2000 Measure A Improvement Program, are included the RTP. Also, light rail extensions in the Downtown/East Valley are included in the *Bay Area Transportation Blueprint for the 21st Century* (Metropolitan Transportation Commission 2000), which is embodied in MTC Resolution No. 3357 (Metropolitan Transportation Commission 2001).

2.4 Project Benefits

The Capitol Expressway Light Rail Alternative provides several benefits to the community that address identified transportation and community needs. As an extension of the Tasman/Capitol Light Rail Project, it would maximize and enhance the investments already made and provide additional transit options and mobility for residents and businesses in east San Jose.

With significant and growing commuter volumes in the corridor, the transit alternative provides increased capacity and regional connectivity to major employments and activity centers. It links with other travel modes, including automobiles, buses, existing and proposed light rail lines, public and private shuttles, bicycles, pedestrians and regional trails. Several park-and-ride lots and additional bus bays proposed near stations will provide additional access to transit users.

The Light Rail Alternative would provide travel time benefits compared to the automobile and bus modes of travel. In 2010, travel time for the Light Rail Alternative from Alum Rock Avenue to State Route 87 would range from three minutes faster than autos in the northbound AM peak direction to 5.5 minutes faster than autos in the southbound PM peak direction. In 2025, travel time benefits for the Light Rail Alternative would increase from 4.1 minutes faster than buses in the northbound PM peak direction, to 8.1 minutes faster than autos for the southbound AM peak direction.

The Light Rail Alternative addresses transit and traffic operations while accommodating pedestrian and bicycle use. With a multipurpose path, increased landscaping and lighting, improved and more extensive sidewalks along the corridor, signalized crosswalks, and grade-separated pedestrian crossings, there would be greatly improved pedestrian access.

The Light Rail Alternative's vision creates a multimodal boulevard by transforming the current "highway" environment into a multimodal street with cars, light rail, bicycles, and pedestrians. It would create a "greener street" with the addition of landscaping to enhance visual quality, resulting in a more attractive and hospitable environment. The Light Rail Alternative supports and enhances identified economic and land development goals. It would provide environmental benefits by improving air quality by reducing the growth in automobile emissions. The light rail stations would serve as gateways to commercial, residential, recreational, and community-oriented activities. The Light Rail Alternative would provide opportunities at the stations to incorporate art features to enhance the visual appearance of the stations.

2.5 EIR Purpose and Intended Use

The purpose of this environmental impact report (EIR) is to fully disclose the environmental consequences of building and operating the proposed alternatives in advance of any decisions to commit substantial financial or other resources toward its implementation. This EIR has been prepared pursuant to the requirements of the California Environmental Quality Act of 1970 (CEQA).

CEQA requires that the resources potentially affected by a project be identified and evaluated. CEQA requires that all state and local government agencies consider the environmental consequences of projects over which they have discretionary authority, and requires that a determination of significant impacts be made in an EIR and mitigation measures identified and implemented where feasible. For this reason, CEQA significance criteria and the specific determination of the level of significance as defined by CEQA are contained in Chapter 5, *Other CEQA Considerations*.

2.5.1 EIR Process

The draft EIS/EIR was circulated from April 28, 2004 to June 28, 2004 for public review in order to disclose the environmental impacts associated with proposed project and alternatives. A public hearing was held on May 27, 2004. During the public review period, a total of 316 written and oral comments were received on the draft EIS/EIR. Volume II, Chapter 3, *Comments and Responses on the Draft EIS/EIR*, includes a list of all commenters, copies of the written comments and the public hearing transcript, and responses to all comments received. The responses and proposed mitigation measures will be presented to the VTA Board of Directors, which will consider them when it votes on whether to certify the Final EIR, in accordance with CEQA. If there are adverse effects that cannot be mitigated, and the board determines that the project should be approved and that the document should be certified, the board will need to make a statement of overriding considerations that explains why the project was approved and the document certified although there were impacts that could not be mitigated as required under CEQA. The board would consider this statement and make findings regarding the adequacy of the document when it votes on whether to approve the project and certify the document.

2.5.2 Intended Use of Environmental Document

This document was prepared in accordance with CEQA (Public Resources Code [PRC] 21000 et seq.), and the State CEQA Guidelines (California Code of Regulations [CCR] 15000 et seq.)

Following the actions of the VTA Board of Directors, other permits, licenses and approvals involving other local, state and federal agencies will be required before project implementation. The following is a list of those agencies and the relevant requirements.

- U.S. Army Corps of Engineers: federal Clean Water Act Section 404 Section 401 compliance
- U.S. Fish and Wildlife Service: federal Endangered Species Act compliance
- San Francisco Bay Regional Water Quality Control Board: National Pollutant Discharge Elimination System General Industrial/General Construction Storm Water Discharge Permits
- California Department of Transportation: Encroachment Permit for work within or adjacent to U.S. 101
- California Department of Fish and Game: California Fish and Game Code Section 1601 Streambed Alteration Agreement and California Endangered Species Act Section 2080 compliance
- Santa Clara County: Encroachment Permit for use of Capitol Expressway right-of-way
- City of San Jose: Encroachment Permit for use of Capitol Expressway right-of-way

2.5.3 Document Organization and Content

This EIR is organized as follows:

- Chapter 1, *Executive Summary*, provides brief discussions of the project background, purpose, and need; the purpose of this EIR; descriptions of the proposed alternatives, and a summary of the substantial adverse effects associated with the proposed alternatives.
- Chapter 2, *Introduction*, contains a brief overview of the proposed alternatives and study area, and discusses in greater detail the project purpose and need, the purpose of this EIR, and the intended uses of this EIR.
- Chapter 3, *Alternatives Considered*, discusses the proposed alternatives and alternatives that were considered but rejected from further analysis.
- Chapter 4, *Environmental Analysis*, provides information on existing conditions relating to various resource areas, evaluates potential adverse effects of the proposed alternatives on those resources, and provides

mitigation measures for substantial adverse effects. (This chapter is divided into 19 sections.)

- Chapter 5, *Other CEQA Considerations*, identifies the substantial adverse effects disclosed in Chapter 4 that would be considered significant and other considerations that are relevant under CEQA. Impacts not determined significant are also summarized. The potential for the proposed alternatives to induce growth in the corridor is considered.
- Chapter 6, *Section 4(f) Evaluation*, which was included in the draft EIS/EIR, was removed, since it is not required for CEQA compliance.
- Chapter 7, *Financial Considerations*, discusses funding for the proposed alternatives and the financial plan for implementation.
- Chapter 8, *Agency and Community Participation*, summarizes the scoping process for the proposed alternatives, coordination with public agencies that has occurred, and the public outreach efforts conducted during the preparation of this EIR.
- Chapter 9, *Agencies, Organizations, and Individuals Receiving Copies*, provides a list of the agencies and organizations to which the document has been sent for review.
- Chapter 10, *References Cited*, lists printed references and personal communications cited in this EIR.
- Chapter 11, *List of Preparers*, lists the persons who contributed to the preparation of the EIR, and the costs of preparing the document.
- Chapter 12, *Glossary of Terms*, lists and defines terms and acronyms that are commonly used throughout the document.

2.5.4 Issues to be Resolved

The primary issue to be resolved is the selection of any preferred design options for the Light Rail Alternative. Along the alignment, there are several grade-separation and station location and design options. Although the alignment is primarily median-running, there is one segment where a side-running option is also being examined. For purposes of environmental analysis, there is a description of a defined Light Rail Alternative. However, the final selection of the preferred design of the Light Rail Alternative has not been made but will be disclosed in the Final EIR and further refined during preliminary engineering. The design options and alternatives are discussed in more detail in Chapter 3, *Alternatives Considered*. The various design options between Alum Rock Station and SR 87 are discussed below.

Alum Rock Station to Story Road

The Light Rail Alternative has an aerial structure beginning near Capitol Avenue/Capitol Expressway and continuing to Story Road. There are two vertical alignment options between the Alum Rock Station and Story Road:

- **Capitol Avenue/Capitol Expressway Tunnel/Story Road Aerial Option**: Tunnel segment beginning near Capitol Avenue/Capitol Expressway, transitioning to an aerial structure just north of Silver Creek and continuing to Story Road.
- **Capitol Avenue/Capitol Expressway/Story Road Tunnel Option:** Tunnel beginning near Capitol Avenue/Capitol Expressway and extending beyond Story Road to depressed, open-air Story Road Station with patron access via stairs/elevators from the median.

At Story Road, there is an aerial station with a pedestrian overcrossing. There are two station design options:

- **Story Road Aerial Station with Median Access Option (Only with Aerial Option):** Station with one level, above-grade platform with access via stairs and elevators from the median. Patrons reach the median via signalized crosswalks.
- **Story Road with a Depressed, Open-Air Station Option (Only with Tunnel Option):** Depressed, open-air station platform located below grade with access via stairs and elevators from the median. Patrons reach the median via signalized crosswalks.

Story Road to Eastridge Transit Center

Currently, the Light Rail Alternative has an Ocala Avenue Station. There are two station location options between Ocala Avenue and Cunningham Avenue:

- **Between Ocala and Cunningham Station Option:** Single, center platform between Ocala Avenue and Cunningham Avenue. Pedestrian access via pedestrian overcrossing to the platform.
- **Cunningham Avenue Station Option:** Two far-side platforms at Cunningham Avenue with access via at-grade crosswalks at a signalized intersection.

The Light Rail Alternative includes a tunnel under Tully Road with an at-grade platform at Eastridge Transit Center. There is one design and station option at the Eastridge Transit Center:

- **North of Eastridge Transit Center Aerial Crossing with Aerial Station Option:** Aerial structure begins north of Tully Road, crossing to an aerial station at Eastridge Transit Center.

Eastridge Transit Center to Aborn Road

The Light Rail Alternative includes a tunnel under Quimby Road and returns to the median of Capitol Expressway at-grade through the Nieman Boulevard median station to Aborn Road. The following four vertical alignment options are under consideration between the Eastridge Transit Center and Aborn Road:

- **South of Eastridge Transit Center Aerial Crossing Option (Only with Eastridge Aerial Station Option):** From aerial station at Eastridge Transit Center, crosses back to the median of Capitol Expressway on an aerial structure and returns to an at-grade design south of Quimby Road.
- **South of Eastridge Transit Center Side-Running/Tunnel Option:** At-grade side-running from Eastridge Transit Center through Nieman Boulevard Station with at-grade crossings of Eastridge Loop Road and Quimby Road. South of Nieman Boulevard Station, transitions to the median of Capitol Expressway via a cut and cover tunnel and returns to at-grade south of Nieman Boulevard until Aborn Road.
- **South of Eastridge Transit Center Side-Running/Cut and Cover Tunnel Option:** At-grade side-running from Eastridge Transit Center through Nieman Boulevard Station with grade-separated (depressed) crossings of Eastridge Loop Road and Quimby Road. South of Nieman Boulevard Station, transitions to the median of Capitol Expressway via a cut and cover tunnel and returns at grade south of Nieman Boulevard through Aborn Road.
- **South of Eastridge Transit Center Side-Running Depressed/At-Grade/Aerial Option:** South of the Eastridge Transit Center, the alignment would continue as side-running until the Nieman Boulevard Station on the west side of Capitol Expressway north of Nieman Boulevard, where it would transition back to the median via an aerial structure and continue aerial through Aborn Road. Crossings of the Eastridge access road and Quimby Road are provided in a depressed cut and cover tunnel section.

The Nieman Boulevard Station has split, offset platforms in the median of Capitol Expressway with access via at-grade crosswalks. There is one station location option in the vicinity of Nieman Boulevard:

- **Nieman Boulevard West Side Station Option:** Side-running options above include a station along the west side of Capitol Expressway and north of Nieman Boulevard

Aborn Road to Silver Creek Road

The Light Rail Alternative crosses Aborn Road at grade and Silver Creek Road on an aerial structure. There are two design options between Nieman Boulevard/Aborn Road and Silver Creek Road:

- **Aerial Crossing at Aborn Road Option:** From at-grade in the median to aerial in the median from north of Aborn Road through Silver Creek Road.

- **Aerial Crossing at Nieman Boulevard/Aborn Road Option:** From side-running to aerial in the median at Nieman Boulevard/Aborn Road and continuing in an aerial configuration through Silver Creek Road.

Silver Creek Road to U.S. Highway 101

The Light Rail Alternative includes an aerial structure from east of Silver Creek Road to east of U.S. 101 with crossing in the median at the existing grade of the Capitol Expressway overpass of U.S. 101. The alternative also includes a potential future Silver Creek Station. There is one design and station option for the crossing of the U.S. 101 overpass:

- **Aerial Crossing of U.S. Highway 101 Option (Potential Future Aerial Silver Creek Station and Aerial McLaughlin Avenue Station):** Aerial structure from east of Silver Creek that continues north of existing Highway 101 overpass on a separate aerial structure and then returns to aerial structure in the median of Capitol Expressway.

U.S. Highway 101 to Coyote Creek

The Light Rail Alternative includes an at-grade McLaughlin Avenue Station with offset side platforms opposite the left-turn pockets at the McLaughlin Avenue intersection. One station design option is being considered for the McLaughlin Avenue Station:

- **McLaughlin Avenue Aerial Station Option:** The optional design places the station on an aerial structure with a center platform. At-grade pedestrian access would be provided from the intersection to the station and up to the platform level with stairs and an elevator.

Coyote Creek to State Route 87

The Light Rail Alternative includes a State Route 87 Station located to the west of SR 87. There is one design option for the station located at SR 87:

- **Under State Route 87 Station Option:** The station is located under SR 87.

Park-and-Ride Lots

In addition to the existing park-and-ride lots at Alum Rock, Eastridge, and Capitol Stations on the Guadalupe LRT Line, the Light Rail Alternative includes a new park-and-ride lot at the Ocala Avenue Station, an expanded Eastridge Transit Center park-and ride lot, and a park-and-ride lot near the Monterey Highway Station. The following options are being considered:

- **Expanded Eastridge Transit Center Park-and-Ride Option (Only if No Ocala Avenue Station Park-and-Ride):** If there is no park-and-ride at the Ocala Avenue Station, then the Eastridge Transit Center Park-and-Ride would need to be expanded to accommodate the demand.
- **Monterey Highway Station Park-and-Ride Options:** Three options are under consideration, including:
  - **Monterey Highway Cloverleaf Option:** Within the existing loops on the east side of Monterey Highway, north and south of Capitol Expressway.
  - **Northwest of Monterey Highway Station Option:** West of Monterey Highway and north of the station.
  - **Northeast of Monterey Highway Station Option:** East of Monterey Highway, north of station and the ramp exiting from Capitol Expressway.

Vehicle Storage Facilities

Depending on operational needs, the Light Rail Alternative may provide for overnight storage of light rail vehicles along the alignment. Three optional locations are being considered, including:

- southwest corner of Capitol Expressway and Ocala Avenue Option,
- southwest corner of Capitol Expressway and Quimby Road Option,
- north park-and-ride lot at the Capitol Expressway and SR 87 Option.

Funding Feasibility

Another issue to be resolved concerns the financial feasibility of the Light Rail Alternative. The Minimum Operating System (MOS) to the Eastridge Transit Center has committed funding sources and would be initially constructed if the alternative is selected. The Phase 2 extension to State Route 87 is expected to be implemented at a future date but does not currently have a committed funding plan or schedule.

The capital funding strategy for the Light Rail Alternative will rely on local sales taxes and other potential sources for funding. Although local sales tax receipts have dropped in the past two years, forecasts anticipate that the economy will rebound. Amidst the recent financial uncertainty, the Light Rail Alternative continues to be a high priority for VTA and the community. As such, VTA will continue to pursue solutions that will achieve financial stability to assure that the Light Rail Alternative and the VTA system as a whole are adequately funded. This includes developing ongoing financial analysis and plans for achieving a stable and reliable funding program.

Chapter 3.0
Alternatives Considered

3.1 Introduction

This chapter describes the alternatives considered and evaluated in this EIR. This chapter also discusses the alternatives considered during project scoping, preliminary environmental screening, and conceptual engineering, but not carried forward for detailed analysis. The following alternatives are described in detail in this chapter:

- No-Project Alternative,
- Baseline Alternative, and
- Light Rail Alternative.

3.1.1 Background

Planning for a light rail alignment along Capitol Expressway has been ongoing since the 1990s. Transportation 2010 (T2010), a countywide transportation plan for Santa Clara County adopted in 1992, reaffirmed priorities for light rail corridors established in earlier plans and identified a second tier of candidate corridors for continued planning and potential construction, including the Capitol/Downtown-Evergreen and Stevens Creek/Alum Rock Corridors. A Project Definition Study was initiated on the Capitol/Downtown-Evergreen Corridor and, because of funding constraints and policy input, the Alum Rock Corridor was folded into the Downtown-Evergreen investigation. Work progressed on the Project Definition Study until 1994, when funding shortfalls curtailed the Downtown-Evergreen (and Alum Rock) investigation. Work proceeded for the Capitol Avenue/Expressway corridor in defining a light rail project extending from the terminus of the Tasman East LRT Line along Capitol Avenue and Capitol Expressway to Eastridge Mall (Eastridge Transit Center).

Subsequent policy decisions and the resulting language contained as Measure A in the approved Santa Clara County November 5, 1996, ballot defined the Capitol LRT Line as “Building the Capitol Light Rail Line from northeast San Jose – the connection to the Tasman Line – down Capitol Avenue through east San Jose to the Alum Rock area, with eventual service to Eastridge.” In 2000, VTA completed an MIS that identified transportation needs within the community and developed a major transit investment plan for the corridor (Santa Clara Valley Transportation Authority 2000b). The following section provides additional information about the MIS.

3.1.2 Major Investment Study

A MIS initiated in 1999 for the Downtown/East Valley study area encompassed the Evergreen-Downtown Corridor, Capitol Corridor extension to the Eastridge Transit Center, and Alum Rock Corridor. The Downtown/East Valley study area encompassed 30 square miles extending from McKee Road/East Julian Street on the north to Capitol Expressway and Yerba Buena Road on the south, and from Market Street/Monterey Highway on the west to the foothills of the Diablo Range on the east. Given the identified transportation needs and input received from the community, the following goals were established for the MIS:

- improve mobility,
- increase transit ridership,
- target the highest commute corridors, with emphasis on work trips and school trips,
- promote livable neighborhoods, and
- engage community support.

The Downtown/East Valley study area was recognized as a large geographic area with diverse travel needs and multiple travel markets. Three general travel corridors emerged from the study: Santa Clara/Alum Rock, Capitol/Evergreen, and South San Jose. Following an intensive study process, it was concluded that major transit improvements were warranted in three distinct corridors in the 30-square-mile Downtown/East Valley study area as part of the solution to travel and mobility problems. In August 2000, the VTA Board of Directors approved a Preferred Investment Strategy for the Downtown/East Valley study area, which included light rail to serve what was referred to as the Capitol Expressway/Evergreen Corridor (hereinafter referred to as the Capitol Expressway Corridor) (Santa Clara Valley Transportation Authority 2000a). The Capitol Expressway Corridor is approximately 8 miles long. Three creeks cross the corridor: Coyote, Silver, and Canoas.

3.1.3 Related Projects and Studies

There are a number of related studies and projects underway within the Downtown/East Valley study area. These are briefly summarized below.

- **Santa Clara/Alum Rock Corridor:** The Santa Clara/Alum Rock Corridor, also located within the Downtown/East Valley study area, is in the heart of San Jose, stretching along Santa Clara Street and Alum Rock Avenue from the San Jose Diridon Station to the Alum Rock Station on the Capitol

Avenue LRT Line. The corridor passes through a vibrant central business district characterized by small businesses and high pedestrian activity. As noted previously, VTA is also evaluating transit options in the Santa Clara/Alum Rock Corridor, following upon the conclusions reached during the MIS (Santa Clara Valley Transportation Authority 2000b). During the planning process, VTA recently determined that an enhanced bus service and light rail alternative should both be carried forward for further study. The alignment of the Light Rail Alternative for the Capitol Expressway Corridor would interface at the Alum Rock Station, joining the Capitol Avenue LRT Line and Santa Clara/Alum Rock Corridor with the Capitol Expressway Corridor. The details of the connection will be developed after the transit option is selected for the Santa Clara/Alum Rock Corridor.

- **Silicon Valley Rapid Transit Corridor Project:** VTA is developing plans to extend San Francisco Bay Area Rapid Transit District (BART) service to Milpitas, San Jose, and Santa Clara. An EIS/EIR is being prepared that will evaluate the impacts of constructing and operating the 16.3-mile extension. The extension would begin south of the planned Warm Springs BART Station in Fremont and end in the City of Santa Clara. The proposed BART alignment in downtown San Jose would be located in a tunnel below Santa Clara Street, from approximately 28th Street in the Alum Rock area to the San Jose Arena. The extension would include seven stations, one optional station in Milpitas, and a maintenance and storage yard in San Jose/Santa Clara. Passengers from the Capitol Expressway Corridor would be able to connect to the BART system in downtown San Jose.
- **Comprehensive County Expressway Planning Study:** Santa Clara County has developed a long-range strategic plan for improvement and maintenance of county expressways, including Capitol Expressway. The study evaluated capacity enhancements such as grade separations, auxiliary lanes, soundwalls, landscaping and aesthetics, HOV lanes, safety improvements, and other elements. Several intersections along the expressway where light rail stations and transit centers are proposed are identified as locations where improvements may be needed. The results of the study were used in the development of VTP 2030.
- **U.S. Highway 101 Central Corridor Study:** As part of VTP 2030, a number of freeway corridor studies are being undertaken. One involves a strategic plan for short- and long-term improvements to the U.S. 101 corridor from south of Alum Rock Avenue to north of Hellyer Avenue. The study will define projects that would provide operational and geometric improvements to relieve congestion, alleviate bottlenecks, and enhance safety within the corridor. An evaluation of intersection improvements on Capitol Expressway between McLaughlin Avenue and Aborn Road is included in the study.
- **Reid-Hillview Airport Master Plan:** Reid-Hillview Airport is a general aviation airport located within the Capitol Expressway Corridor. The airport has begun a master planning process to examine its ability to accommodate growth and to develop alternatives for addressing future demand. Various retail/commercial options are being explored in the master plan for the west side of Capitol Expressway between Cunningham Avenue and Tully Road.

- **Thompson Creek Trail Feasibility Study:** Thompson Creek is located within the project corridor. The City has begun a study to determine the feasibility of constructing a Class I bicycle and pedestrian trail along the Thompson Creek riparian corridor. The proposed alignment for the Thompson Creek Trail begins at Lake Cunningham Park and follows the levees north along the creek to Aborn Road.
- **San Jose/Evergreen Community College District Facilities Master Plan:** Evergreen Valley College is located within the project area, east of Capitol Expressway. The district proposes to expand the 166-acre campus, and modify campus access and circulation, which could affect Capitol Expressway.
- **Caltrain Electrification Project**: The Caltrain Electrification Project would provide for the conversion from diesel-hauled to electric-hauled trains and would require the installation of some 180 to 200 single-track miles of overhead contact system (OCS) for the distribution of electrical power to the electric rolling stock. Some limited diesel operations for certain passenger routes as well as for freight service would continue. Electric rolling stock would consist of locomotives or electric multiple unit cars. The OCS would be powered from 25 kilovolt (kV), 60 Hertz (Hz), single-phase, alternating current (AC) supply system consisting of traction power supply substations, switching stations, and paralleling stations. A Final Environmental Assessment (EA)/EIR has been prepared and is currently under review by the Federal Transit Administration.
- **Double Track Segments Between San Jose and Gilroy:** On November 7, 2000, voters in Santa Clara County approved a 30-year 0.5-cent sales tax to provide double track segments in the Caltrain corridor from the San Jose Tamien Station through Morgan Hill to Gilroy.
- **California High Speed Rail Project:** The High Speed Rail Authority has prepared a program-level Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) for a 700-mile high-speed train system serving Sacramento, the San Francisco Bay Area, the Central Valley, Los Angeles, the Inland Empire, Orange County and San Diego. High-speed trains would be capable of maximum speed of at least 200 miles per hour, with an expected trip time from San Francisco to Los Angeles in just less than 2 hours, 30 minutes. The High Speed Rail Authority and Federal Railroad Administration (FRA) are preparing a Final Program EIR/EIS that may identify preferred alignment and station options and includes responses to comments. One alignment under consideration would parallel the Caltrain tracks in the vicinity of Capitol Expressway.

3.2 No-Project Alternative

CEQA requires that an EIR evaluate and analyze the impacts of a no-project alternative. The purpose of evaluating a no-project alternative is to allow decision-makers to compare the impacts of approving a project with the impacts of not approving it. For the purposes of this analysis, the No-Project Alternative does not include transportation improvements in either the Santa Clara/Alum Rock or Capitol Expressway Corridors. It is assumed that transit services provided by VTA within the Capitol Expressway corridor will continue at September 2001 levels except for limited improvements in service frequency. The No-Project Alternative represents the conditions that would be reasonably expected to occur in the foreseeable future if none of the proposed alternatives were implemented. These conditions are based on current plans and are consistent with available infrastructure and community services.

The existing HOV lanes along Capitol Expressway between I-680 and U.S. 101 were approved and constructed in the mid-1990s as temporary transportation improvements to mitigate the impacts of the development included in the Evergreen Specific Plan and Evergreen Development Policy. The Evergreen Specific Plan provides for the construction of approximately 2,856 dwelling units, commercial uses, and associated infrastructure improvements on an 865-acre site in the Evergreen area of San Jose. According to the plan, the HOV lanes were to be replaced by a future light rail transit project. The eight-lane facility ultimately approved for Capitol Expressway was to be designed in a manner that provided for the future elimination of the two inside lanes and installation of a future double track light rail system (with stations). The light rail system was to be constructed in the median of the roadway while minimizing the need to reconstruct the six lanes of the expressway that would remain. The Light Rail Alternative is consistent with these prior policy decisions. For the purposes of this analysis, the HOV lanes remain in the No-Project Alternative.

Under NEPA, an EIS is required to include an evaluation of a no-action alternative. The nature of the no-action alternative depends on the nature of the proposed action. Because this EIR considers build alternatives, the no-action alternative represents anticipated future circumstances without implementation of the build alternatives. This is consistent with the CEQA requirement for a no-project alternative. For the purposes of the environmental analysis, the no-action and no-project alternatives are the same and will be referred to throughout this document as the No-Project Alternative. The No-Project Alternative is illustrated in Figure 3-1.

3.3 Baseline Alternative

While the Capitol Expressway Corridor is not a FTA New Starts project, the Baseline Alternative has been defined in accordance with that program. Under the requirements of FTA's New Starts program, a proposed New Starts project is compared to an alternative that includes transit improvements lower in cost than the proposed New Start project and that is referred to as the "Baseline Alternative." In this EIR, the Baseline Alternative includes existing transit conditions and programmed transportation projects that will be constructed by 2025 and enhancements to existing bus service above existing and planned levels. The Baseline Alternative includes the following projects, some of which are programmed in the approved 1996 Measure B Improvement Program (Santa Clara Valley Transportation Authority 1996):

- light rail extensions in the Tasman, Vasona, and Capitol Avenue Corridors;
- additional commuter rail service along the Capitol Corridor Intercity Rail, Caltrain, and ACE lines;
- extension of BART service from the terminus at the existing Fremont Station to the Warm Springs District of Fremont;
- I-880 Widening Project in north San Jose;
- State Routes 85/87 Interchange Project in San Jose;
- State Route 87 (South) HOV Lanes Project in San Jose; and
- State Route 87 (North) HOV Lanes Project in San Jose.

The Baseline Alternative would address mobility in the Capitol Expressway Corridor by enhancing the existing bus system. It represents the optimal level of bus service that could be provided in the corridor without an investment in major new infrastructure.

Bus Service Improvements

The bus service improvements in the Baseline Alternative would operate using the existing service structure and would maintain the existing route network and bus stop locations. To reduce costs, new routes would partially or fully overlay existing routes and would use existing bus stop locations. Enhancements to the existing service structure would consist primarily of modest, cost-effective facility improvements and operations expansions. The Baseline Alternative would include slight modifications to the existing route network, bus stop locations, and feeder network. Table 3.3-1 summarizes the bus service improvements incorporated in the Baseline Alternative; the following sections provide additional detail. Figure 3-2 illustrates the Baseline Alternative.

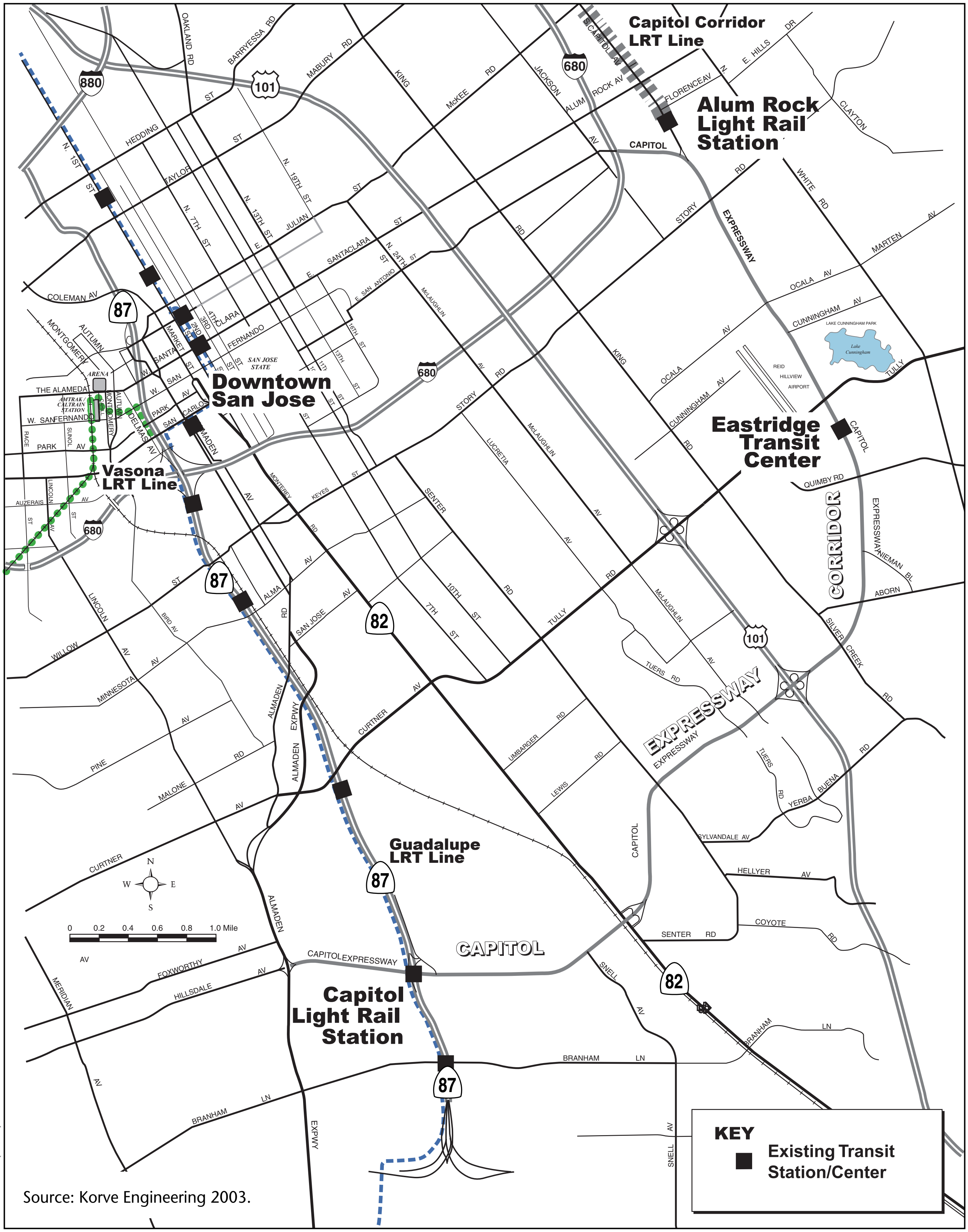

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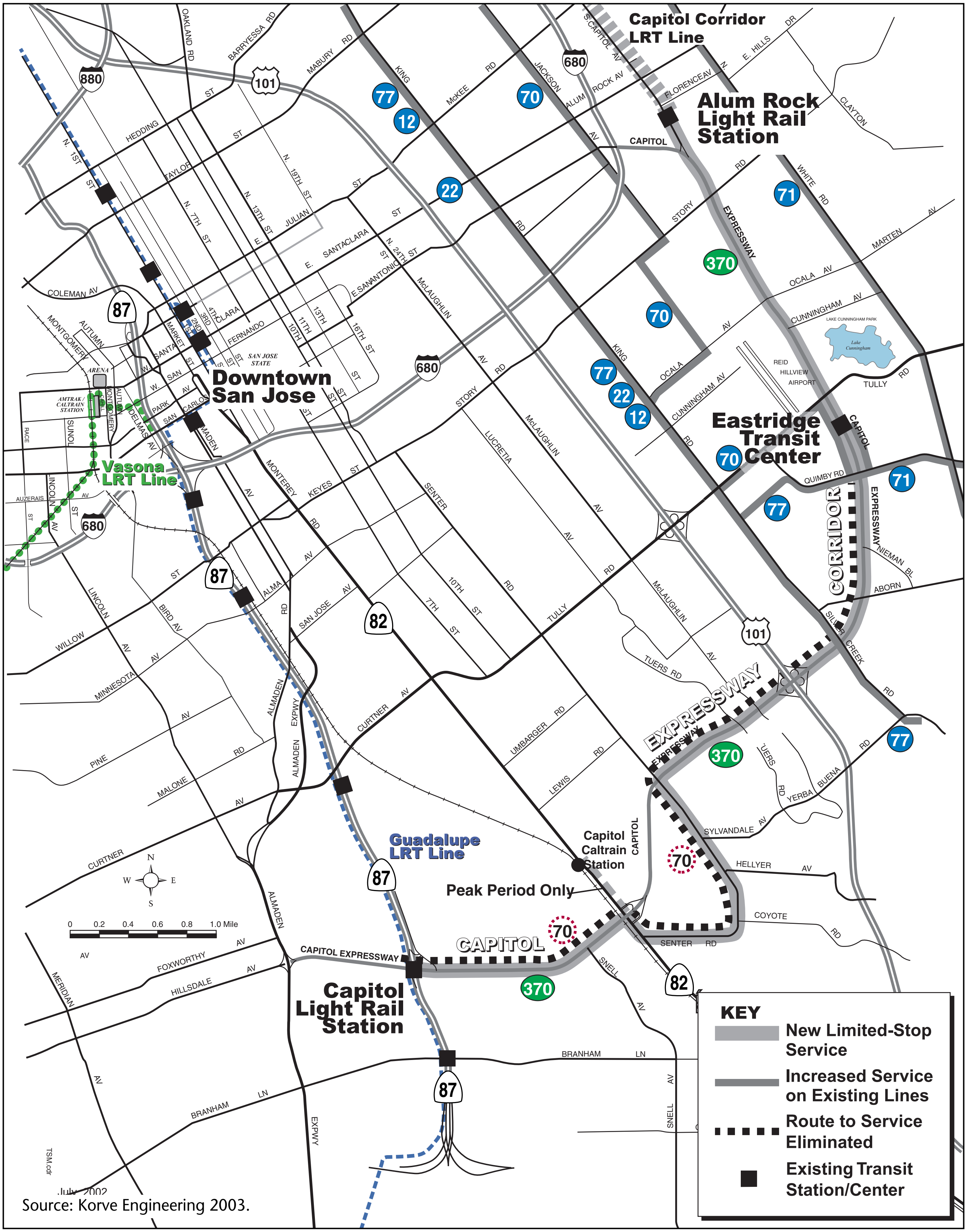
Figure 3-1
No Project Alternative



Source: Korve Engineering 2003.

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Figure 3-2
Baseline Alternative

Table 3.3-1. Proposed Features of Bus Service Improvements, Baseline Alternative

Corridor Feature	Status in Baseline Alternative
Route Network[a]	Existing with modifications
Bus Stop Locations	Existing with modifications
Feeder Network	Existing with modifications
Service Frequency Upgrades	Yes
Expanded Limited-Stop Services	Yes
High-Capacity Buses	Yes
Low-Floor Buses	Yes
Transit Supportive Roadway Geometry	Yes
Signal Priority	Yes
Enhanced Limited-Stop Services[b]	Under consideration
Electronic Passenger Information and Automatic Vehicle Location	Integrated with VTA current system development

[a] New bus routes will overlay existing ones.

[b] The selection of enhanced limited stop service includes a secondary selection of its features, such as multidoor boarding, streetside prepayment, level boarding, and station stops.

Service Frequency Upgrades

Absent a build alternative, an increase in bus service can provide some mitigating level of service for increased passenger demand in the project corridor. The concept of the Baseline Alternative's bus service improvements would be to enhance service in the corridor and to improve surrounding services to increase ridership. The routes in place as of September 2001 would be modified to accommodate varying levels of passenger demand between the new Alum Rock Station, Eastridge Transit Center, and Capitol Station. In addition, a new line is proposed to provide direct service between Alum Rock Avenue and SR 87. Table 3.3-2 summarizes the initial enhancements in service frequency for the study corridor.

Table 3.3-2. Proposed Bus Service Frequency Enhancements, Baseline Alternative

	Weekday				Saturday		Sunday/Holiday	
VTA Bus Service	Hours of Operation	Commute Hours	Midday	Night	Hours of Operation	Frequency	Hours of Operation	Frequency
Route 70								
Existing	5:00 a.m.– 11:30 p.m.	15	15	20–60	6:30 a.m.– 11:00 p.m.	15–60	6:30 a.m.– 11:00 p.m.	20–60
Proposed	5:00 a.m.– 11:30 p.m.	10	10	10–30	6:30 a.m.– 11:00 p.m.	10–30	6:30 a.m.– 11:00 p.m.	10–30
Route 71								
Existing	5:30 a.m.– 11:00 p.m.	15	15	30–60	7:00 a.m.– 9:00 p.m.	30–60	7:00 a.m.– 9:00 p.m.	30–60
Proposed	5:00 am– 11:00 pm	15	15	15–30	7:00 a.m.– 9:00 p.m.	15–30	7:00 a.m.– 9:00 p.m.	15–30
Route 77								
Existing	5:50 am– 10:30 pm	15–30	30	30–60	7:00 a.m.– 9:30 p.m.	30–60	7:00 a.m.– 9:30 p.m.	30–60
Proposed	5:00 a.m.– 11:30 p.m.	15	15	20–60	7:00 a.m.– 11:00 p.m.	15–60	7:00 a.m.– 11:00 p.m.	20–60
New Route 370								
Existing	—	—	—	—	—	—	—	—
Proposed	5:00 a.m.– 12:00 a.m.	10–20	10–20	15–30	7:30 a.m.– 12:30 p.m.	15–30	7:30 a.m.– 12:30 p.m.	15–30

Note: Route 70 includes a new southern route terminus at the Eastridge Transit Center.

The new Route 370 bus route would provide continuous limited-stop service along Capitol Expressway between Alum Rock Station and the Capitol Station. It would link the Capitol Avenue LRT Line with the Guadalupe LRT Line, but would deviate from Capitol Expressway to serve a portion of Senter Road and Monterey Highway as the existing Route 70 does currently. In addition, some of its peak-period trips could be diverted to serve the Capitol Caltrain Station. Route 370 would be designed to operate 7 days a week, with service offered between 5:00 a.m. and 12:00 a.m. on weekdays, and between 7:30 a.m. and 12:30 a.m. on Saturdays and Sundays. Service would be offered every 10–20 minutes during the day on weekdays and every 15–30 minutes at other times.

In conjunction with the introduction of limited-stop service with the new Route 370, the current Route 70 would terminate its service at the Eastridge Transit Center, continuing to serve only the northern portion of the route to Milpitas. Passengers who wish to travel south of the Eastridge Transit Center would use the proposed Route 370 limited-stop service. Weekday service on the remaining portion of Route 70 between the Eastridge Transit Center and Milpitas would be increased to a 10-minute headway to accommodate the high levels of passenger activity on Jackson Avenue. Evening and weekend services would also be increased.

Similarly, weekday service on Route 77 would be increased under the Baseline Alternative from 15- to 10-minute headways to better serve the high-demand corridor along King Road. Evening and weekend services would also be increased. Route 77 currently links Evergreen Valley College and Milpitas, with a deviation to serve the Eastridge Transit Center. Its routing would not change under the Baseline Alternative.

Route 71 would provide additional support in transporting passengers north to Alum Rock Avenue from the Eastridge Transit Center via White Road. Under the Baseline Alternative, service would be enhanced on weekday evenings from 30- to 60-minute headways to 15- to 30-minute headways. Saturday and Sunday service would also increase from 30- to 60-minute headways to 15- to 30-minute headways.

Enhanced Limited-Stop Service

Enhanced limited-stop (ELS) bus service is one measure of the bus service improvements that could have a significant impact on the shape and form of the transit service provided in the Capitol Expressway Corridor. An ELS bus line is a hybrid between a traditional limited-stop bus line (e.g., proposed Route 370) and a fully implemented Bus Rapid Transit (BRT) line. It travels in shared right-of-way, as does a traditional service, but can have amenities that improve passenger comfort, and operates under conditions that are usually reserved for BRT services. Consequently, an ELS bus service can offer high-level transit service at a lower cost per trip than light rail.

The bus service improvements would introduce Route 370 to Capitol Expressway between Alum Rock Avenue and Capitol Station. BRT elements that might be borrowed for an ELS service on Route 370 include:

- enhanced bus stops or stations for boarding locations,
- prepayment fares,
- level boarding at stations, and
- transit priority measures (see following section).

Transit Priority Measures

Traffic congestion often impacts the efficiency of transit operations and can deter potential transit passengers who perceive bus travel as time-consuming and unattractive by comparison with auto travel. The Baseline Alternative would include an array of transit priority measures designed to reduce the effect of congestion on bus operations and improve the competitiveness of transit travel compared to auto travel.

Transit priority measures provide buses with advantages over automobile congestion. Transit priority measures can permit buses to avoid automobile congestion (queue jump and bus-only lanes) and can provide buses with preferential consideration at traffic signals (signal priority and coordination) and in the traffic hierarchy (bulbouts). Table 3.3-3 summarizes transit priority measures recommended for the corridor under the Baseline Alternative and locations at which they would be implemented.

Table 3.3-3. Proposed Transit Priority Measures, Baseline Alternative

Measure	Potential Locations
Queue jump lanes	Alum Rock Avenue at King Road; Alum Rock Avenue at Jackson Avenue
Signal priority	Intersections along Capitol Expressway
Bus stop bulbouts	King Road at Ocala Avenue

Vehicle Characteristics

The choice of vehicle for the corridor can influence the efficiency and success of a bus line. For a corridor such as the Capitol Expressway Corridor, high ridership may warrant vehicles with higher capacity, such as articulated buses. To decrease travel times, low-floor buses are recommended so that boardings and alightings would be easier and faster. In some instances, the selection of a vehicle type would depend on other elements selected for the proposed bus service improvements.

3.4 Light Rail Alternative

The Light Rail Alternative would extend 8.2 miles south and west from the terminus of the Capitol Avenue LRT Line at the Alum Rock Station to the Eastridge Transit Center and connect with the existing Guadalupe LRT Line at SR 87. The Light Rail Alternative would have nine stations located near Story Road, Ocala/Cunningham Avenue, Eastridge Transit Center, Nieman Boulevard, McLaughlin Avenue, Senter Road, Monterey Highway, Vistapark Drive, and SR 87. The alternative includes a potential future station at Silver Creek Road. The alignment of the Light Rail Alternative is shown in Figure 3-3.

If selected as the preferred project, the Light Rail Alternative would likely be constructed in two or more phases: an initial phase terminating in the vicinity of

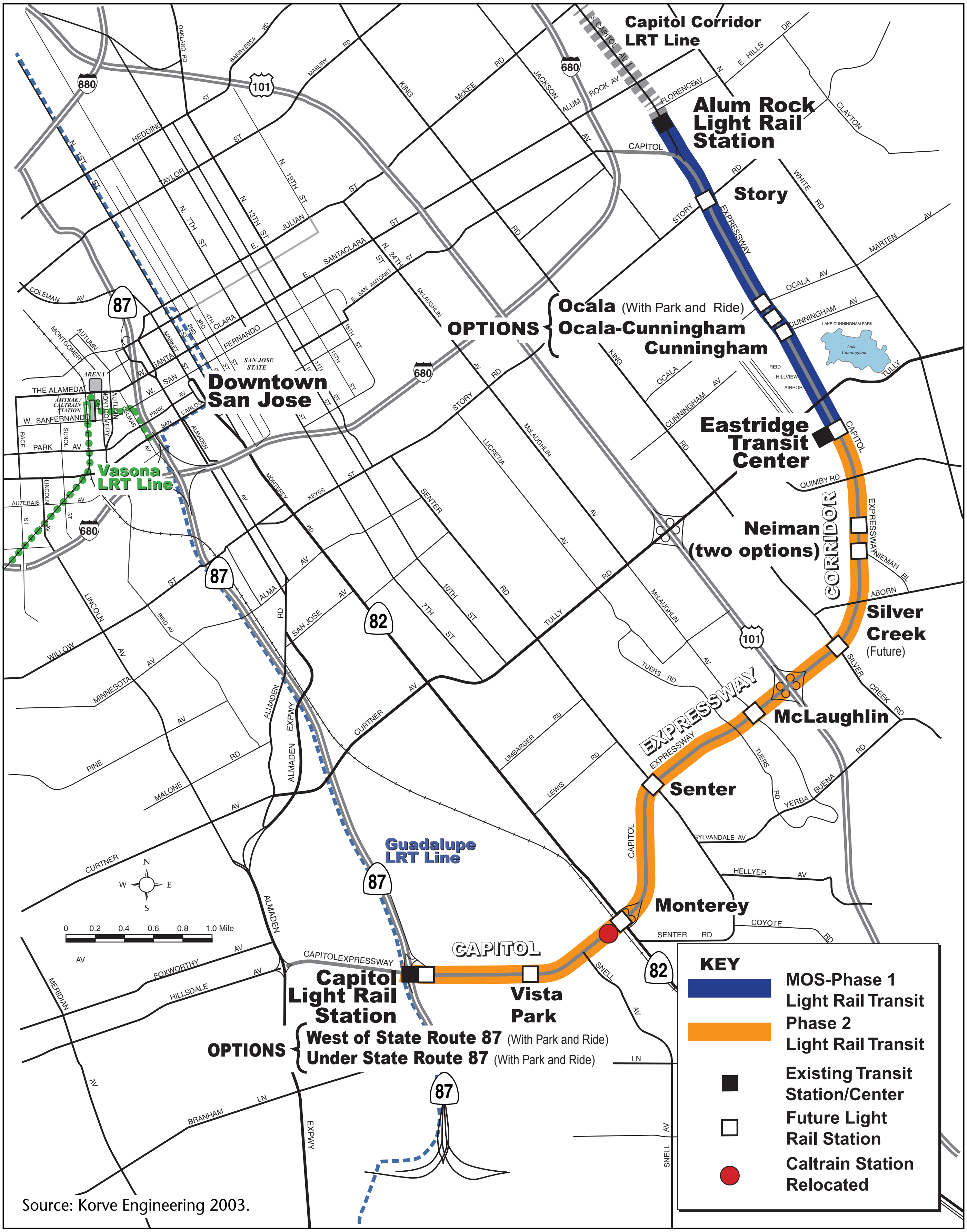

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Figure 3-3
Light Rail Alternative, MOS and Phase 2:
Eastridge Transit Center to Capitol Light Rail Station (State Route 87)

the Eastridge Transit Center (Figure 3-3). The initial phase, or Minimum Operating Segment (MOS), is referred to in this EIR as MOS-Phase 1. Under MOS-Phase 1, light rail would be constructed between the Alum Rock Station and the Eastridge Transit Center, a distance of approximately 2.3 miles. MOS-Phase 1 includes new light rail stations at Story Road, in the vicinity of Ocala and Cunningham Avenues, and at the Eastridge Transit Center, and new park-and-ride facilities would be constructed at Ocala Avenue and/or the Eastridge Transit Center. Existing HOV lanes between Story Road and the Eastridge Transit Center would be removed under MOS-Phase 1; no change to the existing HOV lanes south of Eastridge would occur under MOS-Phase 1.

Light rail continuing from Eastridge Transit Center to SR 87 would be constructed in one or more subsequent phases, and are referred to in this document simply as Phase 2 (see Figure 3-3). Under Phase 2, which is approximately 5.9 miles in length, new light rail stations would be constructed at Nieman Boulevard, McLaughlin Avenue, Senter Road, Monterey Highway, Vistapark Drive, and SR 87, with a potential future station at Silver Creek Road. New park-and-ride facilities would be constructed at Monterey Highway and the remaining Expressway HOV lanes south of Eastridge would be removed. The environmental effects of the entire proposed alignment are analyzed in this EIR; however, it should be recognized that other ongoing transportation planning efforts could influence this alternative, particularly in the segment south and west of the Eastridge Transit Center.

The following sections describe the Light Rail Alternative urban design, alignment, stations, park-and-ride lots, and other facilities and options under consideration. For purposes of environmental analysis, there is a description of the Light Rail Alternative, but the final selection of the preferred design (inclusion of any design options) for the Light Rail Alternative has not been made.

Urban Design

During the conceptual engineering phase, there has been a consistent effort to incorporate attractive, urban design elements into the design of the Light Rail Alternative. These principles reflect the policy guidance by the Downtown/East Valley Policy Advisory Board (PAB). The following section highlights the key urban design elements of the Light Rail Alternative. The design objectives for the Capitol Expressway Light Rail Alternative are noted in Table 3.4-1.

Urban Design Principles

- Transform the expressway from an auto-dominant corridor to a multi-modal boulevard.
- Introduce landscaping as a major element to enhance the visual appearance and spatial definition of the corridor.

- Establish pedestrian and bicycle linkages along and across the corridor to connect neighborhoods to activity centers.
- Design stations to facilitate safe and convenient pedestrian access and to convey the personality and identity of adjacent neighborhoods.
- Introduce special treatments along the edges of the boulevard to reduce visual and noise impacts and to create a more positive relationship with adjacent neighborhoods.
- Promote opportunities for transit-oriented development that will enhance ridership and the quality of life of the surrounding community.

Capitol Expressway as a Multi-Modal Boulevard

- The vision for the Capitol Expressway corridor is a multi-modal boulevard, transforming the current “highway” environment into a street with cars, light rail, bicycles, and pedestrians.
- Light rail service will operate in its own semi-exclusive transit way and include 10 stations near key residential, shopping, business, and recreational areas along Capitol Expressway.
- Light rail tracks will be at street level for the majority of the corridor but tracks may be above or below the street level at a few locations (e.g. the Capitol Avenue/Capitol Expressway intersection; Story Road, Tully Road, and Silver Creek Road/U.S. Highway 101).

The Light Rail Alternative will contribute to key neighborhood goals:

- **Improved Linkages:** Connections can be improved through a multi-purpose path and other opportunities along most of the corridor to implement a planned system of City and County trails, connecting transit stations with adjacent neighborhoods, local and regional parks, and other amenities. Bicycles will also be accommodated on the expressway.
- **A Greener Street:** Adding landscaping will enhance the visual and spatial effect of the street and create a more hospitable environment, including planting trees along the boulevard and at some station platforms. Lighting will also be provided.

Stations as Neighborhood Gateways

The design of stations and their relationship with the adjacent neighborhoods is critical to promote a viable transit environment. Convenience, safety, and ease of access for residents and employees arriving by foot, bike, bus, or car are primary design objectives. Additionally, stations can create identities and gateways to communities and opportunities for neighborhood-serving retail uses and/or a mix of commercial, residential, recreational, and community-oriented activities.

Table 3.4-1. Design Objectives for Capitol Expressway Alternatives (Light Rail)

System Design Objectives: Maintain efficient LRT service and travel speeds by providing increased transit capacity.	• Operate in exclusive or semi exclusive right-of-way and use signal priority. • Utilize signal priority to promote light rail with clearance through intersections. • Design several-grade separations (either elevated or depressed) where warranted and minimize disruption to vehicular circulation and turning movements. • Connect with both existing and planned local and regional transit. • Locate stations to maximize passenger access. • Provide an alternative transportation option to the automobile.
Access Objectives: Provide significant and varied opportunities to access LRT and regional connectivity.	• Provide access by other modes of travel including automobile, buses, other light rail lines, commuter rail lines, shuttles, bicycles, and walking. • Locate park-and-ride lots to provide convenient access at stations. • Design park and ride lots to meet current and projected future demand.
Community Design Objectives: Create a system that integrates transportation and land use.	• Develop a multi-modal landscaped parkway boulevard with transit, bicycle, pedestrian access and vehicular circulation. • Balance LRT technical and operational characteristics with community interests and needs. • Minimize right-of-way impacts to residential and commercial properties through careful station location and design. • Utilize design principles per *Community Design & Transportation: A Manual of Best Practices for Integrating Transportation and Land Use*. • Design stations as gateways to the neighborhoods, and retail, and commercial opportunities. • Enhance the corridor visual environment. • Create community-oriented design elements.
Safety Objectives: Implement a system that considers transit and traffic operations and pedestrian and bicycle use.	• Provide appropriate station railings and fencing. • Utilize signalized crosswalks or grade-separated pedestrian overcrossings. • Incorporate pedestrian access and waiting areas.
Traffic Operations Objectives: Minimize LRT impacts to traffic circulation and movements.	• Balance the operational needs of transit with that of traffic movements. • Maintain three through lanes in each direction along the expressway corridor. • Promote pedestrian safety by separating traffic movements through intersection channelization.

Source: Korve Engineering 2002a.

Design Enhancements at Light Rail Stations

The project will also provide opportunities at the stations to incorporate art elements to enhance the visual appearance of the stations. Because the Light Rail Alternative is both a project included in VTP 2030 and 2000 Measure A, it is eligible to be included in the Community Oriented Design Enhancements (CODE) Program. The goal of the program is to integrate high-quality design enhancements, designed by artists, that reflect the identity of the communities and neighborhoods in which they are located.

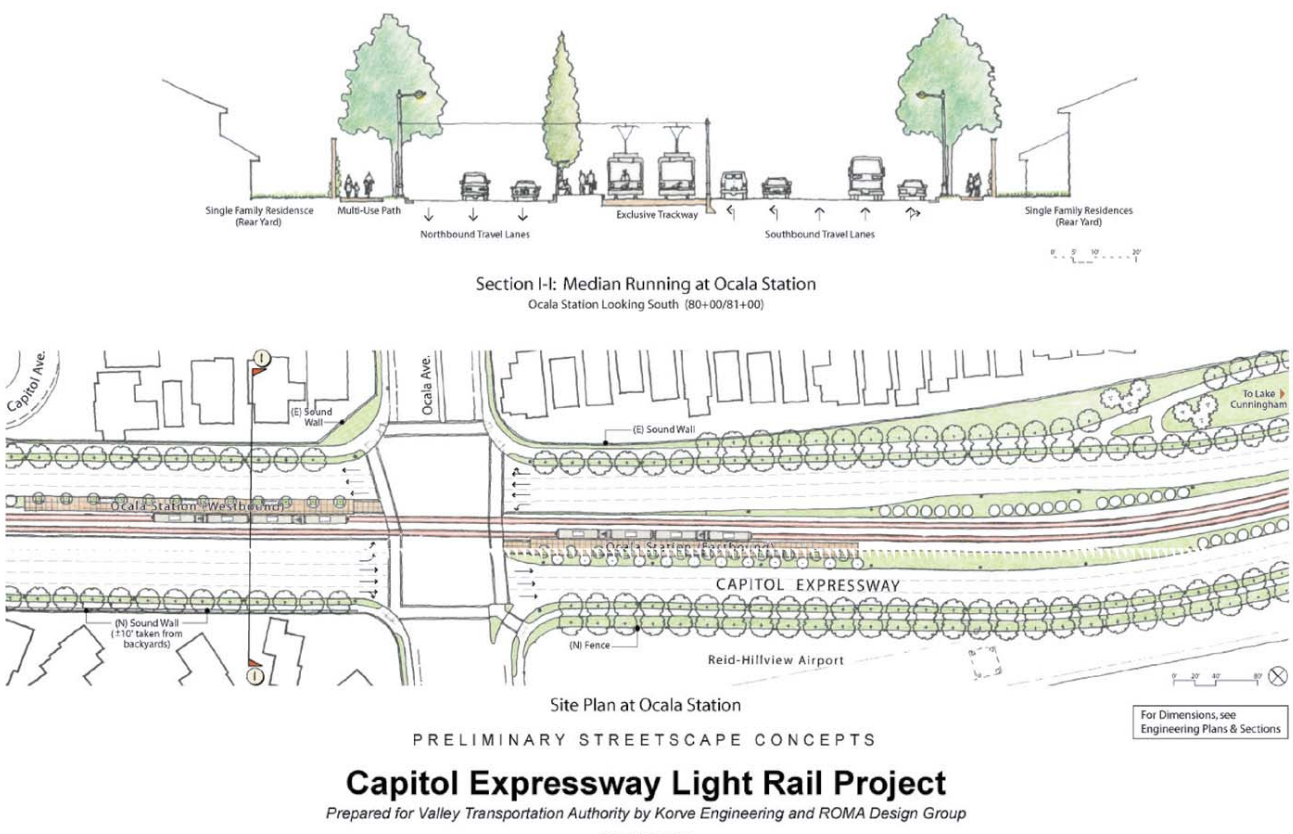
To ensure the success of the program, citizens are involved early in selecting and designing CODE projects. Successful CODE elements build community pride and project support. During the conceptual engineering process, many community members expressed interest in becoming involved in this effort. The budget for CODE improvements has been established at 2% of the construction costs for each project. Numerous examples of CODE Program elements have been incorporated into VTA's light rail stations.

Alignment Description

The detailed specifications of the light rail alignment are illustrated in Volume II of this EIR, Appendix A. These illustrations show the plan of the Light Rail Alternative. Detailed plan and profile drawings are included in the Technical Appendix. for the Downtown/East Valley Light Rail Transit Corridor Conceptual Engineering Project Definition Report, Capitol Expressway Light Rail Corridor (Korve Engineering, 2004). The alignment would operate in exclusive and semi-exclusive right-of-ways and would include both grade-separated and at-grade intersection crossings. The alignment would operate primarily in the median of Capitol Expressway; however, some short alignment sections and options would deviate from the median to a side-running operation.

The Light Rail Alternative would be designed to reduce travel time, with signal priority at intersections and grade separation at congested intersections. Crossings at freeways, expressways, and some major arterials would also be grade-separated (either elevated or depressed) to further support higher speed transit operations. Crossing gates would be required at intersections for side-running operations.

Construction of the light rail guideway and grade-separated structures under this alternative would alter the roadway geometry along some portions of Capitol Expressway. Perhaps the most dramatic change to the expressway would be the removal of existing HOV lanes between Capitol Avenue and U.S. 101. Because the existing roadway width could accommodate light rail if modified, the HOV lanes would be removed to provide the additional right-of-way. This would minimize the need to acquire substantial additional property for the Light Rail Alternative and would be consistent with past policy decisions. Except for restriping and a slight reduction in lane width, minimal modifications to the remaining traffic lanes would be required. Left turns and through movements would not be affected, and all three existing general purpose through traffic lanes would remain in place.

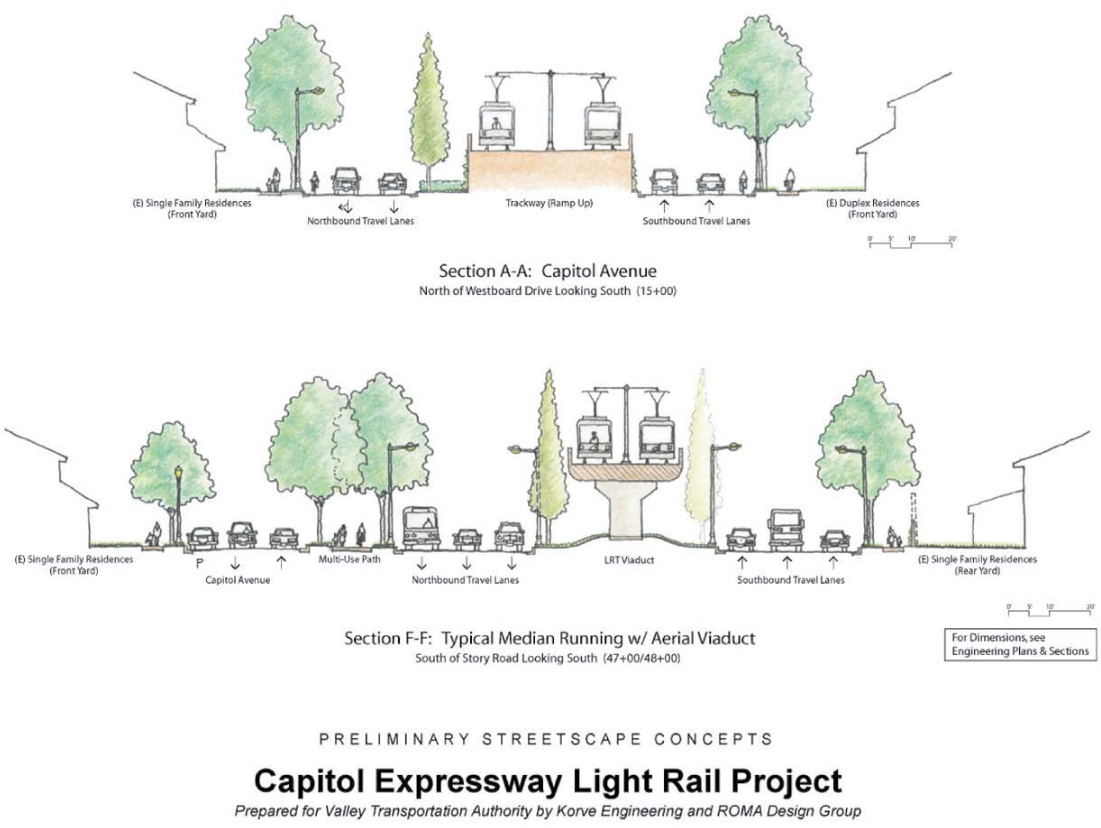


Under the Light Rail Alternative, the streetscape of Capitol Expressway would be redesigned to create an urban parkway. The project cross section shown in the exhibit above was developed as a result of extensive input from the community and incorporates many features from VTA's Community Design and Transportation Program. Pedestrian-friendly improvements, such as removing free-flowing right turn lanes to make pedestrian movements across the roadway shorter and easier, would be implemented at intersections. In addition, the design would incorporate trees along the light rail median and along the curb edge of the roadway. A multi-use linear path along part of Capitol Expressway is also proposed. The path would be approximately 16 feet wide and would include a 10-foot-wide pedestrian and bicycle pathway, landscaping, and replacement of existing soundwalls where necessary. To accommodate bicyclists to the greatest extent possible, curb lanes on both sides of Capitol Expressway will be 17–18 feet for the entire length to allow use of the shoulders by bicycles. There will also be periodic emergency pull-out areas for vehicles along Capitol Expressway.

The following sections describe the Light Rail Alternative vertical and horizontal alignment and the options for each segment of the light rail corridor.

Alum Rock Station to Story Road

Capitol Avenue/Capitol Expressway and Story Road Aerial Alignment: As shown in Figure A-1 through A-3 (Appendix A), the light rail alignment would begin at the existing Alum Rock Station on the Capitol Avenue LRT Line. In this segment, the alignment could be constructed in the median of Capitol Expressway from the Alum Rock station until just north of Story Road. The light rail alignment would be constructed at-grade for most of its course along Capitol Expressway. However, in this section of the corridor, an aerial guideway would be constructed for the full distance from south of Alum Rock Station to south of Story Road. The guideway would be located in the median of Capitol Avenue and Capitol Expressway and would be approximately 4,000 feet long. At its



northern end, the aerial structure would cross the northbound lanes of Capitol Avenue and Capitol Expressway and transition to an alignment in the median of

Capitol Expressway. The light rail alignment would continue on the aerial structure over Story Road and resume a ground-level profile south of Story Road.

Two vertical profile options are under consideration. Both options include two bus bays on Story Road (east of Capitol Expressway) and a kiss-and-ride lot on the southeast corner of the intersection.

- **Capitol Avenue/Capitol Expressway Tunnel/Story Road Aerial Option:** Under this option, a 1,330-foot-long tunnel would be constructed from south of Alum Rock Station, under the intersection of Capitol Expressway and Capitol Avenue and the northbound lanes of Capitol Expressway, to a point 20 feet north of Silver Creek. At this point, the alignment would leave the tunnel and transition to a 2,600-foot-long aerial structure that would cross Story Road. The aerial structure would continue south past Story Road, where it would transition back to ground level. Both the tunnel and the aerial structure would be located in the median of Capitol Avenue and Capitol Expressway.
- **Capitol Avenue/Capitol Expressway/Story Road Tunnel Option:** A 3,950-foot tunnel would be constructed from north of Capitol Avenue/Capitol Expressway to south of Story Road. It would be constructed in the median. The tunnel would pass under Capitol Avenue/Capitol Expressway intersection, cross under Silver Creek and Story Road before returning to a ground-level profile 1,225 feet south of Story Road. The tunnel option would include a depressed, open-air station at Story Road.

Story Road to Eastridge Transit Center

North of Eastridge Transit Center Tunnel with At-Grade Station Alignment: From south of Story Road, the alignment would be at-grade through the Ocala and Cunningham Avenue intersections (see Figures A-4 through A-10). Before reaching Tully Road, a tunnel would provide a grade-separated transition from the median-running configuration along Capitol Expressway to the side-running configuration of the new station at Eastridge Transit Center. The Tully Road tunnel would measure approximately 2,150 feet. In addition to removing light rail operations from the congested intersection of Tully Road, the grade separations in this area would serve to transition the light rail alignment between median- and side-running operations. The MOS-Phase 1 terminates at the Eastridge Transit Center.

One alignment and station option is being considered.

- **North of Eastridge Transit Center Aerial Crossing with Aerial Station Option:** An aerial guideway would be constructed to transition the alignment from median-running north of Tully Road to side-running south of Tully Road in the Eastridge Transit Center. The proposed station at the Eastridge Transit Center would be located on the aerial guideway.

Eastridge Transit Center to Aborn Road

South of Eastridge Transit Center Tunnel Alignment. Figures A-11 through A-15 illustrate the alignment south of the at-grade Eastridge Transit Center, where it would enter a retained cut section that would drop the tracks onto a tunnel structure carrying the light rail under the southbound Capitol Expressway lanes and Quimby Road. From that point, it would return to grade through another retained cut section in the median of Capitol Expressway south of Quimby Road and remain at-grade until it reaches Aborn Road.

The following four vertical alignment options are under consideration between the Eastridge Transit Center and Aborn Road.

- **South of Eastridge Transit Center Aerial Crossing Option (Only with Eastridge Aerial Station Option):** If the alignment comes into the Eastridge Transit Center on an aerial structure, it would remain on an aerial structure as it continues south across the southbound Capitol Expressway lanes and Quimby Road, where it would return to grade in the median south of Quimby Road and remain at-grade to the vicinity of Aborn Road.
- **South of Eastridge Transit Center Side-Running/Tunnel at Nieman Boulevard Option:** South of the Eastridge Transit Center, the alignment would continue at-grade as side-running until the Nieman Station on the west side of the Capitol Expressway north of Nieman Boulevard, where it would transition back to the median via a cut section that would drop the tracks onto a cut and cover tunnel structure under southbound Capitol Expressway and return to grade through another retained cut section in the median south of Nieman Boulevard and remain at-grade to the vicinity of Aborn Road.
- **South of Eastridge Transit Center Side-Running/Cut and Cover Option:** South of Eastridge Transit Center, the alignment would enter a retained cut section that would drop the tracks onto a cut and cover tunnel carrying the light rail under the Eastridge Loop Road and Quimby Road, where it would return to grade through another retained cut section south of Quimby Road continuing at-grade through the Nieman Station. At this point, it would rise to an aerial section that would locate the tracks on a structure carrying the light rail over the southbound Capitol Expressway lanes, where it would return to grade in the median south of Nieman Boulevard and remain at-grade to the vicinity of Aborn Road.
- **South of Eastridge Transit Center Side-Running Depressed At-Grade/Aerial Option:** South of the Eastridge Transit Center, the alignment would enter a retained cut section that would drop the tracks into a cut and cover tunnel carrying the light rail alignment under the Eastridge Loop Road and Quimby Road. The alignment would return to grade through another retained cut section south of Quimby Road, and continue at-grade through the Nieman Station. At this point, it would rise to an aerial section that would locate the tracts on a structure carrying the alignment over the southbound Capitol Expressway travel lanes, where it would return to the median of Capitol Expressway and remain aerial to the vicinity of Aborn Road.

Aborn Road to Silver Creek Road

At-Grade Median Crossing at Aborn Road Alignment. As shown in Figures A-16 and A-17, the alignment would cross Aborn Road at grade and Silver Creek Road via an aerial structure. The length of the aerial structure from the beginning of the first retained fill section to the end of the last retained fill section would be approximately 2,800 feet.

There are two design options at Nieman Boulevard/Aborn Road. Each of these options would transition to an aerial structure for the alignment to cross Silver Creek Road.

- **Aerial Crossing at Aborn Road Option:** An aerial guideway would be constructed in the median from before the Aborn Road intersection through the Silver Creek Road intersection. The total length of the structure would be 8,000 feet.
- **Aerial Crossing at Aborn Road Option (Only with Side-Running Options):** If the aerial option at Aborn Road is from the side-running segment to the median, the aerial guideway would begin before Nieman Boulevard and continue through both Aborn Road and the Silver Creek intersection. The total length of the structure would be 9,500 feet.

Silver Creek Road to Coyote Creek

At-Grade Crossing of Capitol Expressway Overpass of U.S. Highway 101 Alignment: As shown in Figures A-18 through A-20, the alignment would continue on the aerial structure through the potential future Silver Creek Station and transition back to the level of Capitol Expressway through another retained fill section just before the Capitol Expressway overpass of U.S. 101, then continue in the median of Capitol Expressway over U.S. 101 through McLaughlin Road to Coyote Creek.

One design option is under consideration for the section between Silver Creek Road and Coyote Creek.

- **Aerial Crossing of U.S. Highway 101 Option:** The alignment would remain elevated through the optional future Silver Creek Station, as described above. However, in this option, the alignment would continue on a separate aerial structure across southbound Capitol Expressway on the north side of the overpass crossing of U.S. 101. After crossing U.S. 101, the alignment would proceed across the southbound Capitol Expressway lanes over McLaughlin Avenue, through the proposed McLaughlin Avenue Station, and transition back to grade level through another retained fill section just before Coyote Creek.

Coyote Creek to State Route 87

The alignment would proceed in the median of Capitol Expressway for the entire length of the section between Coyote Creek and the end of the alignment near SR 87, as illustrated in Figures A-21 through A-32.

Proposed Stations and Park-and-Ride Facilities

Nine new stations are included with the Light Rail Alternative between the northern terminus at the existing Alum Rock Station and the southern terminus at the existing Capitol Station at SR 87. There is also a potential future station proposed at Silver Creek Road. The stations would be located approximately 0.75 mile apart. The placement of the proposed stations was based primarily on VTA guidelines for station spacing and the desire to place the stations at or near major intersections and near convenient transfer points. The following sections describe each station along the alignment of the Light Rail Alternative. The proposed stations and park-and ride options are shown in Figure 3-4.

Alum Rock Station

At its northern end, the Light Rail Alternative would connect to the existing light rail network at the Alum Rock Station on the Capitol Avenue LRT Line. The Capitol Avenue LRT Line would be through-routed with the Light Rail Alternative. No additional new improvements are anticipated at this station.

Story Road Station

Story Road Aerial Station with Pedestrian Overcrossings: The Light Rail Alternative includes a two-level station in the median of Story Road with a mezzanine level and an elevated center platform. The station would be centered over the Story Road/Capitol Expressway intersection. Passengers would access the station via pedestrian overcrossings. From the mezzanine level, an elevator or stairs would provide access to the station platform.

The traffic volumes and turning movements and the bus and pedestrian/bicycle activity at the Story Road intersection are significant. To support efficient connections to the Story Road Station and as part of the bus integration plan, additional bus and transit support facilities are included.

The enhanced transit features will include a new bus bay for two buses on the south side of eastbound Story Road on the far side of the intersection and a small short-term kiss-and-ride lot in the southeast corner of the intersection. The lot could accommodate up to 10 automobiles and is located directly adjacent to the stairs and elevator accessing the pedestrian overcrossing on the south side of Story Road. A single parcel would be required. A single pedestrian overcrossing would be located close to the intersection. There would be convenient access to the pedestrian overcrossing because it would be close to existing at-grade crosswalks.

There are two separate design options being considered for the Story Road Station.

- **Story Road Aerial Station with Median Access Option:** This design option is for an aerial station with access to a center platform via at-grade pedestrian crossings at the Story Road intersection to the median and up to the station platform with stairs or an elevator.
- **Story Road with Depressed, Open-Air Station Option (only with Capitol Avenue/Capitol Expressway/Story Road Tunnel Option):** A second design option is a depressed, open-air station platform located below-grade with access via stairs and elevators from the median. Patrons would reach the median via signalized crosswalks.

Ocala/Cunningham Avenue Station

Ocala Avenue Station. An at-grade station at Ocala Avenue, with two far-side platforms opposite the left-turn pockets at the Ocala Avenue intersection, is included in the Light Rail Alternative. Passenger access would be provided with pedestrian crosswalks. This station would require the realignment of Capitol Expressway between Ocala Avenue and Cunningham Avenue to the west into property that is owned by Santa Clara County's Reid-Hillview Airport and Pacific Gas & Electric Company (PG&E).

The following two options are under consideration for a station in the vicinity of Ocala and Cunningham Avenues.

- **Between Ocala and Cunningham Station Option:** This station would be between Ocala and Cunningham Avenues, with a single center platform in the median and passenger access provided by pedestrian overpasses, stairs, elevators, and ramps.
- **Cunningham Avenue Station Option:** The second option is for an at-grade station at Cunningham Avenue, with two far-side platforms opposite the left-turn pockets at the Cunningham Avenue intersection. Passenger access would be provided with pedestrian crosswalks. This station option would also require realignment of Capitol Expressway between Ocala Avenue and Cunningham Avenue and the acquisition of additional property.

Eastridge Transit Center

The Eastridge Transit Center is currently one of the busiest facilities in the VTA system, with significant bus transfer activity and a large park-and-ride lot. Most bus routes serving the Downtown/East Valley area terminate at or pass through

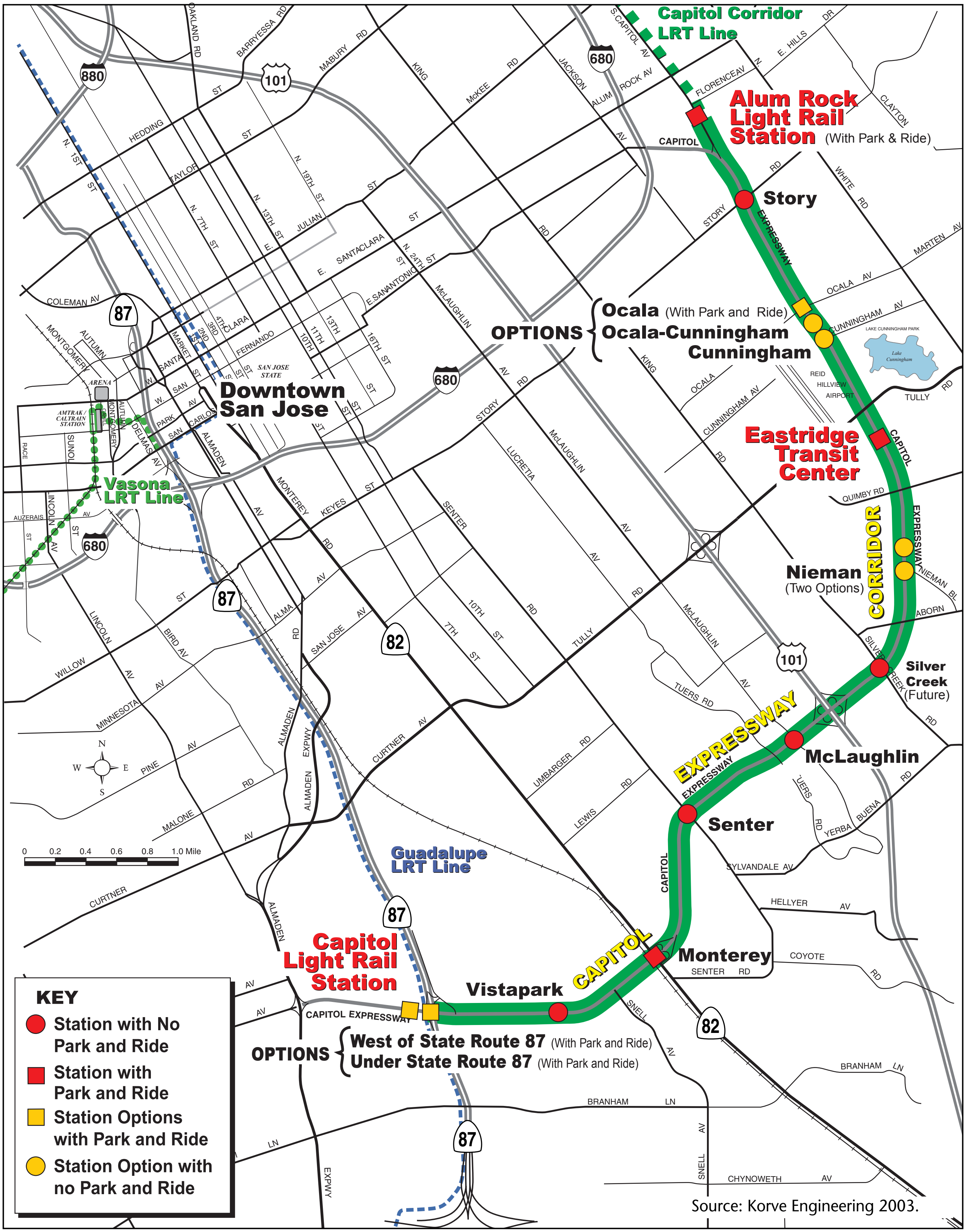


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Figure 3-4
Proposed Station Locations

the center, which accommodates approximately 6,000 daily boardings and alightings.

At-Grade Eastridge Transit Station: The at-grade station would include a center platform adjacent to the proposed Eastridge Transit Center. Pedestrian access would be provided with pedestrian crossings from the proposed multi-use path that would be adjacent to Capitol Expressway.

The station design for the Eastridge Transit Center would require a reconfiguration of the existing bus transfer facilities to provide an efficient interface with the light rail alignment. Improvements include a modified access loop and bus bays for buses, an expanded park-and-ride lot, and the multi-use path traversing the eastern edge of the site. Between the Eastridge Transit Center and Nieman Boulevard, additional landscaping, lighting, and decorative paving could also be added to enhance the design elements of the center.

- **North of Eastridge Transit Center Aerial Crossing with Aerial Station Option (Only with North of Eastridge Transit Center Aerial Crossing Option):** The aerial station would be on a structure with a center platform. Pedestrian access would be provided by stairs or elevators from the multi-use path.

Nieman Boulevard Station

Nieman Boulevard Median Station: The Light Rail Alternative includes an at-grade station with offset side platforms opposite the left-turn pockets located at the Nieman Boulevard intersection. Passenger access would be provided via the proposed multi-use path along the west side of the alignment and pedestrian crossings of Capitol Expressway at Quimby Road and Nieman Boulevard.

There is one design option and location under consideration for the Nieman Boulevard Station.

- **Nieman Boulevard West Side Station Option (Only with Side-Running Options):** If a side-running operation between the Eastridge Transit Center and Nieman Boulevard is selected, the station would be 1,000 feet north of Nieman Boulevard on the west side of the expressway. Passenger access would be provided via the proposed multi-use path along the west side of the alignment.

Silver Creek Road Station (Potential Future)

The design for the potential future station at Silver Creek Road is similar to the proposed Story Road Station. It would be an aerial, two-level station with a mezzanine level and a platform level. Pedestrian access would be provided via overpasses from the two west corners of the intersection to the mezzanine level. An elevator would also be provided to link the two levels within the station.

McLaughlin Avenue Station

McLaughlin Avenue At-Grade Station: The McLaughlin Avenue Station would be an at-grade station with offset side platforms opposite the left-turn pockets at the McLaughlin Avenue intersection. Pedestrian access would be provided via pedestrian crosswalks from all four corners of the intersection.

There is one station design option being considered for this station.

- **McLaughlin Avenue Aerial Station Option (Only with Aerial Crossing of U.S. Highway 101 Option):** The optional design places the proposed station on an aerial structure with a center platform. At-grade pedestrian access would be provided from the intersection to the station and up to the platform level with stairs and an elevator.

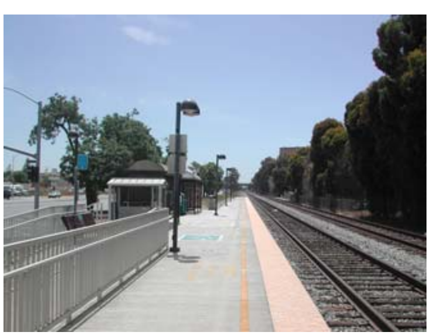
Senter Road Station

The design for the station at Senter Road accommodates a center platform station approximately 500 feet north of the Senter Road intersection. Although the station would be at-grade, passenger access would be provided via pedestrian overpasses because a connection with the crosswalks at Senter Road is not feasible. Stairs and elevators would provide access down to the platform.

Monterey Highway Station

The proposed station at Monterey Highway would be located on the existing Capitol Expressway overpass. The station would include an at-grade center platform, with pedestrian access provided via an elevator, stairs, and pedestrian tunnel. The overpass would be widened to accommodate the 140-foot-wide right-of-way needed for the station platform and tracks. The loop ramps on the highway interchange might also require partial reconstruction to fit with the widened cross section.

The Light Rail Alternative includes a plan to relocate the existing Capitol Caltrain Station. The existing station is located approximately 2,000 feet north of Capitol Expressway at Monterey Highway and Fehren Avenue and consists of a station platform (600 feet by 15 feet) on the west side of Monterey Highway directly across from Fehren Drive and a park-and-ride lot north of Fehren Drive and east of Monterey Highway. The current park-and-ride lot capacity contains 378 parking spaces, including disabled and kiss and ride parking spaces. The Light Rail Alternative would relocate the Capitol Caltrain Station platform to a new location approximately 0.5 mile south of its current location.



The relocation plan would place the Caltrain station beneath Capitol Expressway on the west side of Monterey Highway to create a vertical link between the light rail and commuter rail stations. The relocated Capitol Caltrain Station would include the following elements: steel/glass shelter, bicycle lockers at the park-and-ride lot, and a station platform. The station platform would be approximately 700 feet long by 15 feet wide. The station will accommodate electrified double-track Caltrain service, as well as right-of-way for future high-speed rail service. It would be located at-grade on the west side of Monterey Highway; the platform length will extend both north and south of the Monterey Highway overpass, and will accommodate a future grade-separated pedestrian crossing. The Monterey Highway light rail station would be at-grade with a center platform on the existing Monterey Highway overpass accessed via stairs or elevators and a pedestrian tunnel. The plan also provides for an expanded park-and-ride lot and potential bus transit center.

Vistapark Drive Station

The proposed station at Vistapark Drive would be similar to the design for the station at McLaughlin Avenue. It would be an at-grade station with offset side platforms. Pedestrian access would be provided via pedestrian crosswalks at the intersection. The existing right-of-way and curb-to-curb width at this location would be expanded to accommodate the Light Rail Alternative.

Capitol Station (State Route 87)

West of State Route 87 Station: Passenger access would be provided via a pedestrian crosswalk from the two west corners of the intersection. Passengers would use existing separate facilities to access the Guadalupe LRT Line. There would be no direct track connection to the Guadalupe LRT Line. The station design would facilitate passenger transfer connections between the Light Rail Alternative and the existing Guadalupe LRT Line, but does not include a direct rail connection.

One station design option is being considered.

- **Under State Route 87 Station Option:** Passenger access would be provided via a pedestrian crosswalk on the east side of the intersection with SR 87 southbound ramps. Passengers would use existing separate facilities to access to the Guadalupe LRT Line, and there would be no direct track connection.

Park-and-Ride Facilities

Several sites exist along Capitol Expressway for park-and-ride facilities. Three existing park-and-ride lots are located along the alignment: Alum Rock Station, Eastridge Transit Center, and Capitol Station (at SR 87). A fourth park-and-ride lot within the corridor is located at the intersection of Monterey Highway and Fehren Drive. This facility serves the Caltrain Capitol station, which lies approximately 2,000 feet north of Capitol Expressway. These facilities and current demand are illustrated in Figure 3-5.

To serve the Light Rail Alternative, two additional facilities are needed and are described below. The existing Alum Rock Station and Capitol Station park-and-ride facilities have sufficient capacity to accommodate the projected demand. Table 3.4-2 summarizes the proposed park-and-ride sites for the Light Rail Alternative and the estimated demand at each site.

Expand Eastridge Transit Center Park-and-Ride: The existing park-and-ride facilities at the Eastridge Transit Center would be reconfigured and expanded to serve the additional park-and-ride demand.

Ocala Avenue Station Park-and-Ride: A site on the southwest corner of Ocala Avenue and Capitol Expressway would serve the Ocala Station in conjunction with expanded facilities at the Eastridge Transit Center. However, the demand at this location could also be met at the Eastridge park-and-ride lot.

In addition, the Light Rail Alternative would include options for two new park-and-ride facilities to meet the forecasted demand, as illustrated in Figure 3-4:

- **Expanded Eastridge Transit Center Park-and-Ride Option (Only if No Ocala Avenue Station Park-and-Ride):** If there is no park-and-ride at the Ocala Avenue Station, then the Eastridge Transit Center Park-and-Ride would need to be expanded to accommodate the demand.
- **Monterey Highway Station Park-and-Ride Options:** To serve the relocated Capitol Caltrain Station and the proposed Monterey Highway Station, three park-and-ride options with a bus transfer center are under consideration.
  - **Monterey Highway Cloverleaf Option:** Located in the center of the cloverleaf ramps on the east side of Monterey Highway both north and south of Capitol Expressway.
  - **Northwest of Monterey Highway Station Option:** This option would locate the park-and-ride facility at a site to the northwest of the Monterey Highway Station.
  - **Northeast of Monterey Highway Station Option:** This option would locate the park-and-ride facility at a site to the northeast of the Monterey Highway Station and north of the cloverleaf ramps at Capitol Expressway.

Support Systems

In addition to the primary alignment, stations, and park-and-ride facilities, the Light Rail Alternative would incorporate light rail support systems, including traction power and substations, overhead contact, communications, signaling, and gates. Opportunities for overnight vehicle storage facilities with light

Table 3.4-2. Proposed Park-and-Ride Sites and Estimated Demand and Capacity for the Light Rail Alternative (to State Route 87)

		Estimated Peak Park-and-Ride	
Proposed Station	Notes	Demand	Capacity
Alum Rock—Existing	The existing park-and-ride lot could support the Light Rail Alternative. No change in capacity (currently 105) is proposed. The total demand also includes park-and-ride spaces required to serve the Capitol Light Rail Line.	60–90	105[a]
Ocala Avenue/ Eastridge Transit Center Area	The Ocala Avenue Station and Eastridge Transit Center essential function as one area to serve park-and-ride needs. A new park-and-ride lot on the southwest corner of Ocala Avenue/Capitol Expressway could provide approximately 100 parking stalls. However, if there is no park-and-ride at Ocala Avenue this demand would shift to the Eastridge location and there would be a greater expansion of spaces at the Eastridge Transit Center. The Eastridge Transit Center park-and-ride could be expanded beyond its current capacity of 133 parking stalls.	250–550	250–550
Monterey Highway—Options	One or a combination of the three options under considerations for the Light Rail Alternative can accommodate up to 300 parking stalls. Multi-modal connections with the relocated Caltrain Station and new bus transit center will be provided. The total demand includes 100 parking stalls for the relocated Caltrain Station.	260–300	260–300
SR 87 (Capitol)—Existing	Existing facility has over 900 stalls (including both north and south park-and-ride lots). Estimated demand can be accommodated without expansion. The total demand also includes park-and-ride spaces required to serve the Guadalupe Light Rail Line.	310–375	914[a]

[a] Existing park-and-ride spaces.

Source: Korve Engineering 2004b.

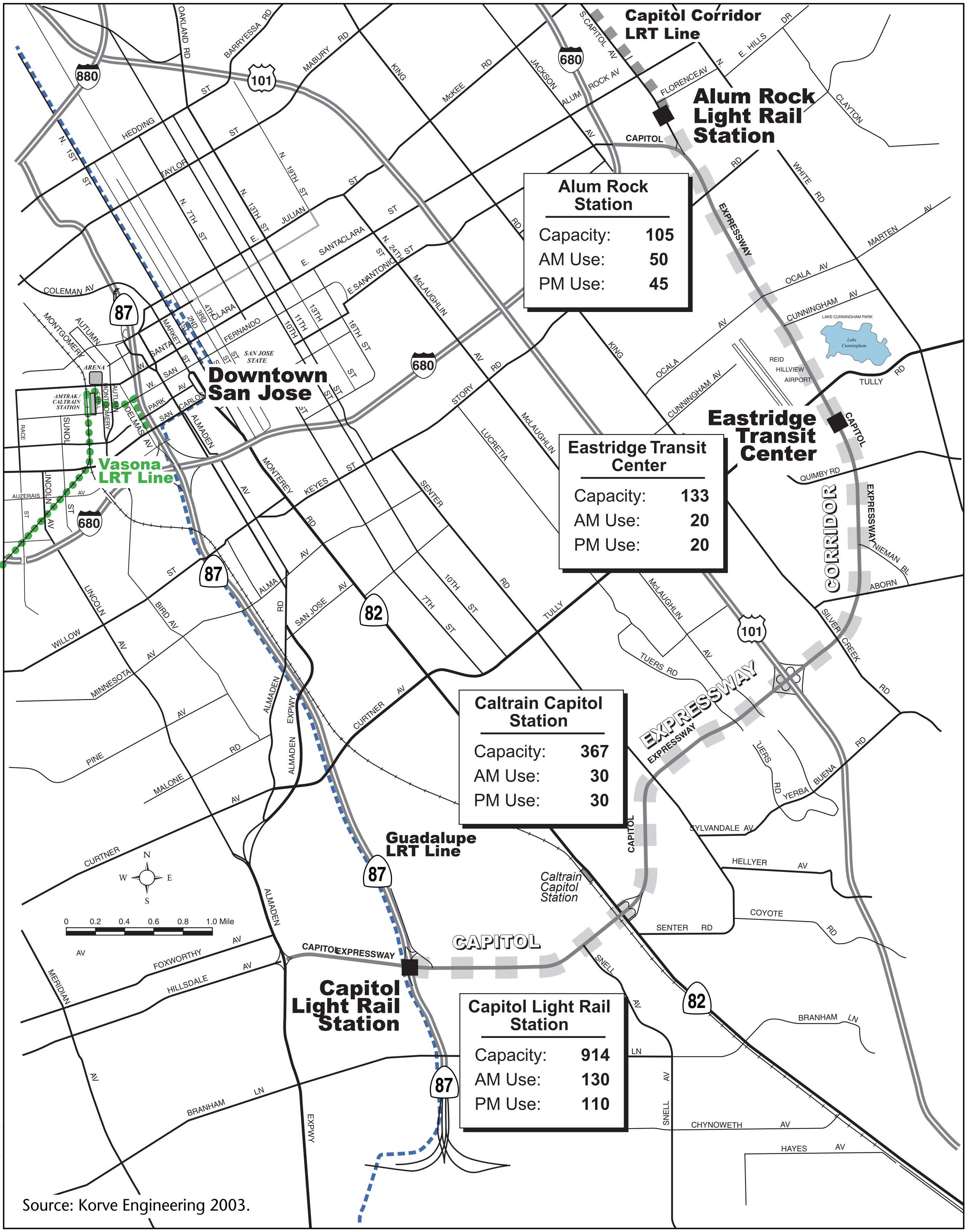


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Figure 3-5
Existing Park-and-Ride Capacity and Use

maintenance capabilities are also under consideration. Support systems are described in the following sections.

Traction Power System and Substations

A traction power system is a distribution system that converts high-voltage commercial electrical power received from substations to medium-voltage direct current (DC) and distributes it to the light rail vehicles via the overhead catenary or contact wire as they travel along the alignment. A traction power system consists of the power distribution mechanism and electrical substations.

For the Light Rail Alternative, the traction power system would provide the potential for three-car light rail trains operating at speeds up to 55 mph on 10-minute headways. The alignment would require a total of eight substations, including one existing substation south of the Alum Rock Station near the park-and-ride lot. The substations would be located approximately 5,900–7,600 feet apart. The final location and placement of the substations along the alignment would be determined during the preliminary engineering phase of the Light Rail Alternative. Locations for new substations that are under consideration include the following:

- southwest corner of Capitol Expressway and Ocala Avenue;
- north of Quimby Road, on the west side of Capitol Expressway;
- southwest corner of Capitol Expressway and Silver Creek Road;
- north of Senter Road on the west side of Capitol Expressway;
- at Monterey Highway ramps;
- between Vistapark and Bluefield Drive on the south side of Capitol Expressway; and
- south of Capitol Expressway and west of SR 87.

Electrical power would be supplied to each traction power substation (TPSS) by an underground feeder from the electrical utility distribution system. Alternate substations would be equipped with two primary feeders from the utility company and an automatic transfer switch to supply reliable power to the substation.

Each TPSS would be contained in a prefabricated substation housing that is factory wired to accommodate internal components and built on a concrete foundation. Foundations would be equipped with embedded conduit to accommodate incoming alternating current primary power cables, control and communication cables, and the DC feeder cables to the overhead contact system.

The estimated size for each TPSS would be approximately 650–750 square feet in area and 12–15 feet in height. Parcels used as substation sites would need to be large enough to provide for side clearance from passing trains and automobiles and to allow a service vehicle to park, unless convenient parking is available on an adjacent roadway.

Overhead Contact System

The overhead contact system (OCS) would be an auto-tensioned simple catenary (ATSC) consisting of a contact wire, a messenger wire, and counterweight terminations. This configuration represents the typical application for the VTA light rail system. The height of the contact wire would conform to the requirements of *VTA Light Rail Design Criteria Manual 2001 Metric Version* (Santa Clara Valley Transportation Authority 2001a) and the California Public Utilities Commission's (CPUC's) General Order 95 (California Public Utilities Commission 1941). All OCS poles, except counterweight poles, would be constructed as tubular, hollow, tapered, round poles made of rigid galvanized steel. Counterweight poles would be nontapered. The pole height would be adjusted to suit the contact wire height and would match the existing system as closely as possible. The OCS poles would be located between the tracks or on the outside of the tracks, depending on space restrictions. The final location of the OCS features would be determined during the preliminary engineering phase for the Light Rail Alternative.

Communications Systems

The communications equipment and design would be fully compatible with the communications system that serves VTA's existing light rail operations. A wayside cable system, fiber optic cable, and two-way radio system would link light rail stations and TPSSs with the existing Operations Control Center by the use of supervisory control and data acquisition and remote terminal units. The communications system would consist of the following main components:

- public address system with two-way voice announcement linking the Operations Control Center and the light rail stations;
- two-way radio system with two-way voice announcement linking the Operations Control Center and light rail vehicles;
- supervisory control and data acquisition system with the capability to monitor and control the TPSS switchgear functions from the Operations Control Center via the remote terminal units and wayside cable system;
- pulse code modulation carrier system to provide for the multiplexing of voice and data channels between the Operations Control Center and locations along the corridor; and
- cable transmission system designed to incorporate both the backbone communications distribution (fiber optics) and metallic distribution.

Wayside cabling would utilize a combined systems duct installed continuously along the corridor.

Signaling and Gates System

The signal system for the Light Rail Alternative would be an extension of the existing light rail signal system and would be functionally compatible with the existing lines. The light rail signal system would include a wayside color light aspect with no cab signal and Automatic Block Signaling (ABS). (*Wayside color light aspect* refers to a signal at the side of the tracks indicating the next block is either clear or occupied.) The signal system would provide for a minimum train headway of 5 minutes, allowing a 5-minute safety factor over the proposed headway of 10 minutes. Generally, the alignment would not be gated. However, any side-running, at-grade alignment would likely require rail crossing gates at the side street crossings.

Vehicle Storage Facilities

The Light Rail Alternative does not include any new vehicle maintenance and overnight storage facilities. Heavy maintenance activities for vehicles used on this line would continue to be performed at the existing Younger Street facility. However, a new storage facility may provide VTA with the opportunity to deliver more-efficient service while saving "dead-heading" costs. The new facility is not necessary to accommodate new vehicles since only four additional vehicles are required for the full alignment to State Route 87. Several options for the location of the light rail vehicle storage facility are under consideration: These are illustrated in Figure 3-6.

- **Southwest Corner of Capitol Expressway and Ocala Avenue Option:** This option includes storage for up to 17 vehicles, and includes two buildings totaling 3,300 square feet, with parking spaces for 17 automobiles. The storage yard would be approximately 63,000 square feet. Access would be provided from John Montgomery Drive.
- **Southwest Corner of Capitol Expressway and Quimby Road Option:** This site could accommodate up to 17 vehicles, and includes a 6,700 square foot building with 32 parking spaces. The storage yard would be approximately 81,000 square feet. Access would be provided from Quimby Road.
- **North Park-and-Ride Lot at Capitol Expressway and SR 87 Option:** This site could accommodate up to 17 vehicles and includes a 5,200 square foot building with 25 parking spaces. The storage yard would be approximately 86,000 square feet. Access would be provided from Narvaez Avenue.

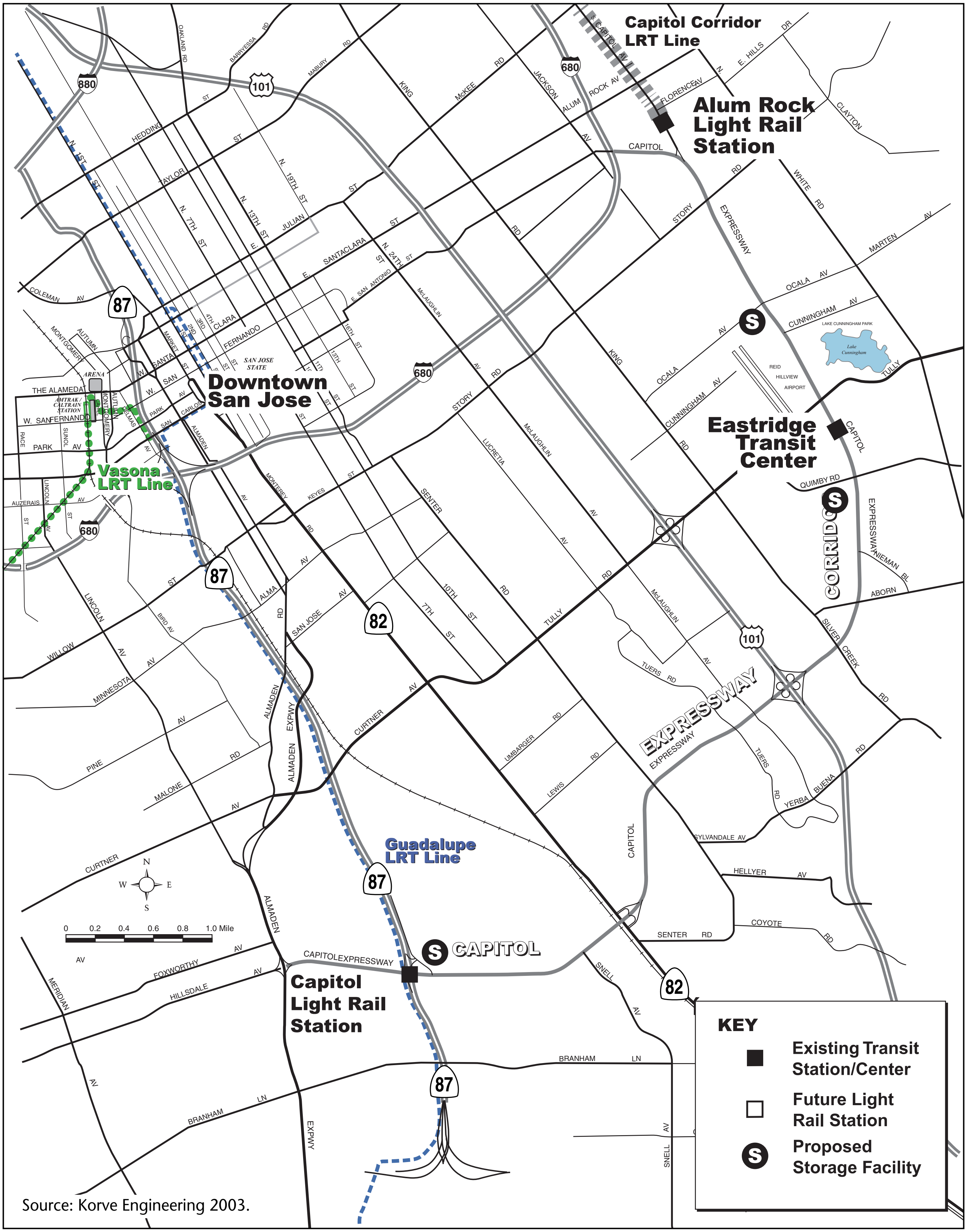
The storage facility would include LRT track, Traction Electrification System (TES) poles and overhead wires to accommodate between 5–17 light rail vehicles. A building would provide office space for supervisory personnel, operator reporting functions, and a break room. There would be storage for minor equipment such as mirrors, seat cushions, and wipers. There would also approximately 25–35 parking spaces to accommodate operators and supervisory personnel. The functions performed at this facility would be light rail vehicle storage and light maintenance such as, interior cleaning of vehicles (vacuuming, window washing), and replacement of minor equipment (mirrors, seat cushions, wipers). No exterior washing or heavy maintenance would occur at this facility.

Recommended Operating Plan

The recommended operating plan for the Light Rail Alternative includes a two-car operation extension of the Capitol Avenue LRT Line that would continue initially to the Eastridge Transit Center and eventually be extended to the existing Guadalupe LRT Line at SR 87. The Light Rail Alternative includes a transfer connection rather than a direct physical connection to the Guadalupe LRT Line at the Capitol Station.

Two operating scenarios are under consideration for the Light Rail Alternative: one scenario would provide light rail service from the existing Alum Rock Station to the Eastridge Transit Center, resulting in a minimum operating segment of the alignment, and another would provide light rail service along the entire alignment from the Alum Rock Station to the Capitol Station.

As described above, the Light Rail Alternative would offer peak-hour service with 10-minute weekday headways between trains and 15-minute headways on weekends. The end-to-end travel time for the Light Rail Alternative would be approximately 17 minutes. For the segment of the alignment between the Alum Rock Station and Eastridge Transit Center, the estimated running time would be just over 5 minutes. Table 3.4-3 shows estimated travel times between stations along the light rail alignment.



Source: Korve Engineering 2003.

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Figure 3-6
Vehicle Storage Facilities

Table 3.4-3. Estimated Travel Times between Stations, Light Rail Alternative

Proposed Station	Time between Stations (h:mm:ss)	Time from Alum Rock Station (h:mm:ss)
Alum Rock	0:00:00	0:00:00
Story Road	0:01:29	0:01:29
Ocala Avenue	0:01:42	0:03:11
Eastridge Transit Center	0:01:59	0:05:10
Nieman Boulevard	0:01:41	0:06:51
Silver Creek Road	0:01:33	0:08:24
McLaughlin Avenue	0:01:35	0:09:59
Senter Road	0:01:44	0:11:43
Monterey Highway	0:01:58	0:13:41
Vistapark Drive	0:01:43	0:15:24
SR 87	0:01:34	0:16:58

Source: Korve Engineering 2002a.

The fleet size required for the Light Rail Alternative would depend on headways and estimated travel times. The current light rail fleet is sufficient to serve the Eastridge Transit Center. To serve the full alignment to SR 87 (Capitol Station), another four vehicles would be required. Table 3.4-4 shows the proposed fleet sizes, estimated vehicle hours, and estimated vehicle miles under minimum and full build operating scenarios.

Table 3.4-4. Estimated Fleet Sizes, Vehicle Hours, and Vehicle Miles for the Light Rail Alternative

Operating Scenario	Peak Vehicles	Annual Revenue Vehicle Miles	Annual Revenue Train Hours
Baseline (No Build)	76	5,122,000	179,400
Capitol Expressway to Eastridge Transit Center Only	80	5,362,000	192,000
Capitol Expressway to SR 87	84	5,938,000	202,500
Change from Baseline			
Extension to Eastridge Transit Center	+4	+240,000	+12,600
Extension to SR 87	+8	+816,000	+23,100

Note: LRT operation in the baseline includes the following (service on Santa Clara Street and Alum Rock Avenue is not included).

- Guadalupe LRT Line: Santa Teresa to Baypointe
- Almaden LRT Line: Almaden to Ohlone/Chynoweth
- Tasman/Capitol Avenue LRT Line: Mountain View to Alum Rock
- Vasona LRT Line: Winchester to Civic Center

Sources: Korve Engineering and Manuel Padron & Associates 2001.

Construction Scenario

The Light Rail Alternative would be constructed and operated in two or more phases, as funding permits, with construction of each phase occurring over a period of approximately 3–4 years. The Minimum Operating System (MOS-Phase 1) would include the segment from the end of the Capitol Avenue LRT Line to the Eastridge Transit Center. Phase 2 would be the segment between the Eastridge Transit Center and SR 87 and may be constructed and operated in two or more subsequent phases. Construction of Phase 2 is dependent on funding and policy-level decisions by the VTA Board of Directors regarding funding priorities. For the purposes of this environmental analysis, both phases of construction are evaluated.

Construction of light rail transit on Capitol Expressway would take place over several years. At the height of construction, a number of construction employees and equipment would occupy portions of the street, including the median and parking lanes, at active construction locations. In the most active areas, construction activities would periodically reduce the capacity of Capitol Expressway from three lanes to two in each direction during the mid-day off-peak periods; VTA would make every effort to keep all three lanes open during peak periods of travel. As a result, construction activity along the corridor would have transportation impacts such as reduced traffic flow and decreased LOS at intersections, reduced availability of HOV lanes and on-street parking, and reduced ability of transit schedule to maintain schedule adherence. Temporary construction easements would be used to facilitate traffic flow. VTA would coordinate the construction schedule to minimize adverse effects and would conduct public outreach throughout the process.

The proposed construction staging areas include sites at the intersection of Capitol Expressway and Ocala Avenue; the intersection of Capitol Expressway and Quimby Road; and the existing north park-and-ride lot at the Capitol Station on the Guadalupe LRT Line. At the Capitol/Ocala site, equipment would be staged in the ruderal field located at the southwest corner of the intersection. The land is currently owned by PG&E and could become a park-and-ride lot. The property located south of Quimby Road and west of Capitol Expressway is referred to as the “Arcadia” site. At this location, a temporary access road from Quimby to the staging area site would need to be constructed. The final site is located west of Narvaez Avenue and north of Capitol Expressway; it is owned by VTA. Although no long-term staging site would occur at Coyote Creek, vehicles and equipment could be parked at the creek overnight during peak construction activity.

Major utilities that would require relocation include five overhead electrical towers in the segment south of Story Road to the Eastridge Transit Center. An existing box culvert at Canoas Creek would be replaced by a larger culvert.

3.5 Alternatives Considered but Rejected

This section discusses those alternatives that have been previously evaluated for this corridor. A brief summary of the reasons why these alternatives were not considered further is also included.

3.5.1 Prior Studies

In 1998, VTA initiated a Major Investment Study (MIS) according to Federal guidance. The purpose of the Downtown East Valley MIS was to identify transportation needs in the study area and develop a strategy for investing in VTA's transit system to address those needs. The ultimate goal of the MIS was approval by the VTA Board of Directors of a Preferred Investment Strategy that outlined a transit improvement plan that was both achievable and had widespread support within the community. The MIS study area encompassed 30 square miles in the southeastern portion of San Jose and evaluated 16 build alternatives. These alternatives are listed as follows:

Table 3.5-1. Preliminary List of Candidate Conceptual Alternatives

Alternative	Mode and Location
1.**	Light Rail Transit (LRT) on Santa Clara/Alum Rock from Downtown to Capitol (Avenue) LRT.
2.**	LRT on Capitol Expressway from terminus of Capitol (Avenue) LRT to Eastridge Mall.
3.**	LRT on Capitol Expressway from Eastridge Mall to Guadalupe LRT (Capitol Station).
4.**	LRT on 10th/11th Streets and Senter Road from Downtown to Tully Road. [Modified by the PAB on December 16, 1999, as follows: LRT on 2nd/3rd, 5th, and 7th or 10th Streets from Downtown to County Fairgrounds.]
5.	LRT on 10th/11th Streets, Senter and Tully Roads from Downtown to Eastridge Mall.
6.	LRT on 10th/11th Streets and Keyes/Story Road from Downtown to terminus of Capitol (Avenue) LRT.
7.	LRT on Alum Rock and White/San Felipe Road from Capitol (Avenue) LRT to Evergreen Valley College.
8.**	Busway/HOV lanes on Highway 101 for Express Bus Service from the Alum Rock, Capitol Eastside and Evergreen study area neighborhoods to "Golden Triangle" employment centers.
9.	Busway/HOV lanes on Capitol Expressway for Express Bus Service from Eastridge Mall to Guadalupe LRT (Capitol Station).
10.**	Busway/HOV lanes on Capitol Expressway from terminus of Capitol (Avenue) LRT to Eastridge Mall and Bus Rapid Transit (BRT) features on Quimby and White Roads from Eastridge Mall to Evergreen Valley College.
11.**	BRT on Santa Clara/Alum Rock, King, Tully and White/San Felipe Roads from Downtown to Evergreen Valley College. [Modified by the PAB on December 16, 1999, as follows: BRT on Santa Clara/Alum Rock from Downtown to White Road, and along King, Tully and White/San Felipe Roads to Evergreen Valley College.]
12.	BRT on Santa Clara/Alum Rock and White/San Felipe Road from Downtown to Evergreen Valley College.
13.**	BRT on 10th/11th Streets, Senter Road and Tully Road from Downtown to Eastridge Mall.
14.	BRT on 10th/11th Streets and Keyes/Story Road from Downtown to terminus of Capitol (Avenue) LRT.
15.**	BRT on Monterey Highway from Downtown to Guadalupe LRT (Santa Teresa Station).
16.**	Transportation System Management (TSM) improvements throughout study area including more frequent bus services and improved intersection signalization.
17.**	No project.

Note: ** indicates that the alternative was carried forward for further analysis.

Source: Downtown/East Valley Major Investment Study, Project Summary Report, December 2000.

Alternatives 5, 6, 7, 9, 12 and 14 were not recommended for further detailed analysis and eliminated for the following reasons:

Table 3.5-2. Alternatives Eliminated from Further Detailed Analysis

Alternative	Mode and Location
5.	LRT on 10th/11th Streets, Senter and Tully Roads from Downtown to Eastridge Mall.
	This alternative is very similar to Alternative 4, but extends light rail to Eastridge Mall along Tully Road rather than terminating at the County Fairgrounds property. Alternative 5 provides a relatively good degree of connectivity to the existing and planned rapid transit network. Even though existing ridership in the corridor is relatively low among study area corridors, future development and redevelopment could generate moderate ridership. However, there appears to be limited support for this option, and public opposition has been voiced regarding construction of an elevated guideway along Tully Road. Because of the high existing traffic volumes and constrained right-of-way on Tully Road, the elevated guideway on Tully is viewed as a necessary element of this alternative. The elevated guideway would also result in a very high capital cost for this alternative. Therefore, carrying Alternative 5 forward did not appear warranted.
6.	LRT on 10th/11th Streets and Keyes/Story Road from Downtown to terminus of Capitol (Avenue) LRT.
	Alternative 6 is similar to Alternative 5 except that the alignment uses Story Road rather than Tully Road as the east/west connection. While this alternative generally meets the goals of the project, concerns have been expressed that Story Road is necessary for automobile traffic without sufficient right-or-way to accommodate LRT. In addition, little community support has been expressed for this alternative. Therefore, carrying Alternative 6 forward did not appear warranted.
7.	LRT on Alum Rock and White/San Felipe Road from Capitol (Avenue) LRT to Evergreen Valley College.
	Alternative 7 extends light rail along Alum Rock to White Road, and continues south along White/San Felipe Roads to Evergreen Valley College. It would provide little additional benefit over Alternative 1 in terms of connectivity to the existing and planned light rail network given the additional cost of extending LRT east to White/San Felipe Road. Existing transit ridership along White/San Felipe falls in the low- to mid-range. Future development along the corridor is expected, but not at the densities that would generate sufficient ridership for a light rail investment. In addition, there was little community support for this corridor as a light rail corridor. Therefore, carrying Alternative 7 forward did not appear warranted.
9.	Busway/HOV lanes on Capitol Expressway for Express Bus Service from Eastridge Mall to Guadalupe LRT (Capitol Station).
	Alternative 9 would construct HOV lanes on Capitol Expressway from Silver Creek Road to State Route 87. This option provides a high degree of connectivity to the existing and planned rapid transit network. While providing express bus service in this corridor has received support, there was community concern regarding the addition of HOV lanes to Capitol Expressway between US 101 and SR 87. As a result, it was recommended that Alternative 9 be dropped from further consideration, but that express bus service traversing Capitol Expressway be added to Alternative 16 (Transportation System Management).
12.	BRT on Santa Clara/Alum Rock and White/San Felipe Road from Downtown to Evergreen Valley College.
	Alternative 12 provides a high degree of connectivity to the existing and planned rapid transit network along the Santa Clara Street/Alum Rock Avenue segment. Existing transit ridership along White/San Felipe falls in the low- to mid-range. Future development along the corridor is expected, but not at the densities that would generate sufficient ridership for major bus rapid transit

Alternative	Mode and Location
	investments. The Santa Clara Street/Alum Rock Avenue portion of this option has received significant support during public outreach while the White/San Felipe road portion of the alignment has received limited support. The project team did not recommend carrying Alternative 12 forward due to insufficient ridership and community support; however, it was recommended that Alternative 11 be modified to include an extension of BRT investments along Alum Rock Avenue to White Road.
14.	BRT on 10th/11th Streets and Keyes/Story Road from Downtown to terminus of Capitol (Avenue) LRT.
	Alternative 14 generally meets the identified goals of the project although it has received very little support during public outreach. Both Alternatives 11 and 13 were considered better choices for serving the study area with bus rapid transit (BRT) improvements since Alternative 11 would serve an existing major transit corridor and Alternative 13 would serve major trip generators, such as Downtown San Jose, the new City Hall, San Jose State University, Kelly Park, the San Jose Municipal Ballpark, and Eastridge Shopping Center; therefore, carrying Alternative 14 forward did not appear warranted.

Source: Downtown/East Valley Major Investment Study, Project Summary Report, December 2000.

Options 1, 2, 3, 4, 8, 10, 11, 13, 15, 16, and 17 were carried forward for further study as they demonstrated the following:

- Medium to high level of connectivity to VTA's rapid transit network
- Medium to high level of existing transit ridership or existing or future land uses that are of the density, type and mixture to support a major transit investment
- Served high commute corridor
- Involved no irreconcilable environmental issues
- General support in the community and among public officials

These options best met both the goals and screening criteria established for the corridor. Alternatives 16 (TSM) and 17 (No Project) were included as required under federal and state planning and/or environmental guidelines and to serve as a basis of comparison against the "build alternatives."

Alternatives Considered for the Capitol Expressway Corridor in the MIS

The Downtown East Valley MIS encompasses 30 square miles in southeastern San Jose and included the Santa Clara/Alum Rock, Capitol Expressway, and Monterey Highway Corridors. As result, only the following five alternatives were considered for the Capitol Expressway Corridor:

- Alternative 2(a): LRT on Capitol Expressway from the terminus of the Capitol Line to Eastridge Mall (primarily at-grade)

- Alternative 2(b): LRT on Capitol Expressway from the terminus of the Capitol Line to Eastridge Mall (primarily on elevated structure)
- Alternative 3: LRT on Capitol Expressway from Eastridge Mall to the Guadalupe
- Alternative 8: Express Bus service using HOV lanes from the Alum Rock, Capitol-Eastside and Evergreen study area neighborhoods to "Golden Triangle" employment centers
- Alternative 10: Express Bus service using HOV lanes on Capitol Expressway from the terminus of the Capitol LRT Line to Eastridge Mall and BRT features on Quimby and White Roads from Eastridge Mall to Evergreen Valley College

The remaining options (Alternatives 1, 4, 11, and 13) are either being evaluated for either the Santa Clara/Alum Rock Corridor environmental document or the Monterey Highway Corridor Study.

Key Findings

The table below indicates the results of the evaluation for six key performance measures.

Table 3.5-3. Key Performance Measures for Alternatives Considered in MIS

Alternative	Total Riders	New Riders	Total Households (HH) Served	Low Income HH Served	HH with 0-1 Autos	Capital Cost
2a	3,200	2,300	11,400	950	250	$215M
2b	3,200	2,300	11,400	950	250	$302M
3	6,200	1,500	13,000	1,100	300	$270M
8	1,800	1,700	43,450	3,600	1,900	$103M
10	2,100	250	6,500	1,100	200	$68M

Source: Downtown/East Valley Major Investment Study, Project Summary Report, December 2000.

Observations

- All of the alternatives (2a, 2b, 3, 8, & 10) would serve the rapidly growing Evergreen area and would enhance VTA's Eastridge Transit Center.
- Alternatives 2a, 2b, and 10 would provide fast, direct service between the Eastridge Transit Center and the Capitol Line, thereby enhancing the overall productivity and effectiveness of the Capitol Line
- Ridership projections for the LRT alternatives were modest both in terms of total riders in the corridor and new riders, although the numbers were comparable to the Capitol Line.

- Alternative 2a, the at-grade LRT extension to Eastridge, was more cost-effective than the above-grade alternative (2b), or further extension to the Guadalupe under Alternative 3.
- Alternative 2a, the at-grade LRT extension to Eastridge, would require removal of existing HOV lanes on Capitol Expressway; Alternative 2b, the above-grade LRT extension to Eastridge, would allow the HOV lanes to remain.
- The relatively high cost of the LRT alternatives was primarily due to improvements required at heavily congested intersections, such as the potential grade separations at Capitol Expressway/Capitol Avenue and Capitol Expressway/Story Road, as described in the refined definition of alternatives. These features also presented design and engineering challenges.
- Construction of the LRT alternatives (2a, 2b and 3) may cause significant traffic impacts during construction.
- Express Bus alternatives 8 and 10 make use of existing HOV lanes and result in fast service.
- Express Bus alternative 8 to Golden Triangle employment centers has the highest operating cost and lowest passenger productivity of alternatives currently under consideration in the MIS.

In regards to the HOV lanes, it should be noted that as part of the City of San Jose's Evergreen Specific Plan infrastructure improvements constructed in the mid-1900s, Capitol Expressway was widened to provide two new mixed flow lanes and two new HOV lanes between U.S. 101 and I-680. These improvements were approved to provide an interim eight-lane facility, and were designed to provide for the future elimination of the two inside lanes to accommodate a potential future light rail line in the Expressway median.

Conceptual Engineering was developed with consideration for retaining the HOV lanes with the Light Rail Alternative. It was found that this option would result in more severe traffic and construction impacts, greater right-of-way requirements that would result in the loss of additional residences and businesses, and increased impacts on recreational uses and biological resources. Because of the increased environmental, social, and economic costs of retaining the HOV lanes, this option was rejected.

Public Comment

Although the express bus alternatives would provide improved service to residents at a lower cost, service would be provide only during commute hours, as compared to the light rail alternatives, which could provide 24-hour service. During the public outreach program, the community strongly supported light rail alternatives for this reason.

The extension of LRT service from the Capitol Line to Eastridge Mall received the most community support as compared to all other alternatives considered during the MIS process. Although removing HOV lanes on Capitol Expressway (Alternative 2a) was raised as an issue, few individuals viewed this as a critical concern.

Preferred Investment Strategy

On June 21, 2000, the PAB adopted final recommendations for the Downtown East Valley Preferred Investment Strategy to be forwarded to the VTA Board of Directors for approval.

Three public “open house” events were held in mid-July 2000 to provide the community with additional opportunity to comment on the proposed Preferred Investment Strategy prior to VTA Board approval. In addition, a final “project update” on the MIS process was prepared and distributed to the entire Downtown East Valley mailing database. The update provided information regarding the upcoming decision by the VTA Board, the next steps in the overall project development process, and the continuing opportunities for public involvement during subsequent project phases.

In a unanimous decision on August 3, 2000, the VTA Board of Directors adopted the recommendations of the PAB for the Downtown East Valley Preferred Investment Strategy that included Alternative 2a: LRT on Capitol Expressway from the terminus of the Capitol Light Rail Line to Eastridge Mall (primarily at-grade), and Alternative 3: LRT on Capitol Expressway from Eastridge Mall to the Guadalupe Light Rail Line.

The VTA Board also directed staff to prepare a resolution stating that Downtown East Valley be VTA’s next priority after completion of the currently planned and funded 1996 Measure A and B Transportation Improvement projects. On September 7, 2000, the VTA Board adopted a resolution to that effect.

The selected alternative for the Downtown East Valley Capitol Expressway Corridor plan as presented in this EIR is the cumulative result of collaboration with the local communities and public agencies, a MIS and Conceptual Engineering analysis, and key decisions by the Downtown East Valley Policy Advisory Board and VTA Board of Directors.

3.5.2 Alternatives Considered and Rejected during Preliminary Environmental Screening and Conceptual Engineering

Building upon the results of the MIS, in formulating alternatives for further study and analysis, VTA considered an overall design objective of constructing a cost-effective project that would also meet the general light rail design objectives of the agency. The development of the Light Rail Alternative was guided by the light rail criteria and standard details embodied in VTA's *Light Rail Transit Design Criteria Manual, 2001 Edition* (Santa Clara Valley Transportation Authority 2001a), and *Light Rail Standard Detail Manual* (Santa Clara Valley Transportation Authority 2001b). In addition, LRT operations in California are governed by CPUC General Order.143-B, "Safety Rules & Regulations Governing Light Rail Transit" (California Public Utilities Commission 1991). The application of these criteria and standard details were adapted to the Light Rail Alternative in cooperation with CPUC and the City traffic engineering and public works departments. Finally, VTA incorporated the urban design principles from VTA's *Community Design & Transportation: A Manual of Best Practices for Integrating Transportation and Land Use* (Santa Clara Valley Transportation Authority 2002).

In considering the proposed alternatives to be evaluated in this EIR, the ability of the alternatives to meet several objectives was evaluated. These objectives are shown in Table 3.4-1 and were based on system design, access, community design, safety, traffic circulation and station location. Several alignment and station options were deemed unable to meet those objectives. The alignment, station location, and design options considered during the preliminary environmental screening and conceptual engineering phases are summarized below.

Project Alternatives

As part of VTA's planning process, the following alternatives were considered during preliminary environmental scoping and conceptual engineering, but were rejected:

- Light Rail Alternative with Four Mixed-flow and Two HOV Lanes on Capitol Expressway
- Light Rail Alternative with Six Mixed-flow and Two HOV Lanes on Capitol Expressway

As background to the genesis of these alternatives, it is important to take into account prior decisions made by the City and County related to Capitol Expressway. In 1991, the San Jose City Council approved the Evergreen Specific Plan project and Evergreen Development Policy (City of San Jose 1991a, 1991b). The Evergreen Specific Plan project consisted of the construction of approximately 2,856 dwelling units, commercial uses, and associated infrastructure improvements on an 865-acre site. In addition, there were 1,353 additional residential units planned for the remainder of the Evergreen area for which additional traffic capacity improvements would be required to comply with the Evergreen Development Policy.

The construction of this development in the Evergreen area was dependent on the implementation of transportation mitigation measures that were the subject of an EIR approved by the San Jose City Council in April 1994. These transportation mitigation measures, which included the construction of HOV lanes on Capitol Expressway from U.S. 101 to I-680, provided the necessary traffic mitigation to allow development of up to 4,209 dwelling units in the Evergreen area. As it relates specifically to the Capitol Expressway, on completion of the transportation mitigation measures, the expressway would consist of three mixed-flow and one HOV lane in both the northbound and southbound directions between U.S. 101 and I-680 until such time as LRT was implemented.

In 1992, the Santa Clara County Board of Supervisors approved the City's request to be the lead agency for the preparation of the EIR for the Capitol Expressway improvements with the understanding that the City was proposing an interim eight-lane facility on Capitol Expressway by adding four additional lanes (two new mixed-flow lanes and two new HOV/commuter lanes) between U.S. 101 and I-680. At the time, it was acknowledged that the buildout proposed for Capitol Expressway (six mixed-flow lanes plus two HOV lanes) would not allow sufficient room for the future LRT project within the existing right-of-way. However, it was also acknowledged that LRT service with 10-minute headways could provide approximately the same level of passenger through-put as a lane of traffic on Capitol Expressway. Therefore, the EIR stated that "given support mechanisms to encourage passenger demand, the LRT could replace one travel lane in each direction while still maintaining adequate traffic levels of service on the expressway." The eight-lane facility ultimately approved was to be designed in a manner that provided for the future elimination of the two inside lanes and the installation of a potential double track light rail system (with stations) in the median while minimizing the need to reconstruct the remaining six lanes of the expressway.

In the City's EIR, the construction of the LRT facility was considered as an alternative to the roadway improvements proposed by the Evergreen Specific Plan development. At the time, the LRT alternative was determined to be the environmentally superior alternative. However, it was also determined not to be the most economical way for private developers to provide traffic capacity for their approved and pending Evergreen development projects. The City further stated in its EIR that it was not the objective of the proposed Evergreen Specific Plan project to provide transportation capacity that would exceed demand for traffic capacity generated by the project. Therefore, the City approved the project to include the construction of two additional general purpose and two HOV lanes. These mitigation improvements were constructed and have been operating since 1997. The approved Evergreen development is also nearing buildout.

It is with the above background and policy decisions that VTA proceeded with the planning for the proposed light rail line in the Capitol Expressway Corridor. Additional information regarding the two additional light rail alternatives considered by VTA and the reasons they were rejected are provided below.

Light Rail Alternative with Four Mixed-Flow and Two HOV Lanes on Capitol Expressway

The Light Rail Alternative includes construction of light rail in the median of Capitol Expressway and retaining three mixed-flow lanes in both directions on Capitol Expressway. This reflects the City's position stated in the Evergreen Specific Plan and Evergreen Specific Plan Transportation Improvements EIR that the future light rail line would replace two HOV lanes rather than two mixed-flow lanes. As stated in the EIR, retaining the HOV lanes would diminish the effectiveness of the capital investment in LRT and would be inefficient from the standpoint of transportation capacity utilization because LRT and buses in HOV lanes were viewed as competing transit modes.

Although the City's position on this issue is clear in their EIR, the County had, at the time, raised the possibility and their preference of retaining the HOV lanes rather than the mixed-flow lanes. Therefore, VTA considered an alternative that would provide LRT and retain four mixed-flow and two HOV lanes. As compared to the Light Rail Alternative, this scenario would result in similar impacts, however, traffic and construction-related impacts would be more severe under this alternative than the Light Rail Alternative. VTA's preliminary analysis supports the City's position that retaining six mixed-flow lanes provides more person through-put than four mixed-flow and two HOV lanes. (See Appendix B.) Therefore, this alternative was considered but rejected.

Light Rail Alternative with Six Mixed-Flow and Two HOV Lanes on Capitol Expressway

Recognizing that removing facilities can be difficult regardless of their "interim" nature, VTA considered constructing the light rail line in the median of Capitol Expressway and retaining all eight traffic lanes (six mixed-flow and two HOV lanes) between U.S. 101 and I-680. Retaining eight traffic lanes would require approximately 11 additional feet of right-of-way on both sides of Capitol Expressway from approximately Story Road to U.S. 101. The number of property acquisitions that would result from the 8-lane alternative in this segment is shown in Table 3.5-4. In summary, the 8-lane alternative would result in 65 additional partial property acquisitions as compared to the Light Rail Alternative (60 residential, 3 commercial), 2 other) and 31 additional full parcel acquisitions (28 residential and 3 commercial) for a total of 96 additional parcels impacted (88 residential, 6 commercial and 2 other). It should be noted that the additional residential acquisitions also includes five single parcels that each contain multiple residences. Retaining eight lanes would impact significantly more Section 4(f) (recreational) and biologically sensitive property. It would also result in additional noise impacts because of the relocation of traffic lanes 11 feet closer to existing residential and park areas. This alternative would result in fewer traffic impacts as compared to the Light Rail Alternative. However, it was rejected because of the severity of other environmental impacts.

Table 3.5-4. Right of Way Impacts of Light Rail (Project) Alternative and Light Rail Alternative with Six Mixed-Flow and Two HOV Lanes on Capitol Expressway

	Alum Rock to Eastridge		Eastridge to U.S. 101		Total Alum Rock to U.S. 101	
	Light Rail Alternative	Light Rail Alternative with Six Mixed-Flow and Two HOV Lanes	Light Rail Alternative	Light Rail Alternative with Six Mixed-Flow and Two HOV Lanes	Light Rail Alternative	Light Rail Alternative with Six Mixed-Flow and Two HOV Lanes
Partial property acquisition	**38**	**105**	**44**	**42**	**82**	**147**
Residential	18	79	23	22*	41	101*
Commercial	14	19	18	16	32	35
Other	6	7	3	4	9	11
Full property acquisition	**8**	**28**	**1**	**12**	**9**	**40**
Residential	7	27	0	8	7	35
Commercial	1	1	1	4	2	5
Other	0	0	0	0	0	0
Total property acquisition	**46**	**133**	**45**	**54**	**91**	**187**
Residential	25	106	23	30*	48	136*
Commercial	15	20	19	20	34	40
Other	6	7	3	4	9	11

* Three of the 22 residential "partial property acquisitions" are portions of mobile home parks that are each identified as a single "partial property acquisition" in the table because each mobile home park represents one parcel of land. However, these three partial property acquisitions represent displacement of a total of 40 mobile homes. Also, two of the 22 residential "partial property acquisitions" are portions of apartment communities; one would result in an additional but undetermined number of residential displacements and the other would result in the loss of several parking spaces. Similar to the situation with the mobile home park properties, the acquisitions from the two apartment communities are each identified as a single "partial property acquisition" in the table because each represents a single parcel of land.

Alignment Options

Alum Rock Station to South of Story Road

Side-Running Option

In this horizontal profile, the light rail alignment would have been placed along the western edge of Capitol Expressway in a side-running configuration. The alignment would have been located in the northern section of the corridor from the Capitol Avenue/Capitol Expressway intersection to the Eastridge Transit Center. The alignment would have been placed below grade in a 2,100-foot tunnel under Tully Road. This alternative was rejected from further consideration because it would have placed light rail closer to the homes on the west side of the expressway, rather than in the median. In addition, this side-running option would require that all intersections have protected grade crossings with gates. Local officials expressed an objection to the use of these grade crossings because their use would have required every traffic signal along the expressway to be preempted. Finally, the adverse effects of construction associated with transitioning the alignment back to the median just before the proposed Story Road Station would have been substantially adverse.

Full Aerial Profile, Side-Running Option

Under this option, a 4,000-foot-long aerial structure would have been constructed from south of Alum Rock Station to south of Story Road. From the north, the alignment would have left the median of Capitol Avenue to cross the northbound lanes of Capitol Avenue and the full width of Capitol Expressway. The alignment would have run along the western edge of the expressway to a point 1,200 feet south of Story Road, where it would resume an at-grade profile. In addition, similar to those effects identified for the side-running option above, grade crossings at each intersection, and construction effects related to the alignment transition back to the median precluded this option from further analysis in this EIR.

Eastridge Transit Center to Aborn Road

Tunnel Structure through Aborn Road Intersection Option

A continuation of the transition from side-running back into the median via a cut-and-cover section continued from Nieman Boulevard through the Aborn Road intersection for about 3,500 feet. This option was rejected because the community supported a station location that was closer to the Capitol Expressway/Nieman Boulevard intersection.

Station Options

Alum Rock Station to South of Story Road

No Station between Story Road and Eastridge Transit Center Option

Without a station in this segment, the population in this area would not be served and the appropriate station spacing would not be achieved. For this reason, the option not to place a station in this area was rejected in favor of a station in Ocala/Cunningham area.

Stations in the Side-Running Configuration Option

The light rail stations in the side-running, at-grade type of configuration would have consisted of a single center-platform, placed between the side-running tracks. In the side-running aerial profile option, the new light rail station at Story Road would have been located on the aerial structure. Both of these station options were rejected along with the side-running alignment option because of impacts on adjacent properties, close proximity to residences on the west side of Capitol Expressway, and the need for gates at all intersection crossings.

Eastridge Transit Center to Aborn Road

Station Location at Aborn Road Option

This option was rejected because the curved alignment of the roadway made it difficult to design the station, and would have required a grade separation that was cost-prohibitive.

North of Aborn Road to State Route 87

Aerial Structure with Direct Track-to-Track and Platform Connection to Guadalupe LRT Line with a Shared Station Option

The southern end of the Light Rail Alternative the station platform would connect to the existing Capitol Station platform to facilitate direct passenger access between lines. Existing access would serve both stations. The station would be located above and north of the existing Capitol Station platforms with vertical access.

At-Grade Center Platform Located in a Separate Station at Site of Existing Capitol Station North Park-and-Ride Lot, with a Direct Track Connection in the Median of Capitol Expressway Option

Pedestrian access would be provided via existing Capitol Station access. Passengers would use existing access to the Guadalupe LRT Line.

Both of these options were rejected for a variety of reasons, including cost, construction feasibility, and construction impacts to the community and to the operation of the Guadalupe LRT Line. The aerial option also has a visual impact because of its length and height. Additionally, there was concern that the demand for such an option would not justify the substantial cost.

Chapter 4.0

Environmental Analysis

Section 4.1
Introduction to Environmental Analysis

4.1.1 Introduction

This section provides an overview of the environmental analysis chapter, which includes Sections 4.2 through 4.19. The environmental analysis sections describe the setting, environmental consequences, and mitigation measures of the proposed alternatives. This section also provides background information that will assist the reader in understanding the analysis.

4.1.2 Scope of this Environmental Impact Report

The purpose of this EIR is to fully disclose the environmental consequences of building and operating the proposed alternatives in advance of any decisions to commit substantial financial or other resources toward its implementation. This draft EIR has been prepared pursuant to the requirements of CEQA. VTA is the lead agency under CEQA.

In September 2001, VTA filed a Notice of Intent (NOI) to prepare an EIS, in accordance with NEPA requirements. In August, 2001 a Notice of Preparation (NOP) for an EIR was also filed, consistent with Section 15082 of the CEQA Guidelines. (A copy of the NOI and NOP are included in Appendix J to this document.)

CEQA requires the identification and evaluation of the resources potentially affected by a project. CEQA requires all state and local government agencies to consider the environmental consequences of projects over which they have discretionary authority, and requires that a determination of significant impacts be identified in an EIR and mitigation measures identified and implemented where feasible.

VTA has determined that the environmental resource areas listed below will be analyzed in this EIR. (CEQA terminology for some resource areas are listed in parentheses.) The environmental analysis incorporated herein identifies the environmental consequences of the proposed alternatives on these resource areas, as well as the mitigation measures proposed to address any adverse effects.

- transportation,
- air quality,
- biological resources,
- community services (public services),
- cultural resources,
- electromagnetic fields,
- energy,
- environmental justice,
- geology, soils and seismicity,
- hazardous materials,
- hydrology and water quality,
- land use,
- noise and vibration,
- safety and security,
- socioeconomics (population and housing),
- utilities,
- visual quality (aesthetics), and
- construction impacts.

In addition to the analysis of the environmental resource areas mentioned above, Chapter 5 of this EIR provides a summary of other relevant impacts, including growth-inducing impacts, significant unavoidable impacts, and significant irreversible environmental changes. Because the analysis of cumulative environmental effects are considered by CEQA, Chapter 5 also includes a discussion of those effects.

4.1.3 Resource Study Area

The geographic boundaries of the area studied for the proposed action and alternatives is defined in Chapter 2.0, *Introduction*, and depicted in Figure 2-2. This area was considered in the process of making the determinations of appropriate study areas for each resource. The extent of the area studied for a resource varies depending on the characteristics of each environmental resource area being analyzed (e.g., the hydrology study area is defined by the physical limits of the watershed, the cultural resources area is defined by the area of potential effects). The study area for each environmental resource area is therefore defined in the corresponding resource section.

4.1.4 Technical Assumptions

In order to maintain the comparability of the project alternatives, each alternative is defined to optimize its performance; moreover, the policy (fares, parking fees, etc.) and land use setting in which the alternatives are defined and analyzed are unbiased and consistent across the alternatives. The *Summary & Technical Assumptions, the Santa Clara County Congestion Management Program, Transportation Planning Model*, details travel constants and assumptions (such as automobile costs per mile, tolls, intra-zonal travel time, parking costs, terminal time, shared ride time delay, ground account adjustment co-efficients) that may affect travel patterns.[1] Land use assumptions are derived from the Association of Bay Area Governments Projections series, and are released at the Census track level.[2] Demographic characteristics are based on 2000 U.S. Census data. The specific assumptions for determining an environmental impact for the alternatives are detailed in each section.

4.1.5 Overview and Terminology of Impacts and Mitigation Measures

Thresholds of Significance

The *Thresholds of Significance* discussion in each section of this chapter describes the criteria by which an adverse effect (impact) is declared and therefore in need of mitigation (i.e., an action to avoid, minimize, or compensate for the effect). These criteria are largely based on standards used by VTA and professional practice. Where appropriate, criteria are based on state or federal standards (e.g., air quality significance criteria or thresholds are based on the state and federal ambient air quality standards, noise significant thresholds are based on criteria defined by FTA). Also, where appropriate, criteria are based on the State CEQA Guidelines that are used by VTA, which generally describe circumstances under which effects are considered adverse (or impacts considered significant).

Types of Effects

A proposed action may have the following types of effects, which are identified in this EIR.

- **No effect:** A proposed action that does not alter the environmental status quo would be considered to have *no effect*.

[1] Page 8, *Summary & Technical Assumptions, The Santa Clara County Congestion Management Program, Transportation Planning Model, Version 1.3*.
[2] Page 1, *Summary & Technical Assumptions, The Santa Clara County Congestion Management Program, Transportation Planning Model, Version 1.3*.

- **Adverse effect:** A proposed action that would exceed an established or defined threshold would be considered to have an *adverse effect*.
- **Beneficial effect:** *Beneficial* effects may occur where the proposed action would eliminate or reduce a situation that is considered detrimental within the affected environment.

Mitigation Measures

Under CEQA, mitigation measures must be discussed for all impacts, regardless of the degree of significance. The CEQA significance criteria and the specific determination of the level of significance as defined by CEQA are contained in Chapter 5, *Other CEQA Consideration*.

In developing mitigation measures for the effects of the proposed alternatives under consideration in this EIR, VTA is guided by definitions in the Guidelines (Section 15370), which define *mitigation* as one or more of the following:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments.
- Compensating for secondary impacts caused by mitigation measures proposed in one resource area that may indirectly affect another.

It is the responsibility of the implementing agency to ensure that the mitigation and enhancement measures committed to in the environmental document, as well as those contained in permits, are carried out. As part of the CEQA environmental decision process, a mitigation monitoring plan will be adopted by the VTA Board of Directors.

Section 4.2

Transportation

4.2.1 Introduction

This section describes the environmental setting and effects of the alternatives analyzed in this EIR with regard to transportation. Specifically, this section discusses existing transportation conditions within the Capitol Expressway Corridor and describes applicable regulations pertaining to transportation. The assessment of adverse effects and mitigation measures of the alternatives related to transportation are also described. A detailed transportation analysis supporting the findings of this section can be found in the *Capitol Expressway Light Rail Corridor Transportation Study* (Korve Engineering 2004b) and *Capitol Expressway Light Rail Corridor Patronage Report* (Korve Engineering 2004a), included as Appendices B and C to this document.

4.2.2 Existing Conditions

Existing conditions for transportation are defined as the transportation setting at the time the NOI/NOP for the Capitol Expressway Corridor was issued in September 2001. These conditions constitute the baseline conditions by which an impact is considered significant. Since the NOI/NOP was issued, there has been a significant decline in the local economy; the resulting decreases in operating revenues and ridership have led to reductions in VTA transit services. As a result, the transit services described in this EIR may differ from current conditions.

The localized study area for this analysis is defined by the alignment of the Light Rail Alternative and the greater metropolitan San Jose area. The Capitol Expressway Corridor can be accessed regionally by freeways, highways, and arterials; VTA transit buses and light rail; and Caltrain commuter rail. The environmental context for these transportation features is described below.

Environmental Setting

Transit Services

Transit services within the study area include light rail, fixed-route bus, commuter rail, intercity rail, and paratransit service. VTA operates regular, limited-stop, and express fixed-route buses, as well as light rail service. VTA is also a partner with several other agencies on two “joint powers” authorities that operate commuter and intercity rail service: Caltrain and the Amtrak Capitol Corridor service. VTA provides connecting feeder and shuttle service to these services.

Santa Clara Valley Transportation Authority

Bus Service

VTA operates public transit services in Santa Clara County. Its services include light rail transit on three lines and bus service on 77 routes. As of September 2001, the light rail system carried an average of 28,077 passengers per weekday and buses an average 146,085 passengers per weekday. VTA would operate the bus service improvements if the Baseline Alternative is selected and the Capitol Expressway LRT Line if the Light Rail Alternative is selected and constructed.

Bus service dominates existing transit service in the corridor. VTA operates several bus routes on major cross-town streets, connecting the study area to the rest of the region. It also operates some local services in the Evergreen neighborhoods. Connections within the system are focused at the Eastridge Transit Center, which serves 14 bus routes, and the Monterey Highway/Senter Road intersection, where nine routes meet. The existing transit network is shown in Figure 4.2-1.

Most regular bus routes run weekdays from early morning (5:00 a.m.–6:00 a.m.) to late evening (10:00 p.m.–12:00 a.m.) and weekends from early morning (5:00 a.m.–6:00 a.m.) until mid-evening (8:00 p.m.–10:00 p.m.). This schedule excludes Route 68, which offers weekday service between downtown San Jose and Gilroy over extended hours, and Routes 37, 38, and 67, which terminate service in the early evening (5:00 p.m.–7:00 p.m.). Limited-stop and express bus services operate only during peak periods from Monday to Friday. Table 4.2-1 lists the bus routes that serve the study area, their hours of operation, and their general headways in 2001.

The study area is served by several of the most heavily used bus routes in the VTA system. Routes 22 (King Road to Santa Clara Street), 25 (Story Road), 66 (Monterey Highway), 68 (Monterey Highway), and 70 (Capitol Expressway and Jackson Avenue) each carry more than 7,000 passengers on an average weekday over their full length (not just the portions within the study area). Table 4.2-2 lists the average weekday ridership in 2001 for the bus routes that serve the study area.

Table 4.2-1. Bus Service Hours/Headways (2001)

		Weekday Service				
			Headways			
Route	Description	Hours of Operation	Peak (5:00 a.m.–9:00 a.m., 3:00 p.m.–6:00 p.m.)	Midday (9:00 a.m.–3 p.m.)	Night (after 6:00 p.m.)	Weekend Hours of Operation
Local Routes						
22	Eastridge-Palo Alto/Menlo Park	24 hours	10	10	10-60	24 hours
25	White/Story–De Anza College	5:00 a.m.–12:00 a.m.	10–30	15–30	30–60	5:30 a.m.–11:30 p.m.
26	Eastridge–Lockheed Martin	5:00 a.m.–11:30 p.m.	20	30	30–60	7:00 a.m.–9:30 p.m.
30	Eastridge	5:00 a.m.–10:30 p.m.	30	40	30–60	7:30 a.m.–8:30 p.m.
31	Eastridge–Evergreen College	5:00 a.m.–10:00 p.m.	15–30	30	30	7:30 a.m.–6:30 p.m.
37	Monterey/Senter–Camden/Union	6:00 a.m.–7:00 p.m.	30	60	—	9:00 a.m.–5:00 p.m.
38	Monterey/Senter–Winchester/Knowles	6:00 a.m.–7:00 p.m.	30	60	—	9:30 a.m.–5:00 p.m.
39	Eastridge	5:30 a.m.–10:30 p.m.	20	30	30	6:00 a.m.–9:00 p.m.
66	Santa Teresa Hospital–Milpitas	5:00 a.m.–12:00 a.m.	15	30	30–60	5:30 a.m.–11:30 p.m.
67	Santa Teresa LRT Station–Capitol LRT Station	6:00 a.m.–7:00 p.m.	30	45	—	8:30 a.m.–6:00 p.m.
68	San Jose Diridon Station–Gilroy	4:30 a.m.–1:00 a.m.	15	30	30–60	6:00 a.m.–12:30 a.m.
70	Milpitas–Capitol LRT Station	5:00 a.m.–11:30 p.m.	15	15	20–60	6:30 a.m.–11:00 p.m.
71	Milpitas–Eastridge	5:30 a.m.–11:00 p.m.	15	20	30–60	7:00 a.m.–9:00 p.m.
72	Downtown San Jose–Santa Teresa LRT Station	5:00 a.m.–10:30 p.m.	15–30	15–30	30–60	6:00 a.m.–8:30 p.m.
73	Downtown San Jose–Snell/Capitol Expressway	5:00 a.m.–10:00 p.m.	15	20	30–60	7:00 a.m.–8:00 p.m.
74	Eastridge–Baypointe LRT Station	5:30 a.m.–10:30 p.m.	20	30	30–60	7:30 a.m.–10:30 p.m.
77	Milpitas–Evergreen College	5:30 a.m.–10:30 p.m.	15–30	30	30–60	7:00 a.m.–9:30 p.m.
Limited Stops/Express Routes						
122	South San Jose–Lockheed Martin	6:00 a.m.–7:30 a.m. 4:00 p.m.–6:00 p.m.	30–60	—	—	—
300	East San Jose – Palo Alto Caltrain Station	5:00 a.m. –7:30 p.m.	20–30	30	—	—
304	South San Jose–Mountain View	5:30 a.m.–8:30 a.m. 3:00 p.m.–6:30 p.m.	15–30	—	—	—
305	South San Jose–Mountain View	5:00 a.m.–8:00 a.m. 3:00 p.m.–6:00 p.m.	60	—	—	—
321	Eastridge–Lockheed Martin	5:00 a.m.–7:30 a.m. 2:30 p.m.–5:30 p.m.	30–60	—	—	—
345	Eastridge–Mountain View	6:00 a.m.–7:30 a.m. 4:00 p.m.–5:30 p.m.	60	—	—	—

Table 4.2-1. Continued

		Weekday Service				
			Headways			
Route	Description	Hours of Operation	Peak (5:00 a.m.–9:00 a.m., 3:00 p.m.–6:00 p.m.)	Midday (9:00 a.m.–3 p.m.)	Night (after 6:00 p.m.)	Weekend Hours of Operation
503	Eastridge–Palo Alto	5:00 a.m.–8:00 a.m. 2:30 p.m.–6:00 p.m.	30–60	—	—	—

Source: Korve Engineering 2004b.

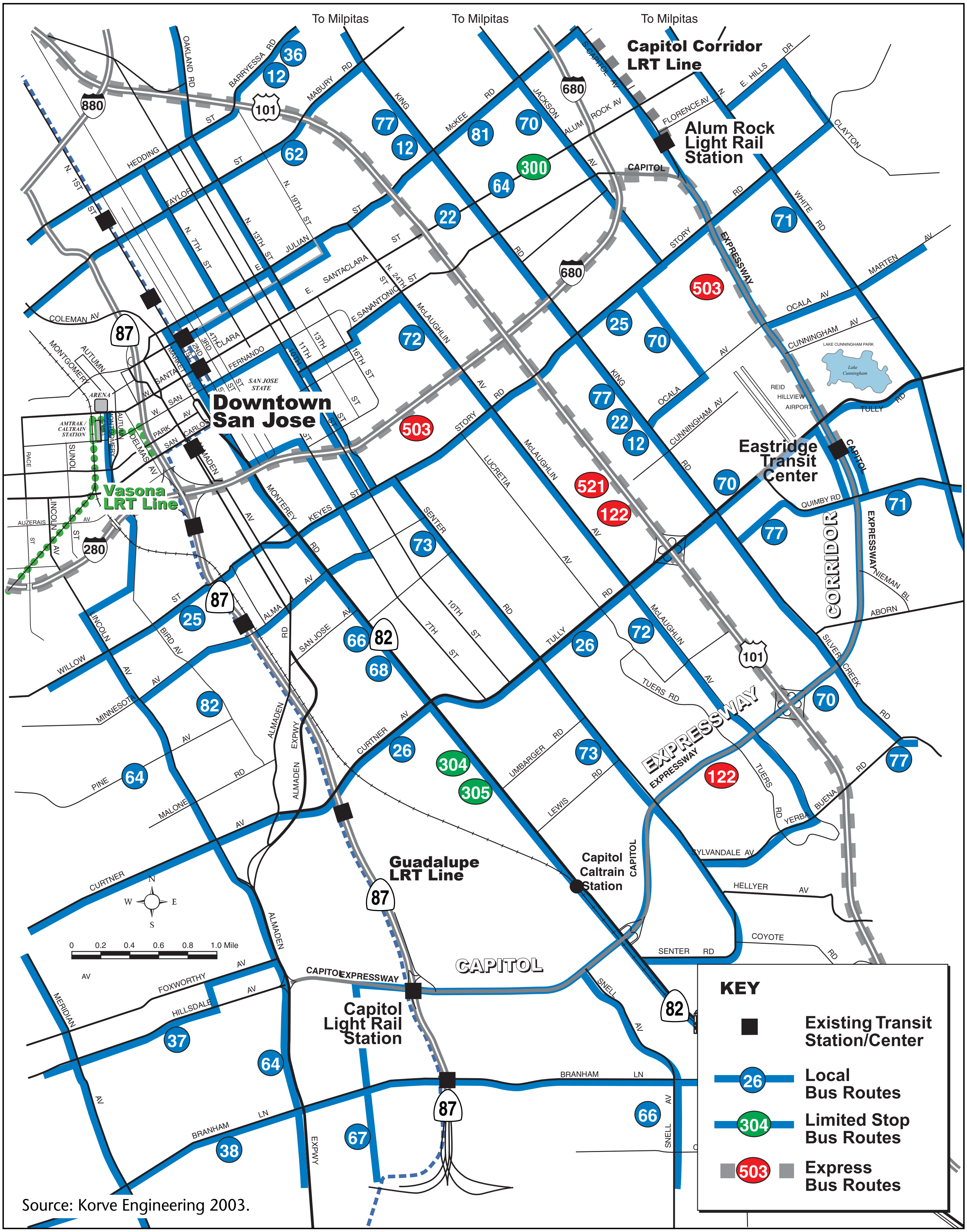

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Figure 4.2-1
Existing Transit Network (2001)

Table 4.2-2. Average Weekday Bus Ridership by Route (2001)

Route	Daily Ridership (Entire Route)
22	24,700
25	9,330
26	4,960
30	290
31	800
37	470
38	620
39	820
66	7,740
67	690
68	7,820
70	9,670
71	4,360
72	4,620
73	3,410
74	2,070
77	3,190
122	60
300	1,390
304	500
305	200
321	160
345	60
503	160

Source: Korve Engineering 2004b.

Major intersections and transit centers are the principal locations at which passengers may make connections between routes. Passenger activity (boardings and alightings) is focused at these locations. The Eastridge Transit Center and the Monterey Highway/Senter Road intersection have the highest levels of passenger activity in the study area, with 7,930 and 3,790 average daily boardings and alightings, respectively. Other locations with heavy activity include the Capitol LRT Station on the Guadalupe LRT Line and the intersections of Capitol Expressway with Story Road, Silver Creek Road, McLaughlin Road, and Senter Road. Table 4.2-3 lists the daily passenger activity for these major intersections and transit centers in 2001. The total passenger activity for these locations is shown graphically in Figure 4.2-2.

Table 4.2-3. Daily Passenger Activity at Selected Intersections and Transit Centers (2001)

Major Intersection with Capitol Expressway	Routes	Bus Stop				Total
		Northbound	Southbound	Eastbound	Westbound	
Story Road	5	80	10	280	140	510
Eastridge Transit Center	*14*	—	—	—	—	*7,930*
Aborn Road	2	40	120	70	0	230
Silver Creek Road	2	230	380	60	40	710
McLaughlin Avenue	3	130	80	160	170	540
Senter Road	3	130	330	180	0	640
Monterey Highway/Senter Road	9	1,640	1,290	860	0	3,790
Snell Avenue	4	0	130	120	110	360
Vistapark Drive	2	0	0	50	60	110
Capitol Station	*3*	—	—	—	—	*960*

Notes: Existing transit centers noted in italics; passenger activity includes both boardings and alightings.

Source: Korve Engineering 2004b.

Light Rail Service

Transit passengers in the study area have access to the VTA light rail network through the Guadalupe LRT Line. Direct service is available at the Capitol LRT Station at the SR 87/Capitol Expressway interchange. Light rail passengers may also transfer from buses to the Guadalupe LRT Line at the Tamien Station (Route 25) and Curtner Station (Route 26). The Guadalupe LRT Line operates 24 hours daily, with daytime service available every 10 minutes. The hours of operation and headways are presented in Table 4.2-4 for the Guadalupe, Tasman, and Almaden LRT Lines.

Table 4.2-4. Light Rail Service Hours and Headways (2001)

Light Rail Line	Weekday Service				Weekend Hours of Operation
	Hours of Operation	Peak (5 a.m.–9 a.m., 3 p.m.–6 p.m.)	Midday (9 a.m.–3 p.m.)	Night (after 6 p.m.)	
Guadalupe (Baypointe–Santa Teresa)	24 hours	10	10	10–70	24 hours
Tasman (Mountain View–Milpitas)	24 hours	10	10	10–105	24 hours
Almaden (Ohlone/Chynoweth–Almaden)	5:30 a.m.–12:30 a.m.	10	10	15	7 a.m.–12:30 a.m.

Source: Korve Engineering 2004b.

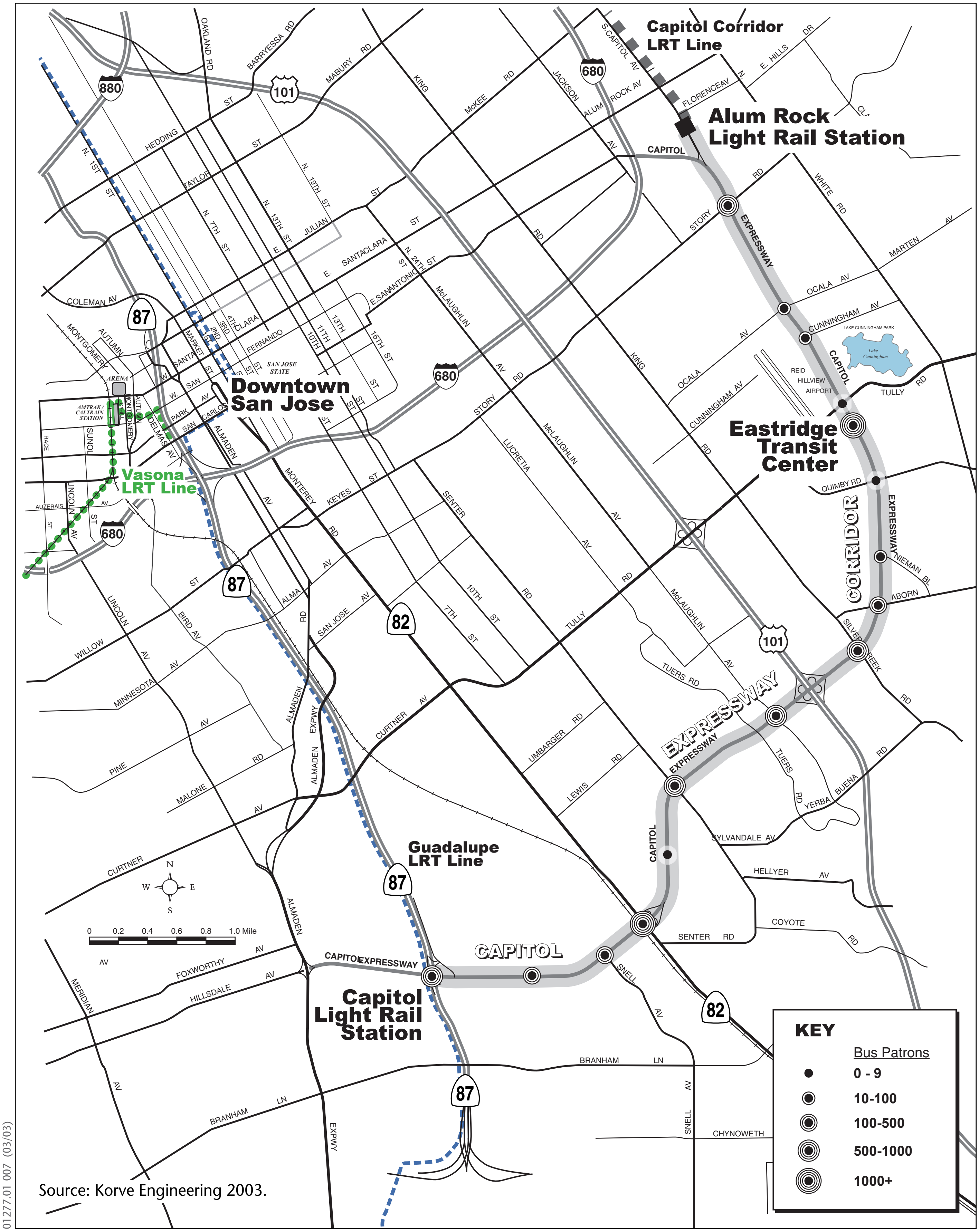


Figure 4.2-2
Daily Passenger Activity (2001)

Caltrain

Caltrain is a commuter rail service provided by the Peninsula Corridor Joint Powers Board (JPB). The service operates along a 77-mile right-of-way between Gilroy and San Francisco. The JPB includes representatives from San Francisco, San Mateo, and Santa Clara Counties. In 2001, Caltrain operated 80 trains each weekday between San Francisco and the San Jose Diridon Station. In addition, eight weekday peak hour trains served five stations in south San Jose, Morgan Hill, San Martin, and Gilroy.

In the study area, Caltrain runs along the west side of Monterey Highway, then passes under Capitol Expressway. The Caltrain station nearest to the Capitol Expressway Corridor is the Caltrain Capitol Station, approximately 2,000 feet north at the Monterey Highway/Fehren Drive intersection. Both light rail and Caltrain passengers could benefit from making the connection easier between the proposed Monterey Highway LRT Station and the Caltrain Capitol Station. To do so, VTA would pursue a cooperative effort with the JPB to relocate the existing Caltrain Capitol Station and its park-and-ride facility toward the site of the proposed light rail station. In this manner, a new Monterey Highway intermodal transit center would be provided by the Light Rail Alternative.

Amtrak Capitol Corridor Service

The Amtrak Capitol Corridor intercity rail service serves 16 stations along a 170-mile corridor from Auburn to San Jose. The Amtrak Capitol Corridor station nearest the Capitol Expressway Corridor is the Diridon Station, located in downtown San Jose. VTA serves as a member of the Capitol Corridor JPB. The Amtrak Capitol Corridor service operates with heavy rail technology and is distinct from the similarly named VTA Capitol Corridor light rail service, which is part of the 8.3-mile Tasman East/Capitol Light Rail Extension. The Light Rail Alternative would connect to the Amtrak Capitol Corridor Service at the proposed Monterey station.

Vehicular Traffic

As stated previously, the study area for transportation is defined by the alignment of the Light Rail Alternative and greater metropolitan area. The Capitol Expressway Corridor can be accessed regionally by freeways, highways, and arterials; VTA transit buses and light rail; and Caltrain commuter rail. The existing roadway network, Congestion Management Plan (CMP), and existing travel volumes and LOS are discussed below. As shown in Figure 4.2-3, 15 signalized intersections, nearly all signalized intersections in the corridor, are included in the study area.

Existing Roadway Network

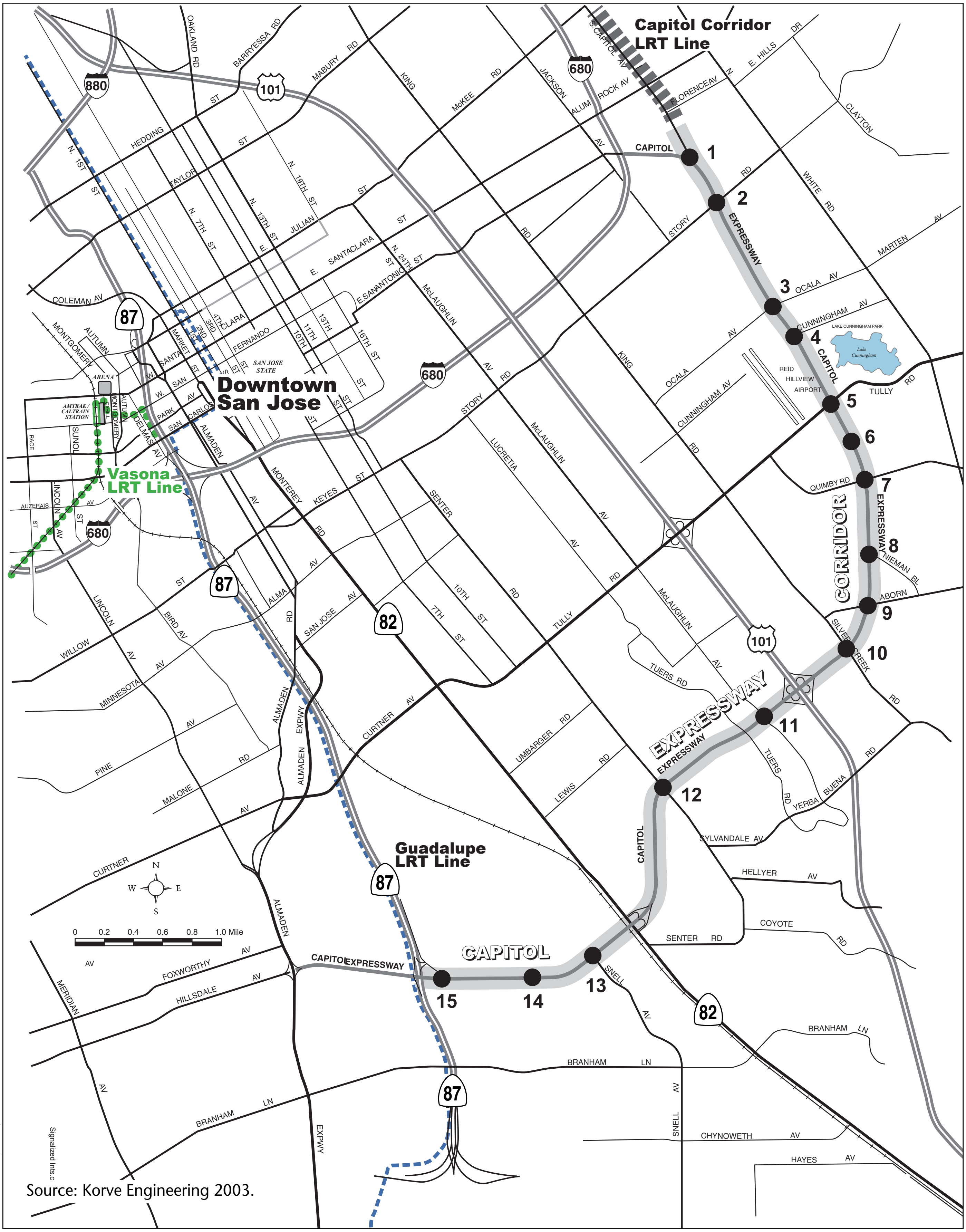
The study area is located within an extensive roadway system in the Downtown/East Valley area of San Jose. This area includes freeways, state highways, expressways, and numerous arterial streets.

Three major facilities serve the study area: U.S. 101, I-680, and SR 87. All three generally travel in a north–south direction. U.S. 101 is an eight-lane facility with an interchange at Capitol Expressway at the approximate midpoint of the corridor. I-680 is an eight-lane facility that parallels the corridor beginning at a point just northwest of the Capitol Avenue/Capitol Expressway intersection. SR 87 is a six-lane highway that intersects Capitol Expressway at the southernmost end of the corridor. Other state highways serving the study area include SR 130 (Alum Rock Avenue) and SR 82 (Monterey Highway). SR 130 is a four-lane arterial that travels east–west through the northern part of the study area. It connects to I-680 with a full freeway interchange. SR 82 is a six-lane divided arterial that travels in a north–south direction and crosses Capitol Expressway west of U.S. 101; an interchange provides access between Capitol Expressway and SR 82.

On I-680, the next interchange north of the Capitol Expressway interchange is the Alum Rock Avenue interchange. The distance from the undercrossing of Capitol Expressway to the overcrossing of Alum Rock Avenue is approximately 1,560 feet. The ramps between the two interchanges are braided. To the south of Capitol Expreessway on I-680, the next interchange is a partial interchange with Jackson Avenue. This interchange provides ramps to and from the south. The distance from the undercrossing of Capitol Expressway to the undercrossing of Jackson Avenue is approximately 1,200 feet. I-680 currently carries approximately 232,000 vehicles per day at Capitol Expressway (Korve Engineering, 2004b).

On U.S. 101, the next interchange to the north of Capitol Expressway is at Tully Road. The distance from the overcrossing of Capitol Expressway to the overcrossing of Tully Road is approximately 7,200 feet. To the south of Capitol Expressway on US 101, the next interchange is at Yerba Buena Road. The distance from the overcrossing of Capitol Expressway to the undercrossing of Yerba Buena Road is 3,600 feet. The ramps between Yerba Buena Road and Capitol Expressway are connected by collector/distributor roadways because of the close spacing of these interchanges. U.S. 101 currently carries approximately 196,000 vehicles per day near Capitol Expressway (Korve Engineering, 2004b).

The study area also contains several arterial, collector, and local streets that intersect Capitol Expressway. An arterial street accommodates major movements of traffic not served by expressways or freeways. It is designated mainly for the movement of through traffic, but also performs a secondary function of providing access to adjacent property. A major collector street serves internal traffic movements within an area and connects the area with the major arterial system. It does not serve long through trips, but does provide access to



Source: Korve Engineering 2003.

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Figure 4.2-3
Signalized Intersections

adjacent property. The primary function of a local street is to provide access to immediately adjacent property.

Capitol Expressway is a limited-access expressway that extends from its interchange with I-680 to its interchange with SR 87. The Capitol Expressway Corridor runs north–south from Capitol Avenue to Silver Creek Road (King Road) and east–west from Silver Creek Road (King Road) to SR 87. The major north-south arterials within the corridor are Silver Creek Road (King Road), McLaughlin Avenue, Senter Road (terminates just east of SR 82), Snell Avenue, and Vistapark Drive. The major east–west arterials within the corridor are Capitol Avenue, Story Road, Ocala Avenue, Tully Road, Quimby Road, and Aborn Road. Nieman Boulevard is a major collector street that runs north–south between Aborn Road and Capitol Expressway. Local streets that run east–west within the corridor include Cunningham Avenue and Eastridge Road. Local streets that run north–south include Seven Trees Boulevard, Copperfield Drive, and Narvaez Avenue.

Table 4.2-5 lists the signalized intersections (by number and cross street), general-plan designation of each cross street, location within the Capitol Expressway Corridor, and average annual daily traffic (AADT) volumes. The spacing of the intersections along the expressway generally varies from 1,400 feet to more than 4,000 feet. (Korve Engineering 2004b.)

Congestion Management Program

CMPs are prepared by Congestion Management Agencies (CMAs), which originated in state legislation and voter approval of Proposition 111 in 1990. CMPs are prepared to meet eligibility requirements for certain state and federal funds. CMPs set performance standards for roads and public transit, and show how local jurisdictions will attempt to meet those standards. They are updated biennially. VTA is the designated CMA for the study area.

Existing Travel Volumes and Level of Service

Daily traffic within the study area varies by transportation facility. Traffic volumes were obtained from the City or collected specifically for this analysis. The analysis of existing traffic conditions focuses on the AM and PM peak hour operations at 15 intersections along Capitol Expressway because peak hour traffic operations are a more accurate gauge of traffic congestion than daily traffic. The intersections were also analyzed based on the CMP Traffic Level of Service Analysis Guidelines (Santa Clara Valley Transportation Authority 1997).

The analysis estimates the operations of intersections and assigns a letter grade LOS to the intersections based on the average stopped delay per vehicle. For signalized intersections in an urban environment, an intersection that has an operational LOS of D or better is generally considered to perform satisfactorily. LOS E suggests that the intersection is unstable, teetering between successful operations and breakdown, with critical volumes approaching saturation. LOS F is considered to have failing operations and excessive delay due to overcapacity.

In general, traffic volumes are heavy along Capitol Expressway and its cross streets, resulting in diminished operational performance. Table 4.2-6 lists the existing LOS at each study intersection for the AM and PM peak hours. It also identifies the estimated delays and calculated volume-to-capacity (V/C) ratio at each study intersection. The intersections vary from acceptable operations to intersections with LOS E and F operations. The existing LOS E and F intersections are further described in Table 4.2-7. (Korve Engineering 2004b.)

V/C ratios are also used to determine significant impacts. The V/C is a simple numeric value of the traffic volume through the intersection divided by the intersection capacity.

Table 4.2-6. Existing Intersection Levels of Service, AM and PM Peak Hours (2001)

			AM Peak Hour			PM Peak Hour		
Intersection	Cross Street	CMP?	LOS	Delay	V/C	LOS	Delay	V/C
1	Capitol Avenue	Yes	D+	26.1	0.62	F	69.7	0.93
2	Story Road	Yes	E	50.3	0.95	F	79.2	1.05
3	Ocala Avenue	No	D	35.1	0.77	D	33.2	0.85
4	Cunningham Avenue	No	B+	6.6	0.60	B+	6.5	0.60
5	Tully Road	Yes	D	36.4	0.85	D-	39.9	0.76
6	Eastridge Road	No	A	4.1	0.49	B	8.3	0.49
7	Quimby Road	Yes	E	53.4	0.85	E	44.5	0.76
8	Nieman Boulevard	No	A	3.0	0.36	B	7.9	0.43
9	Aborn Road	Yes	F	70.1	1.03	D	31.1	0.66
10	Silver Creek Road	Yes	F	62.7	1.05	F	102.8	1.21
11	McLaughlin Avenue	Yes	D-	37.2	0.77	D	35.0	0.70
12	Senter Road	Yes	E	48.2	0.93	E	45.0	0.74
13	Snell Avenue	Yes	E	48.8	0.99	D	29.0	0.37
14	Vistapark Drive	No	C	22.6	0.62	C	22.5	0.73
15	Narvaez Avenue	Yes	C	22.5	0.54	D	32.0	0.53

Source: Korve Engineering 2004b.

Table 4.2-5. Signalized Intersections and Annual Average Daily Traffic Volumes (2001)

Intersection	Cross Street	Cross Street Designation[a]	Distance to Next Intersection, Southbound or Westbound (feet)[b]	Annual Average Daily Traffic, West–East/North–South (vehicles/day)
1	Capitol Avenue	Arterial	1,800	3,100/24,200
2	Story Road	Arterial	4,200	24,000/32,000
3	Ocala Avenue	Arterial	1,200	16,500/20,000
4	Cunningham Avenue	Local	2,700	4,000/2,300
5	Tully Road	Arterial	1,200	38,400/28,000
6	Eastridge Road	Local	1,600	9,100
7	Quimby Road	Arterial	2,800	30,200/30,100
8	Nieman Boulevard	Major collector	1,700	15,200/47,300
9	Aborn Road	Arterial	2,100	—/47,300
10	Silver Creek Road (King Road)	Arterial	3,700	27,200/27,000
11	McLaughlin Avenue	Arterial	4,400	16,500/16,500
12	Senter Road	Arterial	3,500	29,000/29,000
	Seven Trees Boulevard	Local	3,600	—
13	Snell Avenue	Arterial/local north of Capitol Expressway	2,500	17,500/29,000
14	Vistapark Drive	Arterial	1,400	4,000/6,800
	Copperfield Drive	Local	1,700	—
15	Narvaez Avenue	Local	N/A	15,700/6,300

Note: For this study, the Capitol Expressway Corridor is considered to run north–south from Capitol Avenue to Silver Creek Road (King Road) and east–west from McLaughlin Avenue to Narvaez Avenue.

[a] Designations are derived from the *San Jose 2020 General Plan*. Where cross street designations differ, the separate west–east or north–south designations are shown.

[b] Distances are rounded to the nearest 100 feet.

Source: City of San Jose 2002.

Table 4.2-7. Intersections with Existing Level of Service E and F (2001)

		Peak Hour LOS		
Intersection	Cross Street	AM	PM	Comments
1	Capitol Avenue	—	F	Very heavy southbound through and westbound left-turn volumes. Heavy southbound left-turn volume.
2	Story Road	E	F	Heavy southbound left-turn and northbound through volumes in AM. Very heavy southbound left-turn and through volumes in PM.
7	Quimby Road	E	E	Very heavy westbound left-turn volume in AM. Heavy left-turn volumes in each period. Heavy northbound and southbound through volumes.
9	Aborn Road	F	—	Extremely heavy westbound left-turn volume. Heavy volume on remaining critical movements.
10	Silver Creek Road	F	F	Very heavy northbound and southbound through volumes. Very heavy westbound and northbound left-turn volumes. Heavy volumes on remaining movements.
12	Senter Road	E	E	Heavy volumes on most movements.
13	Snell Avenue	E	—	Heavy volumes on most movements. Heavy northbound right-turn volume.

Source: Korve Engineering 2004b.

4.2.3 Future Conditions

Projected Transit Ridership

Ridership forecasts for the Light Rail Alternative for 2010 and 2025 were developed using the Santa Clara County CMP travel demand model. 2010 represents the initial planning horizon for the project, and 2025 is consistent with the long-range planning horizon of the adopted *2001 Regional Transportation Plan for the San Francisco Bay Area* prepared by the Metropolitan Transportation Commission. This model is maintained by VTA in its Congestion Management Department. The patronage estimates developed for the Light Rail Alternative are used for several purposes. First, the number of projected LRT passengers is used to determine the rolling stock required to serve the demand. Also, the number of passengers boarding or alighting at any station can be used in determining the optimal station layout and pedestrian queuing areas. The need for park-and-ride facilities and number of parking spaces needed can also be determined using mode-of-arrival information.

Travel demand and patronage forecasting considered the following scenarios for the 2010 and 2025 horizon years: No-Project Alternative, Baseline Alternative, Light Rail Alternative MOS (light rail alignment to the Eastridge Transit Center), and Light Rail Alternative Phase 2 (full light rail alignment to SR 87). Each scenario includes completion of the Santa Clara/Alum Rock corridor improvements (i.e., enhanced bus or light rail) from downtown San Jose to the Alum Rock Station on Capitol Avenue (Figure 4.2-4).

Specific assumptions concerning the roadway and transit network are included in the travel demand model. Assumptions are made separately for the horizon years 2010 and 2025. The roadway and transit improvements included in the model runs are based on a realistic level of funding. Table 4.2-8 lists the roadway improvements assumed for 2010 and 2025, and the source for their inclusion. Table 4.2-9 lists the transit improvements for 2010 and 2025, and identifies the funding sources. Projects for Santa Clara County and applicable projects in Alameda County are included.

Table 4.2-10 summarizes the daily systemwide light rail ridership for each scenario. These figures represent total daily boardings, including transfers from one light rail corridor to another. The No-Project Alternative would result in the lowest daily ridership: 70,000 boardings in 2010 and nearly 87,000 boardings in 2025. Daily ridership under the Baseline Alternative would be nearly equal to that under the No-Project Alternative. The Light Rail Alternative MOS-1 would increase daily ridership to a projected 72,000 boardings in 2010 and 91,000 boardings in 2025. The Light Rail Alternative Phase 2 would increase the projected daily boardings to 80,000 boardings in 2010 and 97,000 boardings in 2025.

Table 4.2-10. Total Light Rail Transit System Ridership (Boardings, Including Transfers)

	2010			2025		
Scenario	Daily	AM Peak	PM Peak	Daily	AM Peak	PM Peak
No-Project Alternative	70,000	11,800	9,030	86,950	14,250	11,340
Baseline Alternative	70,470	11,860	9,100	87,000	14,250	11,280
Light Rail Alternative (MOS)	71,550	12,120	9,210	90,650	15,000	11,900
Light Rail Alternative (Phase 2)	80,100	13,800	10,420	97,350	16,320	12,790

Source: Santa Clara Valley Transportation Authority 2003; Korve Engineering 2004a.

Table 4.2-11 lists the daily and peak corridor-specific light rail ridership for each scenario for 2010 and 2025. The values represent total daily and peak hour boardings for 2010 and 2025. The operating plan would through-route the Tasman West, Tasman East, and Capitol Avenue LRT Lines with the Light Rail Alternative. The ridership values for the No-Project Alternative reflect total daily boardings on the Tasman and Capitol Avenue LRT Lines only. The table shows that by extending light rail from the Alum Rock Station to the Eastridge Transit Center, daily boardings would increase by 2,250 to 22,000 per day in 2010 and by 3,205 to 27,000 per day in 2025. Extending light rail to SR 87 would increase the daily boardings by 9,790 to 30,000 in 2010 and by 11,075 to 35,000 in 2025.

Table 4.2-8. 2010 and 2025 Baseline Network Assumptions (Roadway)

No.	Highway or Expressway Project	Assumed 2010	Assumed 2025	Source	Notes
Santa Clara County					
1	SR 85/U.S. 101 northbound direct HOV connections in Mountain View	*	*	VTP 2020	Completed by 2005
2	Montague Expressway/San Tomas Expressway/U.S. 101/Mission College Boulevard interchange	*	*	VTP 2020	
3	SR 87/U.S. 101 stem ramp connection to Trimble Road interchange	*	*	VTP 2020	
4	U.S. 101 widening to accommodate SR 85 direct HOV connectors in San Jose	*	*	VTP 2020	
5	SR 85/U.S. 101 direct HOV connectors in San Jose	*	*	SCL Measure B	
6	U.S. 101 widening from Metcalf Road to Cochrane Road	*	*	SCL Measure B	Six mixed-flow and two HOV lanes; completed 2003
7	I-880/Montague Expressway interchange reconfiguration improvements	*	*	VTP 2020	
8	I-880/Coleman Avenue interchange improvements	*	*	VTP 2020	
9	I-680 southbound HOV lanes: Alameda/Santa Clara County line to Montague Expressway	*	*	VTP 2020	
10	SR 87 improvements at Skyport Drive interchange	*	*	SCL Measure B	Under construction
11	SR 87 widening (HOV lanes) between Julian Street and SR 85	*	*	SCL Measure B	
12	Montague Expressway widening from six to eight lanes from I-680 to U.S. 101	*	*	VTP 2020	
13	Montague Expressway/commuter rail/BART grade separation	*	*	VTA	Funded and constructed as part of Silicon Valley Rapid Transit Corridor
14	I-880/SR 237 freeway interchange (stages A, B, and C)	*	*	SCL Measure B	Stage C to be completed in 2004
15	I-880 widening from Montague Expressway to U.S. 101	*	*	SCL Measure B	Six mixed-flow lanes; completed in 2003
16	Guadalupe Parkway (SR 87) upgrade to six-lane freeway from U.S. 101 to Julian Street	*	*	SCL Measure B	Six lanes (four mixed-flow, two HOV) under construction
17	U.S. 101/Hellyer Avenue interchange modifications	*	*	Local	City of San Jose project
18	U.S. 101/Blossom Hill Road interchange modifications	*	*	Local	City of San Jose project
19	U.S. 101 auxiliary lane widening from SR 87 to Great America Parkway		*	VTP 2020	

No.	Highway or Expressway Project	Assumed 2010	2025	Source	Notes
20	Fourth Street/Zanker Road/U.S. 101 overcrossing and ramp modifications		*	VTP 2020	
21	U.S. 101/Tully Road interchange modifications		*	VTP 2020	
22	U.S. 101/Tennant Avenue interchange improvements in Morgan Hill		*	VTP 2020	
23	Tenth Street (SR 152) extension and U.S. 101 interchange improvements in Gilroy		*	VTP 2020	
24	SR 25/Santa Teresa Boulevard/U.S. 101 interchange construction		*	VTP 2020	
25	U.S. 101/Buena Vista interchange construction		*	VTP 2020	
26	SR 237 widening for HOV lanes between SR 85 and U.S. 101		*	VTP 2020	
27	SR 237 westbound auxiliary lanes between Coyote Creek Bridge and North First Street		*	VTP 2020	
28	I-880 widening from SR 237 to Alameda County line		*	MTC RTP 1998	10 lanes (eight mixed-flow, two HOV)
29	I-680 northbound HOV lane (Montague Expressway to Alameda/Santa Clara County line)		*	VTP 2020	
30	I-880/Stevens Creek Boulevard interchange improvements		*	VTP 2020	
31	I-280/I-680 connector to southbound U.S. 101: braided ramp with Tully Road exit ramp		*	VTP 2020	
32	SR 85 widening from I-280 to Fremont Avenue		*	VTP 2020	
33	SR 85 northbound to I-280 northbound and I-280 exit to Foothill Expressway braided ramp		*	VTP 2020	
34	SR 25 upgrade to expressway standards		*	VTP 2020	
35	SR 152 safety improvements between U.S. 101 and SR 156		*	VTP 2020	
36	Trimble Road/De La Cruz Boulevard/U.S. 101 interchange improvements		*	VTP 2020	
37	SR 85/SR 87 interchange completion		*	SCL Measure B	Completed in 2003
38	SR 17/SR 85 interchange improvements		*	SCL Measure B	
39	Montague Expressway/Trimble Road flyover ramp		*	VTP 2020	
40	Central Expressway widening for HOV lanes from SR 237 to De La Cruz Avenue		*	VTP 2020	

No.	Highway or Expressway Project	Assumed 2010	Assumed 2025	Source	Notes
Alameda County (in Project Corridor)					
41	I-880 widening from Mission Boulevard to Santa Clara County line	*	*	MTC RTP 1998	10 lanes (eight mixed-flow, two HOV)
42	I-680 southbound HOV lane (SR 84 to Alameda/Santa Clara County line)	*	*	ALA Measure B	
43	I-680 northbound HOV lane (SR 84 to Alameda/Santa Clara County line)		*	ALA Measure B	
44	SR 84 new roadway (expressway) from SR 238 (Mission Boulevard) to I-880	*	*	ALA Measure B	Four-lane new expressway
45	I-880/Dixon Landing Road interchange improvement	*	*	MTC RTP 1998	
46	I-880/Mission Boulevard interchange improvement	*	*	MTC RTP 1998	

Notes: VTP 2020: Valley Transportation Plan 2020

MTC RTP 1998: Metropolitan Transportation Commission Regional Transportation Plan 1998

SCL Measure B: Santa Clara County Measure B

ALA Measure B: Alameda County Measure B

Source: Korve Engineering 2004a.

Table 4.2-9. 2010 and 2025 Baseline Network Assumptions (Transit)

No.	Transit Project	Assumed 2010	Assumed 2025	Source	Action/Notes
Santa Clara County					
1	Vasona LRT Line, Winchester Boulevard to downtown San Jose	*		SCL Measure B	10-minute headways, interlined with East Valley LRT Line
2	Vasona LRT Line, Vasona Junction to downtown San Jose		*	TBD	10-minute headways, interlined with East Valley LRT Line
3	Tasman East/Capitol Expressway LRT Line, Hostetter Road to Alum Rock Station	*	*	SCL Measure B	10-minute headways
4	Santa Clara/Alum Rock LRT Line	*	*	SCL Measure A	10-minute headways, Diridon Station to Alum Rock Station
5	BRT—Route 22/Route 300	*	*	SCL Measure A	Limited stop (Route 300) at 10-minute headways, 15% travel time reduction on El Camino Real
6	BRT—Monterey Highway		*	SCL Measure A	Downtown San Jose to Santa Teresa LRT Line, 10-minute headway for limited stops, 10% travel time reduction on Routes 66 and 68 on Monterey Highway to San Carlos Street
7	Expansion of VTA bus fleet to 600 vehicles	*		SCL Measure A	Initial expansion to 600 buses by 2010
8	Expansion of VTA bus fleet to 650 vehicles		*	SCL Measure A	650 buses planned from VTP 2020; does not include rail shuttles
9	Caltrain	*	*	SCL Measure A	Increase service to 100 trains from San Jose to San Francisco, add express trains (San Jose, Mountain View, Palo Alto, Hillsdale, Millbrae, and San Francisco stops, 60-minute travel time), new Coyote Valley station, 20 trains serving Gilroy (six rt in peak direction, two to four rt in reverse peak direction)
10	Caltrain service upgrades	*	*	SCL Measure A, other	Increase service over 2010 to 120 trains from San Jose to San Francisco, Gilroy service 30 minutes peak period/peak direction, 60 minutes reverse peak direction, electrify system, extension to Monterey County (external two round trips)
11	Altamont Commuter Express service upgrade	*	*	SCL Measure A	Eight peak direction trains weekday service, new Auto Mall Parkway station

Table 4.2-9. Continued.

No.	Transit Project	Assumed 2010	Assumed 2025	Source	Action/Notes
12	Amtrak Capitol Corridor	*	*	Capitols Plan	11 round trips per day, Sacramento to San Jose trains, new Oakland Coliseum and Union City intermodal stations
13	Norman Y. Mineta San Jose International Airport rail connector to BART, Caltrain, and LRT	*	*	SCL Measure A	5-minute headways all day, connection to LRT in 2010, connection to Bay Area Rapid Transit (BART) system and Caltrain by 2025
14	BART extension from Warm Springs to Santa Clara (Silicon Valley Rapid Transit Corridor)		*	SCL Measure A	Complete extension of BART expected by 2014
Alameda County (in Project Corridor)					
15	BART extension from Fremont to Warm Springs	*	*	BART	12-minute peak/mid-day headways for each train (6-minute combined frequency)
16	AC Transit southern Alameda County bus service increases		*	Alameda – Contra Costs (AC) Transit	Increase to 15-minute peak/30-minute offpeak headways from 30-minute peak/30-minute offpeak headways
17	New West Dublin BART station		*	ALA Measure B	

Notes: VTP 2020: Valley Transportation Plan 2020

MTC RTP 1998: Metropolitan Transportation Commission Regional Transportation Plan 1998

SCL Measure A: Santa Clara County Measure A

SCL Measure B: Santa Clara County Measure B

ALA Measure B: Alameda County Measure B

Capitols Plan: Amtrak Capitol Corridor Intercity Passenger Rail Service Plan

Source: Korve Engineering 2004a.

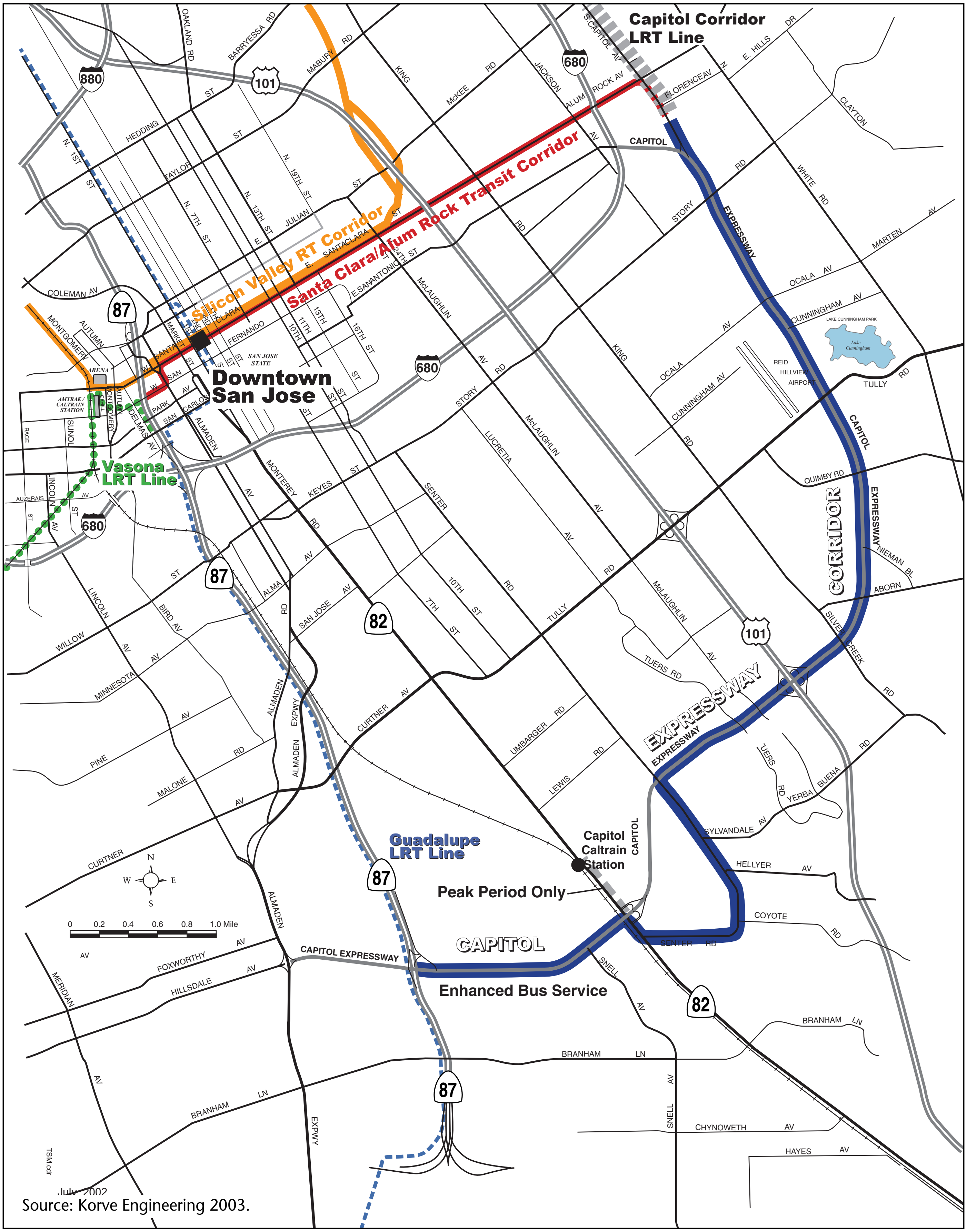

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Figure 4.2-4
Potential Future Transit Services

Table 4.2-11. Total Tasman/Capitol Avenue/Capitol Expressway Light Rail Transit Line Ridership (Boardings, Including Transfers)

	2010			2025		
Alternative	Daily	AM Peak	PM Peak	Daily	AM Peak	PM Peak
No-Project Alternative	19,820	3,520	2,780	23,925	4,190	3,410
Light Rail Alternative (MOS)	22,070	3,920	3,050	27,130	4,740	3,840
Change in Ridership	(+2,250)	(+400)	(+270)	(+3,205)	(+550)	(+430)
Light Rail Alternative (Phase 2)	29,610	5,300	4,090	35,000	6,170	4,860
Change in Ridership	(+9,790)	(+1,780)	(+1,310)	(+11,075)	(+1,980)	(+1,450)

Source: Korve Engineering 2004a.

Table 4.2-12 lists projected light rail boardings along Capitol Expressway for Light Rail Alternative MOS and Phase 2. The figures noted in Table 4.2-12 indicate line boardings by direction for each peak hour for the 2010 and 2025 horizon years.

Projected Park-and-Ride Demand

Park-and-ride facilities will be available for use by Capitol Expressway light rail passengers. Historically, VTA has found that more light rail passengers arrive at the stations by walking, being dropped off or transferring from buses than estimated by the travel demand model. This results in an overestimation of the park-and-ride demand. The park-and-ride demand projection included both parking spaces that will be occupied by a vehicle during the majority of the day, and also for kiss-and-ride drop offs. Approximately 5% of the park-and-ride spaces will be designed for kiss-and-ride drop offs. Table 4.2-13 provides the projected demand and capacity for each park-and-ride lot. Both the Alum Rock and SR 87 (Capitol) sites are existing park-and-ride lots that have sufficient existing capacity to accommodate the Light Rail Alternative. The Ocala Avenue and Eastridge Transit Center sites are located close together and essentially serve the same area. Therefore, they have been grouped together. Initially, 265 spaces are proposed to be provided at the Eastridge Transit Center on property currently owned by VTA and on property to be acquired from the Eastridge Shopping Center. The Monterey Highway site has three park-and-ride lot optional locations to accommodate the demand.

Projected Travel Time for All Alternatives

The Light Rail Alternative would provide travel time benefits compared to automobile and bus modes of travel. In 2010, travel time for the Light Rail Alternative from Alum Rock Avenue to SR 87 would range from 3 minutes faster than autos in the northbound AM peak direction to 5.5 minutes faster than autos in the southbound PM peak direction. In 2025, travel time for the Light Rail Alternative would range from 4.1 minutes faster than buses in the northbound PM peak direction to 8.1 minutes faster than autos in the southbound AM peak direction. Table 4.2-14 compares auto and bus travel times on the roadway to the Light Rail Alternative.

Projected Traffic for All Alternatives

The traffic analysis provides an evaluation of traffic and transportation issues related to the proposed alternatives, and outlines the effects of the alternatives on the local and regional transportation network. The effects of the alternatives were evaluated using the policy guidelines of the VTA, Santa Clara County CMP, and the City. The future year traffic projections were developed using the CMP travel forecasting model. The LOS methodology for the CMP is based on the 1985 Highway Capacity Manual (HCM) methodology. The study intersection operations for the Baseline Alternative and the two phases of the Light Rail Alternative were assessed for the AM and PM peak hours for the 2010 and 2025 horizons. These alternatives were then compared to the No-Project Alternative.

The intersections within the Capitol Expressway Corridor were analyzed based on the CMP Traffic Level of Service Analysis Guidelines (Santa Clara Valley Transportation Authority 1997). The guidelines stipulate that intersection LOS be evaluated using the TRAFFIX software program (version 7.5R1), which is based on the HCM methodology and provides results similar to results from the HCM and software. TRAFFIX estimates the operations of intersections and assigns a letter-grade LOS to the intersections based on the average stopped delay per vehicle. However, it should be noted that the model does not subtract the light rail transit rider vehicle trips that would no longer occur on Capitol Expressway. Therefore, the following results represent worse traffic conditions than would actually occur with the Light Rail Alternative. The adjusted model analysis is provided in Appendix C of this EIR. It should also be noted that the travel demand model used for the traffic analysis is not sensitive enough to capture the improved traffic operations that would result from implementation of the Light Rail Alternative. The adjusted model traffic delay in seconds and LOS are provided in Appendix B of this EIR.

Table 4.2-15 shows the average stopped delay thresholds associated with each LOS interval.

Table 4.2-12. Projected Boardings under Light Rail Alternative

Station	2010						2025					
	Daily		AM Peak Hour		PM Peak Hour		Daily		AM Peak Hour		PM Peak Hour	
	North-bound	South-bound	North-bound	South-bound	North-bound	South-bound	North-bound	South-bound	North-bound	South-bound	North-bound	South-bound
MOS-1												
Alum Rock Avenue	1,459	284	156	5	149	56	1,602	519	165	7	159	86
Story Road	314	62	102	7	4	4	389	74	131	8	5	5
Ocala Avenue	449	37	144	5	6	2	575	41	194	6	8	2
Eastridge Road	830	–	230	–	34	–	1,045	–	285	–	44	–
Phase 2												
Alum Rock Avenue	2,058	362	178	13	211	44	2,128	444	160	13	233	68
Story Road	241	76	79	18	3	2	231	107	75	20	3	9
Ocala Avenue	296	122	97	28	3	4	308	161	98	31	4	12
Eastridge Road	359	230	104	26	12	31	375	341	105	31	16	59
Nieman Boulevard	349	317	103	109	8	6	449	380	124	121	12	12
Silver Creek Road	443	590	132	170	11	17	484	757	140	201	13	27
McLaughlin Avenue	188	204	62	79	3	2	220	255	71	95	3	3
Senter Road	283	404	92	142	10	5	304	472	96	159	11	10
Monterey Highway	460	330	114	96	34	14	581	423	142	118	42	17
Vistapark Drive	140	140	44	52	3	1	161	150	48	55	4	1
State Route 87	2,292	–	138	–	541	–	2,672	–	154	–	634	–

Source: Korve Engineering 2004a

Table 4.2-13. Proposed Park-and-Ride Sites and Estimated Demand and Capacity for the Light Rail Alternative (to SR 87)

Proposed Station	Notes	Estimated Peak Park-and-Ride Demand	Estimated Peak Park-and-Ride Capacity
Alum Rock—Existing	The existing park-and-ride lot could support the Light Rail Alternative. No change in capacity (currently 105) is proposed. The total demand also includes park-and-ride spaces required to serve the Capitol Light Rail Line.	60–90	105[a]
Ocala Avenue/ Eastridge Transit Center Area	The Ocala Avenue Station and Eastridge Transit Center essential function as one area to serve park-and-ride needs. A new park-and-ride lot on the southwest corner of Ocala Avenue/Capitol Expressway could provide approximately 100 parking stalls. However, if there is no park-and-ride at Ocala Avenue this demand would shift to the Eastridge location and there would be a greater expansion of spaces at the Eastridge Transit Center. The Eastridge Transit Center park-and-ride could be expanded beyond its current capacity of 133 parking stalls.	250–550	250–550
Monterey Highway—Options	One or a combination of the three options under considerations for the Light Rail Alternative can accommodate up to 300 parking stalls. Multi-modal connections with the relocated Caltrain Station and new bus transit center will be provided. The total demand includes 100 parking stalls for the relocated Caltrain Station.	260–300	260–300
SR 87 (Capitol)—Existing	Existing facility has over 900 stalls (including both north and south park-and-ride lots). Estimated demand can be accommodated without expansion. The total demand also includes park-and-ride spaces required to serve the Guadalupe Light Rail Line.	310–375	914[a]

[a] Existing park-and-ride spaces.

Source: Korve Engineering 2004a.

Table 4.2-14. Travel Time and Speed Data for Roadway, Bus, and Light Rail

		Northbound				Southbound			
		AM		PM		AM		PM	
Travel Times and Speeds	Distance (miles)	Travel Time (minutes)	Speed (mph)	Travel Time (minutes)	Speed (mph)	Travel Time (minutes)	Speed (mph)	Travel Time (minutes)	Speed (mph)
Roadway—Existing Conditions									
Alum Rock Avenue to Tully Road	2.3	7.4	18.6	5.3	26.0	6.9	20.0	7.0	19.7
Tully Road to McLaughlin Avenue	2.4	5.3	27.2	6.3	22.9	8.7	16.6	5.0	28.8
McLaughlin Avenue to State Route 87	3.5	8.1	25.9	9.6	21.9	8.1	25.9	5.8	36.2
Total	**8.2**	**20.8**	**23.7**	**21.2**	**23.2**	**23.7**	**20.8**	**17.8**	**27.6**
Roadway—2010 No Build With HOV (3M1H)									
Alum Rock Avenue to Tully Road	2.3	8.0	17.3	5.4	25.4	7.5	18.4	10.3	13.4
Tully Road to McLaughlin Avenue	2.4	5.8	24.8	7.8	18.3	9.1	15.8	6.2	23.1
McLaughlin Avenue to State Route 87	3.5	8.4	24.9	9.9	21.3	8.1	25.8	5.9	35.4
Total	**8.2**	**22.2**	**22.1**	**23.1**	**21.3**	**24.7**	**19.9**	**22.5**	**21.9**
Roadway—2010 Full Build No HOV (3M+LRT)									
Alum Rock Avenue to Tully Road	2.3	8.5	16.3	5.4	25.4	7.2	19.2	10.8	12.7
Tully Road to McLaughlin Avenue	2.4	6.5	22.1	7.7	18.6	11.1	12.9	6.6	21.7
McLaughlin Avenue to State Route 87	3.5	8.2	25.5	9.5	22.1	8.2	25.7	5.7	37.0
Total	**8.2**	**23.2**	**21.2**	**22.7**	**21.7**	**26.5**	**18.6**	**23.1**	**21.3**
Roadway—2025 No Build With HOV (3M1H)									
Alum Rock Avenue to Tully Road	2.3	9.1	15.2	5.8	23.8	7.5	18.4	10.6	13.0
Tully Road to McLaughlin Avenue	2.4	7.0	20.6	8.0	18.0	11.3	12.7	8.2	17.6
McLaughlin Avenue to State Route 87	3.5	8.5	24.7	10.2	20.6	8.5	24.7	6.0	35.0
Total	**8.2**	**24.6**	**20.0**	**23.9**	**20.6**	**27.3**	**18.0**	**24.8**	**19.8**
Roadway—2025 Full Build No HOV (3M+LRT)									
Alum Rock Avenue to Tully Road	2.3	10.4	13.3	8.0	17.3	7.2	19.2	12.2	11.3
Tully Road to McLaughlin Avenue	2.4	9.5	15.2	7.9	18.2	11.2	12.9	8.2	17.6
McLaughlin Avenue to State Route 87	3.5	8.3	25.3	9.8	21.4	8.8	23.9	5.8	36.2
Total	**8.2**	**28.1**	**17.5**	**25.7**	**19.1**	**27.3**	**18.0**	**26.3**	**18.7**
Bus—Existing Conditions									
Alum Rock Avenue to Tully Road	2.3	6.2	22.3	5.9	23.4	5.9	23.4	6.2	22.3

Table 4.2-14. Continued.

Travel Times and Speeds	Distance (miles)	Northbound AM Travel Time (minutes)	Northbound AM Speed (mph)	Northbound PM Travel Time (minutes)	Northbound PM Speed (mph)	Southbound AM Travel Time (minutes)	Southbound AM Speed (mph)	Southbound PM Travel Time (minutes)	Southbound PM Speed (mph)
Tully Road to McLaughlin Avenue	2.4	6.4	22.5	6.1	23.6	6.1	23.6	6.4	22.5
McLaughlin Avenue to State Route 87	3.5	10.4	20.2	9.9	21.2	9.9	21.2	10.4	20.2
Total	**8.2**	**23.0**	**21.4**	**21.9**	**22.5**	**21.9**	**22.5**	**23.0**	**21.4**
Bus—2010 No Build With HOV (3M1H)									
Alum Rock Avenue to Tully Road	2.3	6.4	21.6	6.2	22.3	6.2	22.3	6.4	21.6
Tully Road to McLaughlin Avenue	2.4	6.6	21.8	6.4	22.5	6.4	22.5	6.6	21.8
McLaughlin Avenue to State Route 87	3.5	10.8	19.4	10.3	20.4	10.3	20.4	10.8	19.4
Total	**8.2**	**23.8**	**20.7**	**22.9**	**21.5**	**22.9**	**21.5**	**23.8**	**20.7**
Bus—2010 Full Build No HOV (3M+LRT)									
Alum Rock Avenue to Tully Road	2.3	7.0	19.7	6.3	21.9	6.3	21.9	7.0	19.7
Tully Road to McLaughlin Avenue	2.4	7.1	20.3	6.5	21.2	6.5	21.2	7.1	20.3
McLaughlin Avenue to State Route 87	3.5	11.5	18.3	10.6	19.8	10.6	19.8	11.5	18.3
Total	**8.2**	**25.6**	**19.2**	**23.4**	**21.0**	**23.4**	**21.0**	**25.6**	**19.2**
Bus—2025 No Build With HOV (3M1H)									
Alum Rock Avenue to Tully Road	2.3	6.8	20.3	6.3	21.9	6.3	21.9	6.8	20.3
Tully Road to McLaughlin Avenue	2.4	7.0	20.6	6.5	22.2	6.5	22.2	7.0	20.6
McLaughlin Avenue to State Route 87	3.5	11.3	18.6	10.5	20.0	10.5	20.0	11.3	18.6
Total	**8.2**	**25.1**	**19.6**	**23.3**	**21.1**	**23.3**	**21.1**	**25.1**	**19.6**
Bus—2025 Full Build No HOV (3M+LRT)									
Alum Rock Avenue to Tully Road	2.3	8.4	16.4	7.1	19.4	7.1	19.4	8.4	16.4
Tully Road to McLaughlin Avenue	2.4	8.6	16.7	7.4	19.5	7.4	19.5	8.6	16.7
McLaughlin Avenue to State Route 87	3.5	14.1	14.9	12.0	17.5	12.0	17.5	14.1	14.9
Total	**8.2**	**31.1**	**15.8**	**26.5**	**18.6**	**26.5**	**18.6**	**31.1**	**15.8**
LRT									
Alum Rock Avenue to Tully Road	2.3	5.1	27.1	5.1	27.1	5.1	27.1	5.1	27.1
Tully Road to McLaughlin Avenue	2.4	5.4	26.7	5.4	26.7	5.4	26.7	5.4	26.7
McLaughlin Avenue to State Route 87	3.5	8.7	24.1	8.7	24.1	8.7	24.1	8.7	24.1
Total	**8.2**	**19.2**	**25.6**	**19.2**	**25.6**	**19.2**	**25.6**	**19.2**	**25.6**

Notes: Parenthetical notations (e.g., 3M1H) indicate mix of lanes or facilities: M = mixed-flow lanes; H = HOV/carpool lanes; LRT = light rail transit line.

Table 4.2-15. Level of Service Thresholds

LOS	Average Stopped Delay (seconds per vehicle)
A	0–5.0
B+	5.1–7.0
B	7.1–13.0
B-	13.1–15.0
C+	15.1–17.0
C	17.1–23.0
C-	23.1–25.0
D+	25.1–28.0
D	28.1–37.0
D-	37.1–40.0
E+	40.1–44.0
E	44.1–56.0
E-	56.1–60.0
F	More than 60.0

Source: Santa Clara Valley Transportation Authority 1998.

Tables 4.2-16 and 4.2-17 show the 2010 AM and PM peak hour traffic operational conditions, respectively, for the No-Project Alternative, Baseline Alternative, Light Rail Alternative MOS, and Light Rail Alternative Phase 2. Intersections for which there would be an adverse effect are shaded. Similarly, Tables 4.2-18 and 4.2-19 summarize the 2025 AM and PM peak hour traffic operational conditions, respectively, for the No-Project Alternative, Baseline Alternative, Light Rail Alternative MOS, and Light Rail Alternative Phase 2. Intersections on which there would be an adverse effect are shaded.

4.2.4 Environmental Consequences and Mitigation Measures

Approach and Methodology

The connectivity of the transit network in the Capitol Expressway Corridor will depend on strong linkages between the preferred project and supporting bus services. Once a preferred project is selected, VTA will be able to restructure the area’s bus routes to provide these linkages. Specific future operating plans for new bus routes or restructuring would not be completed until a later phase of implementation. To determine the effects of potential transit changes on proposed transit facilities, some preliminary route changes have been identified for purposes of this analysis.

Thresholds of Significance

Based on significance criteria used by VTA and professional practice, the proposed alternatives may result in adverse effects related to transportation if they would:

- cause an intersection's LOS to deteriorate from LOS D when compared to the No-Project Alternative;
- increase the critical volume delay by 4 seconds or more and increase the critical V/C ratio by 0.01 or more at an intersection already operating at LOS F under the No-Project Alternative;
- result in a change of two letter grades at an intersection operating at LOS A or B under the No-Project Alternative;
- cause a substantial increase in regional vehicle miles traveled (VMT) or vehicle hours travel (VHT);
- cause a substantial diversion of traffic onto a residential street;
- substantially disrupt traffic operations and/or substantially affect emergency vehicle response at grade crossings;
- result in a loss of parking spaces such that the loss results in substantial adverse economic effects on the businesses in the area;
- construct a park-and-ride lot where demand is projected to be 105% or more of its planned capacity;
- create particularly hazardous conditions for bicyclists or eliminate bicycle facilities, and adequate facilities do not remain to serve the community's needs; or
- result in substantial overcrowding on public sidewalks, creation of hazardous conditions for pedestrians, or elimination of pedestrian access to adjoining areas.

Environmental Consequences and Mitigation Measures of the No-Project Alternative (2010)

This analysis considers the effects of the No-Project Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

The No-Project Alternative would result in no adverse traffic impacts. Planned projects included in the No-Project Alternative would be evaluated in separate environmental analyses to identify impacts and determine mitigation measures.

Table 4.2-16. Intersection Level of Service, Delay, and Volume-to-Capacity Ratio, 2010 AM

			No-Project Alternative			Baseline Alternative			Light Rail Alternative (MOS)			Light Rail Alternative (Phase 2)		
Intersection	Cross Street	CMP?	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C
1	Capitol Avenue	Yes	D+	26.5	0.652	D+	26.6	0.671	D+	26.4	0.712	D+	26.4	0.712
2	Story Road	Yes	F	60.2	1.003	F	66.2	1.029	F	77.0	1.063	F	77.0	1.063
3	Ocala Avenue	No	D	35.6	0.810	D	36.5	0.839	D	36.8	0.867	D	36.8	0.867
4	Cunningham Avenue	No	B	7.0	0.692	B	7.2	0.709	B	8.2	0.762	B	8.2	0.762
5	Tully Road	Yes	D-	38.2	0.927	D-	38.1	0.934	E+	40.8	0.983	E+	40.8	0.983
6	Eastridge Road	No	A	4.4	0.569	A	4.6	0.585	A	5.0	0.631	A	4.9	0.631
7	Quimby Road	Yes	E-	56.3	0.909	E	50.1	0.900	E-	56.3	0.909	E	52.5	0.960
8	Nieman Boulevard	No	A	3.2	0.379	A	3.1	0.392	A	3.2	0.379	A	2.9	0.415
9	Aborn Road	Yes	F	183.2	1.228	F	169.9	1.227	F	183.2	1.228	F	257.1	1.274
10	Silver Creek Road	Yes	F	113.0	1.241	F	130.0	1.227	F	113.0	1.241	F	135.9	1.294
11	McLaughlin Avenue	Yes	E	55.4	0.865	E-	56.2	0.875	E	55.4	0.865	F	69.0	0.865
12	Senter Road	Yes	F	76.9	1.003	F	82.0	1.023	F	76.9	1.003	F	69.9	1.004
13	Snell Avenue	Yes	F	80.0	1.146	F	80.3	1.144	F	80.0	1.146	F	93.8	1.152
14	Vistapark Drive	No	C-	23.9	0.688	C-	23.8	0.685	C-	23.9	0.688	C-	23.3	0.688
15	Narvaez Avenue	Yes	D+	27.5	0.659	D	28.2	0.661	D+	27.5	0.659	D+	26.1	0.659

Note: Shaded cells indicate significant impacts.

Source: Korve Engineering 2004b.

Table 4.2-17. Intersection Level of Service, Delay, and Volume-to-Capacity Ratio, 2010 PM

			No Project Alternative			Baseline Alternative			Light Rail Alternative (MOS)			Light Rail Alternative (Phase 2)		
Intersection	Cross Street	CMP?	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C
1	Capitol Avenue	Yes	F	93.9	1.060	F	96.1	1.067	F	95.9	1.060	F	95.9	1.060
2	Story Road	Yes	F	120.6	1.154	F	123.1	1.167	F	156.9	1.217	F	156.9	1.217
3	Ocala Avenue	No	D	36.4	0.928	D	36.7	0.93	E+	43.2	1.000	E+	42.8	0.997
4	Cunningham Avenue	No	B	7.4	0.697	B	7.4	0.696	B	8.1	0.767	B	8.1	0.767
5	Tully Road	Yes	E-	57.5	0.850	E-	59.2	0.850	F	62.2	0.824	F	62.2	0.824
6	Eastridge Road	No	B	8.7	0.559	B	8.9	0.563	B	9.2	0.614	B	8.9	0.614
7	Quimby Road	Yes	F	62.2	0.850	F	64.2	0.851	F	65.5	0.882	F	65.5	0.882
8	Nieman Boulevard	No	B	8.4	0.499	B	8.5	0.501	B	8.4	0.499	B	7.5	0.534
9	Aborn Road	Yes	E	44.5	0.784	E+	43.6	0.778	E	44.5	0.784	E-	56.4	0.813
10	Silver Creek Road	Yes	F	272.5	1.486	F	268.0	1.479	F	272.5	1.486	F	336.7	1.558
11	McLaughlin Avenue	Yes	D	34.7	0.777	D	34.5	0.764	D	34.7	0.777	D	35.2	0.777
12	Senter Road	Yes	E+	43.1	0.708	E+	42.9	0.697	E+	43.1	0.708	E+	43.6	0.712
13	Snell Avenue	Yes	D	31.5	0.435	D	32.4	0.477	D	31.5	0.435	D	29.2	0.617
14	Vistapark Drive	No	D+	26.9	0.798	D+	27.4	0.810	D+	26.9	0.798	D+	26.3	0.798
15	Narvaez Avenue	Yes	D	36.0	0.622	D	36.4	0.633	D	36.0	0.622	D	35.4	0.628

Note: Shaded cells indicate significant impacts.

Source: Korve Engineering 2004b.

Table 4.2-18. Intersection Level of Service, Delay, and Volume-to-Capacity Ratio, 2025 AM

			No Project Alternative			Baseline Alternative			Light Rail Alternative (MOS)			Light Rail Alternative (Phase 2)		
Intersection	Cross Street	CMP?	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C
1	Capitol Avenue	Yes	D+	27.6	0.717	D+	27.5	0.707	D+	27.9	0.780	D+	27.9	0.780
2	Story Road	Yes	F	87.6	1.102	F	84.5	1.101	F	116.0	1.167	F	116.0	1.167
3	Ocala Avenue	No	D-	40.0	0.894	E+	40.5	0.897	E	47.2	0.956	E+	42.9	0.956
4	Cunningham Avenue	No	B	9.3	0.824	B	9.3	0.824	C+	18.0	0.908	C	18.0	0.908
5	Tully Road	Yes	E	52.9	1.052	E	52.2	1.049	F	70.9	1.120	F	70.8	1.120
6	Eastridge Road	No	B+	5.4	0.684	B+	5.4	0.684	B+	6.7	0.758	B+	6.4	0.758
7	Quimby Road	Yes	E-	57.2	0.973	E-	57.5	0.976	E-	57.2	0.973	F	75.3	1.034
8	Nieman Boulevard	No	A	3.5	0.433	A	3.5	0.430	A	3.5	0.433	A	3.2	0.474
9	Aborn Road	Yes	F	405.0	1.466	F	461.5	1.491	F	405.0	1.466	F	559.2	1.518
10	Silver Creek Road	Yes	F	368.1	1.600	F	371.4	1.597	F	368.1	1.600	F	435.1	1.666
11	McLaughlin Avenue	Yes	F	90.3	1.066	F	82.2	1.080	F	90.3	1.066	F	118.8	1.066
12	Senter Road	Yes	F	122.1	1.167	F	127.3	1.212	F	122.1	1.167	F	111.1	1.169
13	Snell Avenue	Yes	F	101.6	1.236	F	99.9	1.231	F	101.6	1.236	F	120.6	1.243
14	Vistapark Drive	No	C-	24.8	0.752	C-	24.8	0.752	C-	24.8	0.752	C-	24.7	0.752
15	Narvaez Avenue	Yes	D	28.4	0.728	D	28.0	0.724	D	28.4	0.728	D+	27.0	0.728

Note: Shaded cells indicate significant impacts.

Source: Korve Engineering 2004b.

Table 4.2-19. Intersection Level of Service, Delay, and Volume-to-Capacity Ratio, 2025 PM

			No Project Alternative			Baseline Alternative			Light Rail Alternative (MOS)			Light Rail Alternative (Phase 2)		
Intersection	Cross Street	CMP?	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C
1	Capitol Avenue	Yes	F	137.2	1.151	F	128.4	1.128	F	148.7	1.151	F	148.7	1.151
2	Story Road	Yes	F	169.2	1.272	F	150.3	1.238	F	231.2	1.339	F	231.2	1.339
3	Ocala Avenue	No	E	46.1	1.015	E+	43.5	0.996	E-	57.9	1.091	E-	57.0	1.088
4	Cunningham Avenue	No	B	7.8	0.764	B	7.5	0.736	B	9.2	0.841	B	9.2	0.841
5	Tully Road	Yes	F	90.4	0.979	F	79.8	0.957	F	107.9	1.009	F	107.8	1.007
6	Eastridge Road	No	B	9.8	0.632	B	9.5	0.613	B	10.5	0.732	B	10.2	0.725
7	Quimby Road	Yes	F	112.0	0.996	F	100.3	0.971	F	112.0	0.996	F	116.7	1.033
8	Nieman Boulevard	No	B	9.0	0.569	B	8.9	0.559	B	9.0	0.569	B	8.4	0.607
9	Aborn Road	Yes	F	117.2	0.966	F	108.0	0.951	F	117.2	0.966	F	158.1	0.998
10	Silver Creek Road	Yes	F	603.1	1.835	F	550.3	1.791	F	603.1	1.835	F	767.5	1.915
11	McLaughlin Avenue	Yes	D-	38.0	0.873	D-	37.1	0.854	D-	38.0	0.873	E+	40.3	0.873
12	Senter Road	Yes	E	46.8	0.796	E	46.6	0.764	E	46.8	0.796	E	49.6	0.796
13	Snell Avenue	Yes	D	35.4	0.828	D	35.0	0.824	D	35.4	0.828	D-	37.2	0.828
14	Vistapark Drive	No	D	33.3	0.908	D	31.8	0.886	D	33.3	0.908	D	33.1	0.908
15	Narvaez Avenue	Yes	D-	39.1	0.717	D-	38.9	0.704	D-	39.1	0.717	D-	38.1	0.717

Note: Shaded cells indicate significant impacts.
Source: Korve Engineering 2004b.

Environmental Consequences and Mitigation Measures of the Baseline Alternative (2010)

This analysis considers the effects of the bus service improvements that are included in the proposed Baseline Alternative as outlined in Chapter 3, *Alternatives Considered*. Anticipated adverse effects associated with the projects included in the approved 1996 Measure B Improvement Program are independent of the proposed alternatives and will be reviewed in their respective environmental compliance documents. Additionally, the potential cumulative effects of these projects are considered in Chapter 5, *Other CEQA Considerations*, of this document.

Transportation (TRN)-1: Traffic Impacts at the Capitol Expressway Intersections with Story Road and Senter Road

There would be adverse traffic effects at two intersections in the AM peak hour with the Baseline Alternative (Tables 4.2-16 and 4.2-17). These intersections are discussed below.

TRN-1a: Capitol Expressway/Story Road Intersection

The Capitol Expressway/Story Road intersection currently operates at LOS F. Under the Baseline Alternative in 2010, the delay value and V/C ratio for the intersection in the AM peak hour would exceed the thresholds for an intersection that already operates at LOS F, resulting in an adverse effect. Implementation of the following mitigation measure would minimize the adverse effect.

Mitigation Measure TRN-1a: Addition of a Third Southbound Left Turn Lane to Capitol Expressway at Story Road
A potential mitigation measure would be to add a third southbound left-turn lane on the expressway to eastbound Story Road. This would involve re-striping a lane to allow both through and left-turn movements.

TRN-1b: Capitol Expressway/Senter Road Intersection

The Capitol Expressway/Senter Road intersection currently operates at LOS F. Under the Baseline Alternative in 2010, the delay value and V/C ratio for the intersection in the AM peak hour would exceed the thresholds for an intersection that already operates at LOS F, resulting in an adverse effect. Implementation of the following mitigation measure would minimize the adverse effect.

Mitigation Measure TRN-1b: Addition of Left-Turn and Through Lanes on Capitol Expressway at Senter Road
Potential mitigation under the Baseline Alternative includes adding a second northbound and southbound left-turn lane and a second southbound through lane on Capitol Expressway. The southbound through lane would be separate of an exclusive right-turn lane. This is a programmed transportation improvement, and no additional mitigation is required or proposed under the Baseline Alternative.

Environmental Consequences and Mitigation Measures of the Light Rail Alternative (2010)

This analysis considers the effects of the Light Rail Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations,* of this document.

TRN-2: Traffic Impacts at Capitol Expressway Intersections with Story Road, Tully Road, Ocala Avenue, Aborn Road, Silver Creek Road and McLaughlin Avenue

There would be adverse traffic effects at six intersections in the AM and/or PM peak hours with the Light Rail Alternative (Tables 4.2-16 and 4.2-17). These intersections are discussed below.

TRN-2a: Capitol Expressway/Story Road Intersection

The Capitol Expressway/Story Road intersection currently operates at LOS F. Under the Light Rail Alternative MOS and Phase 2 in 2010, the delay value and V/C ratio for the intersection in the AM and PM peak hours would exceed the thresholds for an intersection that already operates at LOS F, resulting in adverse effects. Mitigation measures have been identified that would minimize these adverse effects on traffic; however, in implementing these mitigation measures, further adverse traffic and construction-related traffic impacts would occur.

A potential mitigation measure would be to replace the existing HOV lanes removed as part of the project. Because the existing HOV lanes would be removed to provide space for the light rail trackway, right-of-way would not be available for this mitigation and would need to be acquired from adjacent property. All four quadrants of the intersection would require right-of-way acquisitions that would result in displacements of commercial properties. Section 3.5.2 of Chapter 3, *Alternatives*, provides a discussion of these right-of-way acquisitions.

Another potential mitigation measure would grade-separate the traffic movements, with Capitol Expressway depressed and traveling under Story Road. To implement this mitigation, three to four residential properties on the northwest side and seven to ten residences on the southwest side of the intersection would be displaced. The frontage roads on the northeast and southeast sides of the intersection would also be acquired to provide sufficient right-of-way, further impacting business and residential access. Section 3.5.2 of Chapter 3, *Alternatives*, provides a discussion of these right-of-way acquisitions.

Because the implementation of these mitigation measures would result in adverse operation- and construction-related traffic effects for which no mitigation is feasible, these would be considered substantially adverse effects for which there is no feasible mitigation.

Mitigation: There is no feasible mitigation for these effects.

TRN-2b: Capitol Expressway/Ocala Avenue Intersection

The Capitol Expressway/Ocala Avenue intersection currently operates at LOS D. Under the Light Rail Alternative MOS and Phase 2 in 2010, the LOS for the intersection would decline to LOS E in the PM peak hour, resulting in an adverse effect. A mitigation measure has been identified that would minimize the adverse effects on traffic; however, in implementing this mitigation measure, further adverse traffic and construction-related traffic impacts would occur.

The potential mitigation measure would be to replace the existing HOV lanes removed as part of the project. Because the existing HOV lanes would be removed to provide space for the light rail trackway, right-of-way would not be available for this mitigation and would need to be acquired from adjacent property. All four quadrants of the intersection would require right-of-way acquisitions that would result in displacements of residential and industrial properties. Section 3.5.2 of Chapter 3, *Alternatives*, provides a discussion of these right-of-way acquisitions.

Because the implementation of this mitigation measure would result in adverse traffic and construction-related traffic impacts for which no mitigation is feasible, this would be considered a substantially adverse effect for which there is no feasible mitigation.

Mitigation: There is no feasible mitigation for this effect.

TRN-2c: Capitol Expressway/Tully Road Intersection

The Capitol Expressway/Tully Road intersection currently operates at LOS D in the AM peak hour and at LOS F in the PM peak hour. Under the Light Rail Alternative MOS and Phase 2 in 2010, the LOS for the intersection would decline to LOS E in the AM peak hour, resulting in an adverse effect. In the PM peak hour, the delay value and V/C ratio for the intersection would exceed thresholds for an intersection that already operates at LOS F, resulting in an adverse effect. Implementation of the following mitigation measure would minimize these adverse effects.

Mitigation Measure TRN-2c: Maintain HOV Lane on Capitol Expressway as an HOV Bypass Lane
Because light rail would be located on the west side of Capitol Expressway through the Tully Road intersection, sufficient width would be available to maintain the fourth through lane on Capitol Expressway in the vicinity of Tully Road as an HOV bypass lane. This lane will need to be placed north of Tully Road under the Light Rail Alternative MOS and south of Tully Road under the Light Rail Alternative Phase 2.

TRN-2d: Capitol Expressway/Aborn Road Intersection

The Capitol Expressway/Aborn Road intersection currently operates at LOS F in the AM peak hour and LOS E in the PM peak hour. Under the Light Rail Alternative Phase 2 in 2010, the delay value and V/C ratio for the intersection in the AM peak hour would exceed the thresholds for an intersection that already operates at LOS F, resulting in an adverse effect. In the PM peak hour, the delay value and V/C ratio for the intersection would exceed the thresholds for an intersection that already operates at LOS E, resulting in an adverse effect. Implementation of the following mitigation measure would minimize these adverse effects.

Mitigation Measure TRN-2d: Addition of a Third Left-Turn Lane to Aborn Road at Capitol Expressway
A potential mitigation measure would be a third left-turn lane from northbound Aborn Road to westbound Capitol Expressway (does not require additional right-of-way). This mitigation measure was proposed in the *Comprehensive County Expressway Planning Study* and would be included as mitigation for the Light Rail Alternative because no additional right-of-way is required.

TRN-2e: Capitol Expressway/Silver Creek Road Intersection

The Capitol Expressway/Silver Creek Road intersection currently operates at LOS F. Under the Light Rail Alternative MOS in 2010, the delay value and V/C ratio for the intersection in the AM and PM peak hours would exceed the thresholds for an intersection already operating at LOS F, resulting in adverse effects. Implementation of the following mitigation measure would minimize these adverse effects.

Mitigation Measure TRN-2e: Construct Interchange at Silver Creek Road

A potential mitigation measure is an interchange for traffic movements between Silver Creek Road and Capitol Expressway. This mitigation was proposed in the County's *Capitol Expressway Planning Study*. An interchange for the traffic movements would need to be planned and designed in conjunction with grade separation of the light rail trackway so that both would be accommodated.

TRN-2f: Capitol Expressway/McLaughlin Avenue Intersection

The Capitol Expressway/McLaughlin Road intersection currently operates at LOS E. Under the Light Rail Alternative MOS in 2010, the LOS for the intersection in the AM peak hour would decline to LOS F, resulting in an adverse effect. Implementation of the following mitigation measure would minimize this adverse effect.

Mitigation Measure TRN-2f: Change Intersection Approaches at McLaughlin Avenue

The City will be providing a programmed improvement to change the McLaughlin Avenue approaches to remove the split phasing to provide two left-turn lanes, two through lanes, and a right-turn lane on both approaches to McLaughlin Avenue. This improvement alone would mitigate the adverse effect. However, the *Comprehensive County Expressway Planning Study*, which is currently underway, further recommends a third southbound left-turn lane from McLaughlin Avenue to Capitol Expressway. The addition of this lane, while improving the intersection operation, is not necessary to mitigate the adverse effect.

TRN-3: Changes to Roadway Access and Diversion

The Light Rail Alternative will not impede any access currently offered from Capitol Expressway. All intersection movements possible before construction will be possible after the Light Rail Alternative is implemented. This alternative does, however, modify access along Capitol Avenue. Between Wilbur Avenue and Capitol Expressway, Westboro Drive (east of Capitol Avenue) and Lombard Avenue (west of Capitol Avenue) will be converted to right in/out only because of the construction of the light rail trackway. Westboro Drive has alternative access from within the neighborhood that motorists on southbound Capitol Avenue can access from Wilbur Avenue. Lombard Avenue, conversely, does not have alternative access. Northbound motorists on Capitol Avenue would require a U-turn at Wilbur Avenue to backtrack to Lombard Avenue. Another minor change in local circulation occurs near the Capitol Expressway/Story Road intersection. In the southeast quadrant of the Capitol Expressway/Story Road intersection, Kollmar Drive will be "cul-de-saced" and will no longer connect to Capitol Avenue. Property fronting on Kollmar Drive will continue to use it for access and will circulate back to Story Road. Traffic on Capitol Avenue that turned onto Kollmar Drive will have to use Sussex Drive to McGinness Avenue to reach Story Road. There is no adverse effect.

Mitigation: No mitigation is required.

TRN-4: On-Street Parking Loss

Currently, no parking is permitted on Capitol Avenue between Wilbur Avenue and Capitol Expressway, or on Capitol Expressway. This condition would not change under the Light Rail Alternative. On-street parking would continue to be available on side streets, which should accommodate this demand.

This alternative would reconfigure the frontage roads on the west side of Capitol Expressway from Excalibur Drive to north of Story Road and on the east side from Mervyns Way to just north of Ocala Avenue. The frontage roads would be narrowed, and parking would be allowed only on one side. Based on current demand, sufficient parking would remain on the frontage roads with one exception; between Kollmar Drive and Sussex Drive, on the east side of Capitol Expressway, all parking would be removed. The 15 on-street parking spaces would be displaced to adjacent streets where sufficient excess parking exists, although it may be less convenient for residents. There is no adverse effect.

Mitigation: No mitigation is required.

TRN-5: Changes to Park-and-Ride Lot Demand and Capacity

Table 4.2-13 lists the estimated peak park-and-ride demand and capacity being provided under the Light Rail Alternative. The two existing park-and-ride lots at Alum Rock and SR 87 (Capitol) have excess existing capacity that can accommodate the demand associated with the Light Rail Alternative. The Ocala Avenue Station and Eastridge Transit Center essentially function as one area to serve park-and-ride needs. Park-and-ride facilities at the Ocala Avenue Station and Eastridge Transit Center, or just at the Eastridge Transit Center, can accommodate the lower end of the range of project demand, but at some point in the future demand may exceed supply. This would result in an adverse effect. The demand at the Monterey Highway Station can be accommodated at one or a combination of the park-and-ride location options being considered.

Mitigation Measure TRN-5: Supply Additional Parking Warranted by Demand

VTA will monitor the park-and-ride demand at the Eastridge Transit Center. When demand exceeds supply on a consistent basis, VTA will provide additional parking spaces by acquiring additional property, constructing parking structures, or other arrangements at the Eastridge Shopping Center.

TRN-6: Changes to Pedestrian and Bicycle Facilities

The streetscape concept is designed to transform Capitol Expressway from a limited access expressway to a multimodal parkway boulevard. The multi-use path, approximately 10 feet wide, would include pedestrian- and bicycle-friendly features and 6 feet of landscaping. Pedestrian sidewalks would be provided for almost the entire length of the alignment. In addition, the curb lanes on both sides of Capitol Expressway will be approximately 17–18 feet wide to allow use of the shoulders by bicyclists. Although no pedestrian or bicycle improvements are planned beyond the project limits, pedestrian access across the corridor would be facilitated by crosswalk striping, pedestrian signals, and pedestrian overcrossings at Story Road, Silver Creek Road, and Senter Road that would be compliant with the Americans with Disabilities Act of 1990. Therefore, the Light Rail Alternative would provide a substantial enhancement to existing pedestrian and bicycle facilities. There is no adverse effect.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the No-Project Alternative (2025)

This analysis considers the effects of the No-Project Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations,* of this document.

The No-Project Alternative would result in no adverse traffic impacts. Planned projects included in the No-Project Alternative would be evaluated in separate environmental analyses to identify impacts and determine mitigation measures.

Environmental Consequences and Mitigation Measures of the Baseline Alternative (2025)

This analysis considers the effects of the bus service improvements that are included in the proposed Baseline Alternative as outlined in Chapter 3, *Alternatives Considered*. Anticipated adverse effects associated with the projects included in the approved 1996 Measure B Improvement Program are independent of the proposed alternatives and are reviewed in their respective environmental compliance documents. Additionally, the potential cumulative effects of these projects are considered in Chapter 5, *Other CEQA Considerations*, of this document.

TRN-7: Traffic Impacts at the Capitol Expressway Intersections with Ocala Avenue, Aborn Road, and Senter Road

There would be adverse traffic effects at three intersections in the AM peak hour under the Baseline Alternative (Table 4.2-18). These intersections are discussed below.

TRN-7a: Capitol Expressway/Ocala Avenue Intersection

The Capitol Expressway/Ocala Avenue intersection currently operates at LOS D. Under the Baseline Alternative in 2025, the LOS for the intersection in the AM peak hour would decline to LOS E, resulting in an adverse effect. Implementation of the following mitigation measure would minimize this adverse effect.

Mitigation Measure TRN-7a: Signal Modifications to the Capitol Expressway/Ocala Avenue Intersection

A potential mitigation measure for the Baseline Alternative would be to provide an overlap phase for the westbound right turn with the southbound left turn, prohibiting U-turns for the southbound left turn. This involves a signal modification.

TRN-7b: Capitol Expressway/Aborn Road Intersection

The Capitol Expressway/Aborn Road intersection currently operates at LOS F. Under the Baseline Alternative in 2025, the delay value and V/C ratio for the intersection in the AM peak hour would exceed the thresholds for an intersection that already operates at LOS F, resulting in an adverse effect. Implementation of the following mitigation measure would minimize the adverse effect.

Mitigation Measure TRN-7b: Addition of a Third Left-Turn Lane from Aborn Road to Capitol Expressway

Mitigation for this effect would be to add a third left-turn lane from northbound Aborn Road to westbound Capitol Expressway. Although this mitigation measure is included in the *Comprehensive County Expressway Planning Study,* it is not a programmed improvement. Because the addition of the third left-turn lane requires no additional right-of-way, this mitigation measure would be implemented by the project.

TRN-7c: Capitol Expressway/Senter Road Intersection

The Capitol Expressway/Senter Road intersection currently operates at LOS F. Under the Baseline Alternative in 2025, the delay value and V/C ratio for the intersection in the AM peak hour would exceed the thresholds for an intersection that already operates at LOS F, resulting in an adverse effect. Implementation of the following mitigation measure would minimize this adverse effect.

Mitigation Measure TRN-1b: Addition of Left-Turn and Through Lanes on Capitol Expressway at Senter Road
Potential mitigation under the Baseline Alternative includes adding a second northbound and southbound left-turn lane and a southbound through lane separate from an exclusive right-turn lane. These are programmed improvements that will be implemented by the City and will reduce the adverse effect; therefore, no further mitigation is required. The *Comprehensive County Expressway Planning Study* further recommends a third southbound left-turn lane from Senter to Capitol; however, this is not needed to mitigate the adverse effect.

Environmental Consequences and Mitigation Measures of the Light Rail Alternative (2025)

This analysis considers the effects of the Light Rail Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

TRN-8: Traffic Impacts at the Capitol Expressway Intersection with Capitol Avenue, Story Road, Ocala Avenue, Tully Road, Quimby Road, Aborn Road, Silver Creek Road, and McLaughlin Avenue

Traffic impacts would result at eight intersections with the Light Rail Alternative in 2025 (Tables 4.2-18 and 4.2-19).

TRN-8a: Capitol Expressway/Capitol Avenue Intersection

The Capitol Expressway/Capitol Avenue intersection currently operates at LOS F. Under the Light Rail Alternative MOS and Phase 2 in 2025, the delay value and V/C ratio for the intersection in the PM peak hour would exceed the thresholds for an intersection that already operates at LOS F, resulting in an adverse effect. Implementation of the following mitigation measure would minimize this adverse effect.

Mitigation Measure TRN-8a: Addition of Shared Left-Turn and Through Lane on Capitol Avenue at Capitol Expressway
Potential mitigation under the Light Rail Alternative would be to add a third left-turn lane shared with the through lane from Capitol Avenue onto southbound

Capitol Expressway. This improvement is consistent with the recommendation of the *Comprehensive County Expressway Planning Study* and will reduce the adverse effect. This improvement can be made with traffic signing and pavement marking changes, and does not require additional right-of-way.

TRN-8b: Capitol Expressway/Story Road Intersection

The Capitol Expressway/Story Road intersection currently operates at LOS F. Under the Light Rail Alternative MOS and Phase 2 in 2025, the delay value and V/C ratio for the intersection for the PM peak hour would exceed the thresholds for an intersection that already operates at LOS F, resulting in an adverse effect. Mitigation measures have been identified that would minimize the adverse effects on traffic; however, in implementing these mitigation measures, further adverse traffic and construction-related traffic impacts would occur.

A potential mitigation measure would be to replace the existing HOV lanes removed as part of the project. Because the existing HOV lanes would be removed to provide space for the light rail trackway, right-of-way would not be available for this mitigation and would need to be acquired from adjacent property. All four quadrants of the intersection would require right-of-way acquisitions that would result in displacements of commercial properties. Section 3.5.2 of Chapter 3, *Alternatives,* provides a discussion of these right-of-way acquisitions.

Another potential mitigation measure would grade-separate the traffic movements, with Capitol Expressway depressed and traveling under Story Road. To implement this mitigation, three to four residential properties on the northwest side of the intersection and seven to ten residences on the southwest side of the intersection would be displaced. The frontage roads on the northeast and southeast sides of the intersection would also be required to provide sufficient right-of-way, further impacting business and residential access. Section 3.5.2 of Chapter 3, *Alternatives,* provides a discussion of these right-of-way acquisitions.

Because the implementation of these mitigation measures would result in adverse traffic and construction-related traffic impacts for which no mitigation is feasible, these would be considered substantially adverse effects for which there is no feasible mitigation.

Mitigation: There is no feasible mitigation for these effects.

TRN-8c: Capitol Expressway/Ocala Avenue Intersection

The Capitol Expressway/Ocala Avenue intersection currently operates at LOS D. Under the Light Rail Alternative MOS and Phase 2 in 2025, the LOS for the intersection in the AM peak hour would decline to LOS E, resulting in an adverse effect. In the PM peak hour, the delay value and V/C ratio for the intersection would exceed the thresholds for an intersection that already operates at LOS E, resulting in an adverse effect. A mitigation measure has been identified that would minimize the adverse effects on traffic; however, in implementing this mitigation measure, further adverse traffic and construction-related traffic impacts would occur.

The potential mitigation measure would be to replace the existing HOV lanes removed as part of the project. Because the existing HOV lanes would be removed to provide space for the light rail trackway, right-of-way would not be available for this mitigation and would need to be acquired from adjacent property. All four quadrants of the intersection would require right-of-way acquisitions that would result in displacements of residential and industrial properties. Section 3.5.2 of Chapter 3, *Alternatives,* provides a discussion of these right-of-way acquisitions.

Because the implementation of this mitigation measure would result in adverse traffic and construction-related traffic impacts for which no mitigation is feasible, this would be considered a substantially adverse effect for which there is no feasible mitigation.

Mitigation: There is no feasible mitigation for this effect.

TRN-8d: Capitol Expressway/Tully Road Intersection

The Capitol Expressway/Tully Road intersection currently operates at LOS E. Under the Light Rail Alternative MOS and Phase 2 in 2025, the LOS for the intersection in the AM peak hour would decline to LOS F, resulting in an adverse effect. In the PM peak hour, the delay value and V/C ratio for the intersection would exceed the thresholds for an intersection that already operates at LOS E, resulting in an adverse effect. Implementation of the following mitigation measure would minimize these adverse effects.

Mitigation Measure TRN-2c: Maintain HOV Lane on Capitol Expressway as an HOV Bypass Lane (see previous text)

TRN-8e: Capitol Expressway/Quimby Road Intersection

The Capitol Expressway/Quimby Road intersection currently operates at LOS E in the AM peak hour and LOS F in the PM peak hour. Under the Light Rail Alternative Phase 2 in 2025, the LOS for the intersection in the AM peak hour would decline to LOS F, resulting in an adverse effect. In the PM peak hour, the delay value and V/C ratio for the intersection would exceed the thresholds for an intersection that already operates at LOS F, resulting in an adverse effect. A mitigation measure has been identified that would minimize the adverse effects on traffic; however, in implementing this mitigation measure, further adverse traffic and construction-related traffic impacts would occur.

A potential mitigation measure would be to replace the existing HOV lanes removed as part of the project. Because the existing HOV lanes would be removed to provide space for the light rail trackway, right-of-way would not be available for this mitigation and would need to be acquired from adjacent property. All four quadrants of the intersection would require right-of-way acquisitions that would result in displacements of commercial properties. Section 3.5.2 of Chapter 3, *Alternatives*, provides a discussion of these right-of-way acquisitions.

Because the implementation of this mitigation measure would result in adverse traffic and construction-related traffic impacts for which no mitigation is feasible, this would be considered a substantially adverse effect for which there is no feasible mitigation.

Mitigation: There is no feasible mitigation for this effect.

TRN-8f: Capitol Expressway/Aborn Road Intersection

The Capitol Expressway/Aborn Road intersection currently operates at LOS F. Under the Light Rail Alternative Phase 2 in 2025, the delay value and V/C ratio for the intersection for the AM and PM peak hour would exceed the thresholds for an intersection that already operates at LOS F, resulting in adverse effects. Implementation of the following mitigation measure would minimize these adverse effects.

Mitigation Measure TRN-8f: Addition of Third Left-Turn Lane on Aborn Road at Capitol Expressway

A potential mitigation measure for the Light Rail Alternative to SR 87 would also be the addition of a third left-turn lane on northbound Aborn Road to westbound Capitol Expressway (does not require additional right-of-way) that is part of the *Capitol Expressway Planning Study*.

TRN-8g: Capitol Expressway/Silver Creek Road Intersection

The Capitol Expressway/Silver Creek Road intersection currently operates at LOS F. Under the Light Rail Alternative Phase 2 in 2025, the delay value and V/C ratio for the intersection in the AM and PM peak hours would exceed the thresholds for an intersection that already operates at LOS F, resulting in adverse effects. Implementation of the following mitigation measure would minimize these adverse effects.

Mitigation Measure TRN-2e: Construct Interchange at Silver Creek Road (see previous text)

TRN-8h: Capitol Expressway/McLaughlin Avenue Intersection

The Capitol Expressway/McLaughlin Road intersection currently operates at LOS D. Under the Light Rail Alternative in 2025, the LOS for the intersection in the PM peak hour would decline to LOS E, resulting in an adverse effect. Implementation of the following mitigation measure would minimize this adverse effect.

Mitigation Measure TRN-2f: Change Intersection Approaches at McLaughlin Avenue (see previous text)

TRN-9: Changes to Roadway Access and Diversion

See TRN-3 discussion above.

TRN-10: On-Street Parking Loss

See TRN-4 discussion above.

TRN-11: Changes to Park-and-Ride Lot Demand and Capacity

See TRN-5 discussion above.

TRN-12: Changes to Pedestrian and Bicycle Facilities

See TRN-7 discussion above.

Proposed Options

As described in Chapter 3.0, *Alternatives Considered*, the Light Rail Alternative includes station, segment, park-and-ride and light rail vehicle storage location options. The station options include at-grade, aerial and depressed open air station designs. Several platform configurations are also being explored including side platforms, single center platforms, offset platforms and a platform on the west side of the expressway. With the exception of the Capitol Avenue to Capitol Expressway transition, the Eastridge Transit Center segment, the side-running option between Eastridge and Nieman Boulevard, and the U.S. 101 crossing, the light rail alignment would remain within the median at-grade, on an aerial structure above the corridor, or in a tunnel. These options could adversely affect transportation. The effects on transportation discussed above could result depending upon the alignment options or station designs selected.

South of Eastridge Transit Center Side-Running/Tunnel at Nieman Boulevard and Side-Running At-Grade/Aerial Options

Two of the design options being considered at this location would maintain light rail side-running from Eastridge and continue along the eastern boundary of the Arcadia property before it would transition back into the median of the expressway. The Arcadia property is currently a vacant 89-acre parcel located approximately 1,300 feet south of Quimby Road on the west side of Capitol Expressway.

The crossing of Eastridge Road and Quimby Road at grade would affect traffic operations. These crossings would need to be gated and, when light rail proceeds, the signals would be pre-empted to clear any automobiles on the tracks. This would interrupt the signal progression along Capitol Expressway, and because of the frequency of light rail movements, returning to progressive traffic movements after light rail vehicles had passed would be unlikely. With light rail operating on 10-minute headways, a train will disrupt every other cycle. Because it would take up to two signal cycles to return to progression, side-running operations would prevent signal progression for this portion of the corridor. Therefore, this option would result in an adverse traffic effect.

South of Eastridge Transit Center Side-Running/Cut and Cover Tunnel Option

An alternative design option is an open-cut trench carrying light rail under the Eastridge Loop and Quimby Road, This option would not require gates, and no signal pre-emption would be necessary. Therefore, adverse traffic effects would not occur at the Eastridge Loop and Quimby Road.

Aerial Crossing at Aborn Road with Median and Side-Running Options

The Light Rail Alternative includes at-grade operations through the Aborn Road intersection under which delay would increase but the V/C ratio would not increase to a level considered adverse. Two design options being considered (one with a median alignment and one with a side-running alignment) would grade-separate the light rail corridor at Aborn Road. A benefit of these grade separation options would be to eliminate any increase in delay. Refer to Sections 4.14, *Noise and Vibration*, and 4.18, *Visual Quality*, regarding adverse effects in those topical areas for this aerial option.

Aerial Crossing of U.S. Highway 101 Option

The Light Rail Alternative includes at-grade operations through the McLaughlin Avenue intersection. Delay would be increased, particularly in the PM peak hour. This would result in an adverse effect. The design option being considered would grade-separate the light rail alignment on a separate light rail bridge over U.S. 101 north of the existing Capitol Expressway interchange and continuing through the Capitol Expressway/McLaughlin Avenue intersection. The grade separation would eliminate any increase in delay. Refer to Sections 4.14, *Noise and Vibration*, and 4.18, *Visual Quality*, regarding adverse effects in those topical areas.

Section 4.3
Air Quality

4.3.1 Introduction

This section describes the environmental setting and effects of the alternatives analyzed in this EIR with regard to air quality. Specifically, this section discusses existing air quality conditions within the Capitol Expressway Corridor and describes applicable regulations pertaining to air quality. The assessment of substantial adverse effects and mitigation measures of the alternatives related to air quality are also described. Additional information on carbon monoxide modeling can be found in Appendix D to this document.

4.3.2 Existing Conditions

Environmental Setting

Air quality conditions in a given area are characterized by the concentrations of various pollutants in that area. The concentration of a given pollutant in the atmosphere is determined by the amount of the pollutant released and the atmosphere's ability to transport and dilute it. Air pollution transport and dilution are mostly determined by wind, atmospheric stability, terrain, and insolation (solar energy). Information on these factors as they relate to Santa Clara County is available on the Bay Area Air Quality Management District (BAAQMD) web site (n.d.).

Climate and Topography

Santa Clara Valley is bounded by San Francisco Bay to the north and by mountains to the east, south, and west. Temperatures are warm on summer days and cool on summer nights; winter temperatures are fairly mild. At the northern end of the valley, mean maximum temperatures are in the low 80s°F in summer and the high 50s°F in winter, and mean minimum temperatures from the high 50s°F in summer to the low 40s°F in winter. Farther inland, where the moderating effect of the bay is not as strong, temperature extremes are greater. For example, in San Martin, located 27 miles south of SJIA, temperatures can be more than 10°F warmer on summer afternoons and more than 10°F cooler on winter nights.

Regional Attainment Status

Air pollutant concentrations in various regions called air basins are monitored at stations throughout the state. The state is divided into 15 air basins characterized by similar meteorological and geographic conditions. Measured air pollutant concentrations are compared to federal and state standards to determine the attainment status of particular air basins. Attainment status is a classification of regional air quality.

The federal and state governments—specifically, the U.S. Environmental Protection Agency (EPA) and California Air Resources Board (CARB)—each establish ambient air quality standards for several criteria pollutants. These are referred to as the national ambient air quality standards (NAAQS) and California ambient air quality standards (CAAQS), respectively. The current standards are listed in Table 4.3-1. Most of the standards have been set to protect public health, although some are based on other values (e.g., protection of crops, protection of materials, or avoidance of nuisance conditions). For some pollutants, separate standards have been set for different periods of time (averaging times).

Table 4.3-1. Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Standard	State Standard
Ozone	8 hours	0.08 ppm	—
	1 hour	0.12 ppm (235µg/m^3)	0.09 ppm (180 µg/m^3)
Carbon Monoxide	8 hours	9.0 ppm (10 mg/m^3)	9.0 ppm (10 mg/m^3)
	1 hour	35 ppm(40 mg/m^3)	20 ppm (23 mg/m^3)
Nitrogen Dioxide	Annual average	0.053 ppm (100 µg/m^3)	—
	1 hour	—	0.25 ppm (470 µg/m^3)
Sulfur Dioxide	Annual average	80 µg/m^3 (0.03 ppm)	—
	24 hours	365 µg/m^3 (0.14 ppm)	0.04 ppm (105 µg/m^3)
	1 hour	—	0.25 ppm (655 µg/m^3)
Particulate Matter (PM10)	Annual arithmetic mean	50 µg/m^3	—
	Annual geometric mean	—	20 µg/m^3
	24 hours	150 µg/m^3	50 µg/m^3
Particulate Matter—Fine (PM2.5)	Annual arithmetic mean	15 µg/m^3	12 µg/m^3
	24 hours	65 µg/m^3	—
Sulfates	24 hours	—	24 µg/m^3
Lead	Calendar quarter	1.5 µg/m^3	—
	30-day average	—	1.5 µg/m^3
Hydrogen Sulfide	1 hour	—	0.03 ppm (42 µg/m^3)
Vinyl Chloride (Chloroethene)	24 hours	—	0.010 ppm (26 µg/m^3)
Visibility-Reducing Particles	8 hours (1000–1800 PST)	—	*

Notes: ppm = parts per million
mg/m^3 = milligrams per cubic meter
µg/m^3 = micrograms per cubic meter

* Statewide VRP standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70%. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

When an air basin exceeds the federal or state standard for a given pollutant more times than allowed under the established violation criteria, it is generally designated as a nonattainment area for that pollutant by EPA or CARB. A nonattainment classification may be used to specify what air pollution reduction measures an area must adopt and when the area must reach attainment. Areas designated as nonattainment areas that subsequently achieve attainment of federal or state standards must develop and implement plans as necessary to maintain their attainment status. Such areas are referred to as "maintenance areas."

The Capitol Expressway Corridor is located within the San Francisco Bay Area Air Basin (SFBAAB), which functions as the study area for this air quality analysis. The SFBAAB includes all of San Francisco, San Mateo, Santa Clara, Alameda, Contra Costa, Marin, and Napa Counties, and parts of Sonoma and Solano Counties. The State of California has designated the area as a nonattainment area for ozone and particulate matter less than or equal to 10 microns in diameter (PM10), and an attainment area for carbon monoxide (CO). The US EPA has designated the area as being a subpart 2/marginal nonattainment area for 1-hour ozone, not-classified/moderate under 23 USC Sec. 104 (b)(2) area for 8-hour ozone, unclassified area for PM10, and unclassified/attainment area for CO.

Existing Pollutant Concentrations in the Capitol Expressway Corridor

The air pollutants of greatest concern in the Capitol Expressway Corridor include CO, ozone, and PM10. A mildly toxic pollutant, CO interferes with oxygen transport to body tissues. The primary effects of ozone (a component of photochemical smog) include reductions in plant growth and crop yield, chemical deterioration of various materials, irritation of the respiratory system, and eye irritation. PM10 can result in a wide range of effects, including reduced visibility, respiratory irritation, corrosion of structures and materials, and soiling of materials and related economic concerns.

Information on existing air quality conditions in the Capitol Expressway Corridor was based on data collected by BAAQMD at the 4th Street monitoring station in San Jose (California Air Resources Board 2002). The data collected is summarized below and in Table 4.3-2, and the pollutants are described below. Concentrations are typically expressed in terms of parts per million (ppm) or micrograms per cubic meter (μg/m^3).

Table 4.3-2. Ambient Air Quality Monitoring Data from San Jose 4th Street Monitoring Station

Pollutant Standards	1999	2000	2001
Ozone			
Maximum 1-hour concentration (ppm)	0.109	0.073	0.105
Days Standard Exceeded			
NAAQS (1-hour) > 0.12 ppm	0	0	0
CAAQS (1-hour) > 0.09 ppm	3	0	2
Maximum 8-hour concentration (ppm)	0.084	0.061	0.074
Days Standard Exceeded			
NAAQS (1-hour) > 0.08 ppm	0	0	0
Carbon Monoxide			
Maximum 8-hour concentration (ppm)	6.3	7.0	5.1
Maximum 1-hour concentration (ppm)	9.0	8.9	7.6
Days standard exceeded			
NAAQS (8-hour) ≥ 9.0 ppm	0	0	0
NAAQS (1-hour) ≥ 35 ppm	0	0	0
CAAQS (8-hour) ≥ 9.0 ppm	0	0	0
CAAQS (1-hour) ≥ 20 ppm	0	0	0
Particulate Matter (PM10)			
Maximum 24-hour concentration ($\mu g/m^3$)	114.4	76.1	76.7
Second-highest 24-hour concentration ($\mu g/m^3$)	63.7	67.8	70.8
Average arithmetic mean concentration ($\mu g/m^3$)	28	26	28
Average geometric mean concentration ($\mu g/m^3$)	25	23	25
Days standard exceeded			
NAAQS (24-hour) > 150 $\mu g/m^3$*	0	0	0
CAAQS (24-hour) > 50 $\mu g/m^3$*	5	7	4
Particulate Matter—Fine (PM2.5)			
Maximum 24-hour concentration ($\mu g/m^3$)	70.0	64.2	63.3
Second-highest 24-hour concentration ($\mu g/m^3$)	69.3	63.4	62.5
Average concentration ($\mu g/m^3$)	12.3	13.6	12.4
Days standard exceeded			
NAAQS (24-hour) > 65 $\mu g/m^3$	2	0	0
NAAQS (annual) > 15 $\mu g/m^3$	No	No	No
CAAQS (annual) > 12 $\mu g/m^3$	Yes	Yes	Yes

* Recorded every 6 days.

Sources: California Air Resources Board 2002; U.S. Environmental Protection Agency 2003.

Ozone

Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections—it is a severe eye, nose, and throat irritant. Ozone can cause substantial damage to vegetation and other materials; plants exposed to ozone can experience leaf discoloration and cell damage. Ozone also attacks synthetic rubber, textiles, plants, and other materials.

Ozone is not emitted directly into the air, but is formed by a photochemical reaction in the atmosphere. Ozone precursors, which include reactive organic gases (ROG) and oxides of nitrogen (NO_X), react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. ROG and NO_X are emitted by mobile sources and by stationary combustion equipment.

The monitoring station recorded five violations of the state ozone standard during the 3 most recent years for which data are available (1999–2001) (Table 4.3-2).

Carbon Monoxide

CO is essentially inert to plants and materials but can have significant effects on human health. CO is a public health concern because it combines readily with hemoglobin and thus reduces the amount of oxygen transported in the bloodstream. Effects on humans range from slight headaches to nausea to death.

Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

The monitoring station recorded no violations of the state CO standard during the 3 most recent years for which data are available (1999–2001) (Table 4.3-2).

Particulate Matter

Health concerns associated with suspended particulate matter focus on particles small enough to reach the lungs when inhaled. Particulates can damage human health and retard plant growth. Particulates also reduce visibility, soil buildings and other materials, and corrode materials.

Emissions of PM10 are generated by a wide variety of sources, including agricultural activities, industrial emissions, dust suspended by vehicle traffic, and secondary aerosols formed by reactions in the atmosphere. Emissions of particulate matter less than or equal to 2.5 microns in diameter (PM2.5), also called fine particulate matter, are generated primarily by combustion sources, including stationary and mobile sources, and by formation of secondary aerosols by reactions in the atmosphere. PM2.5 is a particular concern because it can reach deep into the lungs when inhaled.

The monitoring station recorded 16 violations of the state PM10 standard during the 3 most recent years for which data are available (1999–2001) (Table 4.3-2). PM2.5 monitoring in San Jose began in 1999. The monitoring station recorded no violations of the federal annual or 24-hour PM2.5 standards for 1999–2001; however, the state annual PM2.5 standard, enacted in June 2002, would have been exceeded in all 3 years.

Sensitive Receptors

The primary land use in the Capitol Expressway Corridor is residential. Residential land uses along the Capitol Expressway Corridor are at various densities and are separated from Capitol Expressway by soundwalls or frontage roads. Various other land uses exist along the Capitol Expressway Corridor, including industrial, commercial, and public uses, as well as vacant scattered lots. Commercial uses are generally found at the major intersections along the Capitol Expressway Corridor.

Regulatory Setting

Air Quality Legislation

Air quality regulation is controlled primarily by the federal Clean Air Act (CAA) and California Air Pollution Control Laws in the Health and Safety Code. The federal CAA was originally enacted in the 1970s; the CAA Amendments of 1990 represented a substantial update of the act. The California Air Pollution Control Laws are amended almost every year and include a significant set of air quality planning requirements, called the California Clean Air Act (California CAA), enacted in 1988.

Agency Roles and Responsibilities

At the federal level, EPA has authority to require states to reduce emissions of CO, ozone precursors, and PM10 in nonattainment areas. Recent federal and state standards have been established for PM2.5. EPA must also approve state implementation plans (SIPs) submitted by CARB. At the state level, CARB has traditionally established CAAQS, maintained oversight authority in air quality planning, developed programs for reducing emissions from motor vehicles, developed air emission inventories, collected air quality and meteorological data, and approved locally adopted state implementation plans for submission to EPA. At a regional level, California's air districts are responsible for planning to attain federal and state air quality standards, overseeing stationary source emissions, approving permits, maintaining emissions inventories, maintaining air quality stations, overseeing agricultural and forestry burn permits, and reviewing air quality–related sections of environmental documents required under CEQA.

BAAQMD is responsible for administering federal, state, and local air quality regulations in the Capitol Expressway Corridor and vicinity.

Federal and State Air Quality Management Programs

Air pollution control programs were established in California before the enactment of federal requirements. Federal CAA legislation in the 1970s resulted in a gradual merging of state and federal air quality programs, particularly those relating to industrial sources. Air quality management programs developed since the late 1980s have generally been responding to requirements established by the federal CAA. Enactment of the California CAA in 1988 and the federal CAA Amendments of 1990 has produced additional changes in the structure and administration of air quality management programs.

The California CAA requires the air district with jurisdiction to prepare an air quality attainment plan for any air basin that violates CAAQS for CO, SO_2, NO_2, or ozone. Locally prepared attainment plans are not required by state law for areas that violate the CAAQS for PM10. Hence, an attainment plan for the SFBAAB is not required even though the basin is classified as a nonattainment area for that state PM10 standard. Local PM10 issues, which result primarily from construction dust, are addressed by BAAQMD through a list of construction-related mitigation measures described in its CEQA guidelines (Bay Area Air Quality Management District 1999). All applicable measures from that list must be incorporated into the design of construction projects that occur within BAAQMD jurisdiction. PM10 attainment issues are addressed by CARB. Air pollution problems in the SFBAAB are primarily the result of locally generated emissions. The SFBAAB, however, has been identified as a source of ozone precursor emissions that occasionally contribute to air quality problems in the Monterey Bay area, northern San Joaquin Valley, and southern Sacramento Valley. Consequently, in addition to correcting local air pollution problems, air quality planning efforts for the SFBAAB must also reduce the area's impact on downwind air basins.

BAAQMD has prepared both state and federal air quality plans to bring the SFBAAB into attainment with ozone standards. The 2000 Clean Air Plan (2000 CAP), adopted by BAAQMD on December 20, 2000, addresses the CAAQS for ozone. The 2001 Ozone Attainment Plan (2001 OAP), adopted by BAAQMD on October 24, 2001, addresses the NAAQS for ozone. On February 21, 2002, EPA published a determination that the motor vehicle emissions budgets submitted with the 2001 OAP are adequate for transportation conformity purposes. Once a budget has been determined adequate, those emission levels must not be exceeded in any RTP or transportation improvement program (TIP). However, the remainder of the 2001 OAP has not yet been approved. EPA's adequacy determination on the motor vehicle emission budgets was challenged in litigation. The court stayed the effectiveness of EPA's adequacy finding on July 23, 2002, leading to a freeze on approval of transportation plans and projects beginning October 6, 2002. The court dismissed the case on November 13, 2002. EPA thereafter requested that the court lift the stay and allow the emission budgets to take effect, but the remaining plaintiffs have requested reconsideration and the case is still pending.

Transportation Conformity

The federal CAA requires that federally funded or approved transportation plans, programs, and projects in nonattainment or maintenance areas conform with the SIP for meeting the NAAQS. Transportation conformity must be assessed for all nonattainment area pollutants classified as regional pollutants. This process involves forecasting future air pollutant emissions to determine whether the amount of pollution expected to result from the plan, program, or project would be within the allowable limit for motor vehicle emissions. Transportation projects also generate CO, which is considered a localized pollutant. CO microscale analysis is required to determine whether a transportation project would cause or contribute to localized violations of the NAAQS for CO.

Typically, conformity for a federally funded individual transportation project and plan is assessed by evaluating whether the project or plan is included in a conforming RTP and TIP. If the air pollutant emissions associated with the RTP and TIP are within the allowable ozone precursor budgets, then no further assessment of the individual project or plan's contribution to regional ozone levels is needed. However, the conformity regulations require that transportation projects be evaluated to determine whether they would cause or contribute to violations of the federal CO or PM10 standards.

4.3.3 Environmental Consequences and Mitigation Measures

Approach and Methodology

Vehicular traffic is the primary source of air pollutants that would be affected by the proposed alternatives. Travel projections and the traffic conditions presented in Section 4.2, *Transportation*, are the basis of this analysis. The primary operational emissions associated with the proposed alternatives are CO, PM10, and ozone precursors (ROG and NO_X) emitted as vehicle exhaust. Ozone precursors and PM10 operational emissions for with-project conditions in both 2010 and 2025 were estimated by multiplying EMFAC 2001 model emission factors by the VMT information provided by Korve Engineering (2004b). EMFAC 2001 is an emission inventory model that calculates emission factors (grams per mile) for motor vehicles operating on roads in California. An emission inventory can be summarized as the product of a vehicle emission factor (e.g., grams of pollutant emitted per mile) and vehicle activity (e.g., miles driven per day).

CO concentrations were also estimated for sensitive receptors located near intersections in the vicinity of the Capitol Expressway Corridor. The *Transportation Project-Level Carbon Monoxide Protocol* (Garza et al. 1997) states that, for a single project with multiple intersections, only the three intersections representing the worst LOS ratings under project conditions in the PM peak need to be analyzed. Therefore, CO modeling was conducted at the three existing intersections in the Capitol Expressway Corridor that would operate at LOS F, with the most delay and highest v/c ratio in 2010 and 2025: Capitol Expressway/Silver Creek Road, Capitol Expressway/Story Road, and Capitol Expressway/Capitol Avenue, respectively. These intersections were selected based on the likelihood that they would experience changes in traffic conditions, including increased volumes and congestion, and the presence of sensitive receptors (e.g., residences). The estimated CO concentrations are listed in Table 4.3-3. CO concentrations were estimated using the CALINE4 dispersion model, which is described in Appendix D.

Thresholds of Significance

Based on significance criteria used by VTA and professional practice, the proposed alternatives would result in substantial adverse effects related to air quality if they would:

- conflict with or obstruct of implementation of the federal or California CAA;
- violate federal or California air quality standards or contribute substantially to an existing or projected air quality violation;
- exceed BAAQMD’s significance criteria;
- expose sensitive receptors to substantial pollutant concentrations;
- create objectionable odors affecting a substantial number of people; or
- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is classified as nonattainment under an applicable federal or California ambient air quality standard.

With regard to the BAAQMD significance criteria above, thresholds are contained in the BAAQMD CEQA guidelines (1999). The proposed alternatives are subject to these guidelines and would result in a significant impact on air quality if they would result in:

- a net increase in pollutant emissions of 80 pounds per day or 15 tons per year of ROG, NO_X, or PM10, or
- localized carbon monoxide concentrations in excess of the CAAQ standards indicated in Table 4.3-1 (9 ppm averaged over 8-hours, and 20 ppm averaged over 1-hour).

Table 4.3-3. Carbon Monoxide Modeling Results

	Alternative													
	Existing Conditions		2010 No Project Alternative		2010 Baseline Alternative		2010 Light Rail Alternative		2025 No Project Alternative		2025 Baseline Alternative		2025 Light Rail Alternative	
Intersection	1-hour	8-hour	1-hour	8-hour	1-hour	8-hour	1-hour	8-hour	1-hour	8-hour	1-hour	8-hour	1-hour	8-hour
Capitol Expressway/Capitol Avenue	10.2	7.5	8.9	6.5	8.9	6.5	8.9	6.5	8.9	6.5	8.8	6.5	8.9	6.5
Capitol Expressway/Story Road	10.8	8.0	9.7	7.1	9.8	7.2	9.7	7.1	9.9	7.2	9.7	7.1	9.9	7.2
Capitol Expressway/Silver Creek Road	11.7	8.6	11.8	8.6	11.7	8.5	11.8	8.6	11.4	8.3	11.3	8.2	11.4	8.3
State CO Standards	20.0	9.0	20.0	9.0	20.0	9.0	20.0	9.0	20.0	9.0	20.0	9.0	20.0	9.0

Note: Light Rail Alternative includes MOS - Phase 1 and Phase 2.

Environmental Consequences and Mitigation Measures of the No-Project Alternative

This analysis considers the effects of the No-Project Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

AQ-1: Violation of State Carbon Monoxide Standards as Determined by Modeling of Carbon Monoxide Emissions

The results of the CO modeling conducted for the three most-affected intersections under the No-Project Alternative are shown in Table 4.3-3. The results do not indicate a violation of the 1- or 8-hour state CO standard under the No-Project Alternative. Future CO emissions are projected to decline due to the turnover in the automobile fleet, which results in the older, more polluting vehicles being replaced with newer and substantially less polluting vehicles that result from advances in automobile technology. Therefore, although an intersection may be congested in the future with no improvements to the roadway and transit network, it would still be possible that no CO violation would result. As such, there would be no adverse effect.

Mitigation: No mitigation is required.

AQ-2: Potential Net Increase in Emissions of Reactive Organic Gases, Oxides of Nitrogen, and PM10

As shown in Tables 4.3-4 and 4.3-5, PM10 emissions under the No-Project Alternative would continue to increase over time compared to current conditions. Under the No-Project Alternative, the existing transit and roadway network would remain in place, and environmental conditions would not change. Without improvements in the transportation network, there would be no reduction in automobile trips, and vehicle miles traveled would continue to increase, as shown in Table 4.3-6. This would be an adverse effect that cannot be mitigated.

Table 4.3-4. Mobile Source Emissions (Pounds Per Day)

Alternative	ROG	NO_X	PM10
2010 No Project Alternative	57,172	46,493	55,936
2010 Baseline Alternative	55,369	45,313	54,172
2010 Light Rail Alternative	55,298	45,102	54,102
2025 No Project Alternative	4,770	10,524	60,424
2025 Baseline Alternative	4,653	10,449	58,829
2025 Light Rail Alternative	4,631	10,302	58,615

Source: EMFAC 2001; Vehicle Miles Traveled, Santa Clara Valley Transportation Authority 2003.

Table 4.3-5. Mobile Source Emissions (Tons per Year)

Alternative	ROG	NO_X	PM10
2010 No Project Alternative	12,464	10,240	10,208
2010 Baseline Alternative	12,070	9,972	9,886
2010 Light Rail Alternative	12,055	9,930	9,874
2025 No Project Alternative	1,053	2,243	11,028
2025 Baseline Alternative	1,027	2,223	10,736
2025 Light Rail Alternative	1,022	2,194	10,697

Source: EMFAC 2001; Vehicle Miles Traveled, Santa Clara Valley Transportation Authority 2003.

Table 4.3-6. Annual Vehicle Miles Traveled

Alternative	2000	2010	2025
No-Project Alternative	41,827,000	47,225,000	51,370,000
Baseline Alternative	—	45,723,000	50,003,000
Light Rail Alternative	—	45,671,000	49,827,000

Source: Santa Clara Valley Transportation Authority 2003.

Mitigation: No mitigation is available.

Environmental Consequences and Mitigation Measures of the Baseline Alternative

Anticipated adverse effects associated with the projects included in the approved 1996 Measure B Improvement Program are independent of the proposed alternatives and are or will be reviewed in their respective environmental compliance documents. Additionally, the potential cumulative effects of these projects are considered in Chapter 5, *Other CEQA Considerations*, of this document. This analysis considers the effects of the bus service improvements that are included in the Baseline Alternative as outlined in Chapter 3, *Alternatives Considered*.

AQ-3: Violation of State Carbon Monoxide Standards as Determined by Modeling of Carbon Monoxide Emissions

The results of the CO modeling conducted for the three most-affected intersections under the Baseline Alternative are shown in Table 4.3-3.

The bus service improvements under the Baseline Alternative would improve service frequencies on existing routes. The improvements would add three to six buses per hour in each direction on the new Route 370 for approximately 60–100 (or more) bus trips per weekday. In the context of the total Bay Area transportation system (4,000 buses currently in use), this would result in a slight increase in total regional emissions, but this increase in bus emissions would be more than offset by the reduction in regional automobile trips and associated emissions. In general, increased pollution from new bus service under the Baseline Alternative would be offset by a slight decrease in pollution from the removal of some automobile trips from the system.

The transit improvements under the Baseline Alternative would also affect local pollutant emissions and ambient pollutant concentrations. Ridership projections indicate that transit ridership would increase both systemwide and within the Capitol Expressway Corridor under the Baseline Alternative. Because bus service is assumed to remove single-occupant-vehicle trips from the road, a significant increase in volatile organic compounds, NO_X, or local CO concentrations along major corridors would not be likely, and reduced emissions would result. The results of the CO analysis in Table 4.3-3 show no violation of the 1- or 8-hour state CO standard under the Baseline Alternative. Therefore, the Baseline Alternative would result in a regional air quality benefit within the SFBAAB.

Mitigation: No mitigation is required.

AQ-4: Potential Net Increase in Emissions of Reactive Organic Gases, Oxides of Nitrogen, and PM10

Decreases in daily VMT that would result from implementation of the Baseline Alternative would reduce emissions of ROG, NO_X, and PM10 for the Baseline Alternative compared to the No-Project Alternative, as shown in Tables 4.3-4 and 4.3-5. Therefore, the Baseline Alternative would result in a regional air quality benefit.

Based on Caltrans' guidance for PM10 hot spots (2000), there is no reason to believe that the Baseline Alternative would contribute to a PM10 hot spot that would cause or contribute to violations of the NAAQS for PM10. No violation of the PM10 NAAQS has been recorded during the 3 most recent years at the monitoring site located nearest to the corridor (Table 4.3-2). There would be no adverse effect.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Light Rail Alternative

This analysis considers the effects of the Light Rail Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

AQ-5: Violation of State Carbon Monoxide Standards as Determined by Modeling of Carbon Monoxide Emissions

In general, increased pollution from new transit service under the Light Rail Alternative would be offset by a slight decrease in pollution from the removal of some automobile trips from the system. The transit improvements under the Light Rail Alternative would also affect local pollutant emissions and ambient pollutant concentrations. Ridership projections indicate that transit ridership would increase both systemwide and within the Capitol Expressway Corridor under the Light Rail Alternative. Because light rail service is assumed to remove single-occupant-vehicle trips from the road, a significant increase in volatile organic compounds, NO_X, or local CO concentrations along major corridors would not be likely, and reduced emissions would result. Therefore, the Light Rail Alternative would result in a regional air quality benefit within the SFBAAB.

The results of the CO modeling conducted for the three most-affected intersections under the Light Rail Alternative are shown in Table 4.3-3. The results show no violation of the 1- or 8-hour state CO standard. The PM peak-hour LOS and v/c ratios for the three most-affected intersections under the Light Rail Alternative and No-Project Alternative as modeled are similar (Korve Engineering 2004b); therefore, projected CO emissions under implementation of the Light Rail Alternative would be similar to the No-Project Alternative. There would be no adverse effect.

Mitigation: No mitigation is required.

AQ-6: Potential Net Increase in Emissions of Reactive Organic Gases, Oxides of Nitrogen, and PM10

Decreases in daily VMT that would result from implementation of the Light Rail Alternative would reduce emissions of ROG, NO_X, and PM10 for the Light Rail Alternative compared to the No-Project Alternative, as shown in Tables 4.3-4 and 4.3-5. Therefore, the Light Rail Alternative would result in a regional air quality benefit.

Based on Caltrans' guidance for PM10 hot spots (2000), there is no reason to believe that the Light Rail Alternative would contribute to a PM10 hot spot that would cause or contribute to violations of the NAAQS for PM10. No violation of the PM10 NAAQS has been recorded during the 3 most recent years at the monitoring site located nearest to the corridor (Table 4.3-2). There would be no adverse effect.

Mitigation: No mitigation is required.

Proposed Options

As described in Chapter 3.0, *Alternatives Considered*, the Light Rail Alternative includes station, segment, park-and-ride, and light rail vehicle storage location options. The station options include at-grade, aerial, and depressed open-air station designs. Several platform configurations are also being explored, including side platforms, single center platforms, offset platforms, and a platform on the west side of the expressway. With the exception of the Eastridge Transit Center segment and the side-running option between Eastridge and Nieman Boulevard, the light rail alignment would remain within the median at grade, on an aerial structure above the corridor, or in a tunnel. These options could adversely affect air quality. The effects on air quality discussed above would result depending on the alignment options or station designs selected.

Transportation Conformity Analysis for the Light Rail Alternative

The Light Rail Alternative is included in the 2001 RTP adopted on December 19, 2001, by MTC. In March 2002, MTC determined that the RTP was in conformance with federal air quality regulations. As described above, the Light Rail Alternative would not cause or contribute to violations of state CO standards, which are more stringent than federal standards. The Light Rail Alternative would not cause or contribute to localized violations of federal CO standards and therefore would be a conforming transportation project.

As described above, the Light Rail Alternative would not cause or contribute to violations of the NAAQS for PM10 and therefore would be a conforming transportation project.

Section 4.4
Biological Resources

4.4.1 Introduction

This section describes the environmental setting and effects of the alternatives analyzed in this EIR with regard to biological resources. Specifically, this section discusses existing biological resources conditions within the Capitol Expressway Corridor and describes applicable regulations pertaining to biological resources. The assessment of adverse effects and mitigation measures of the alternatives related to biological resources are also described. A detailed biological resources analysis supporting the findings in this section can be found in Appendix E, *Biological Resources Information*, to this document.

4.4.2 Existing Conditions

Environmental Setting

The environmental setting of the Capitol Expressway Corridor area was determined by reviewing the California Natural Diversity Database (CNDDB) (2002), the CalFlora database (California Native Plant Society 2001), current field guides, and existing literature to determine the likelihood for special-status species to occur within the Capitol Expressway Corridor.

A field visit was also conducted to document the conditions of habitats located within the corridor. Jones & Stokes biologists conducted the field survey on October 16, 2001, to document existing biological resources and habitats in or near the Capitol Expressway Corridor. During the survey, the biologists walked open lots, riparian corridors and adjacent habitat, and other areas; identified the dominant species in these areas; and classified the vegetation present using the descriptions found in Holland (1986) and Sawyer and Keeler-Wolf (1995). Vegetation communities were mapped onto engineering plan sheets (scale: 1 inch = 100 feet). Although no focused surveys for special-status species (plants or animals) or jurisdictional wetland delineations were conducted, habitats that may support special-status plants or wildlife, and jurisdictional wetlands were noted. Waters under the potential regulatory jurisdiction of the U.S. Army Corps of Engineers (Corps) were drawn onto engineering plan sheets (scale: 1 inch = 100 ft.). Jones & Stokes biologists conducted a second site visit on November 21, 2002, to update the status of resources identified during the 2001 field survey.

The study area for evaluation of biological resources within the corridor encompasses all areas of disturbance associated with implementation of the proposed alternatives, including all lands that would be acquired outside the existing right of way. The study area also includes all construction staging areas. Biologists also surveyed areas adjacent to the defined study area that contained habitats with potential to support special-status species. For the purposes of this chapter, these areas are referred to as the "study area vicinity."

The following sections describe existing plant and wildlife resources along the Capitol Expressway Corridor. Creek crossings and vacant lots on, under, or adjacent to Capitol Expressway that may provide habitat for wildlife are identified and discussed. The remaining portions of corridor contain developed hardscape and landscaping associated with urbanized development, such as sidewalks, commercial buildings, and private residences, and are not included in the following discussion.

Biological Habitats

Habitats in the study area include Central Coast cottonwood-sycamore riparian forest, freshwater marsh, ruderal, and aquatic habitats. Habitats were classified using Holland (1986) and Sawyer and Keeler-Wolf (1995). Table 4.4-1 summarizes acreages by habitat type within the study area. Figure 4.4-1 graphically depicts the distribution of these habitat types.

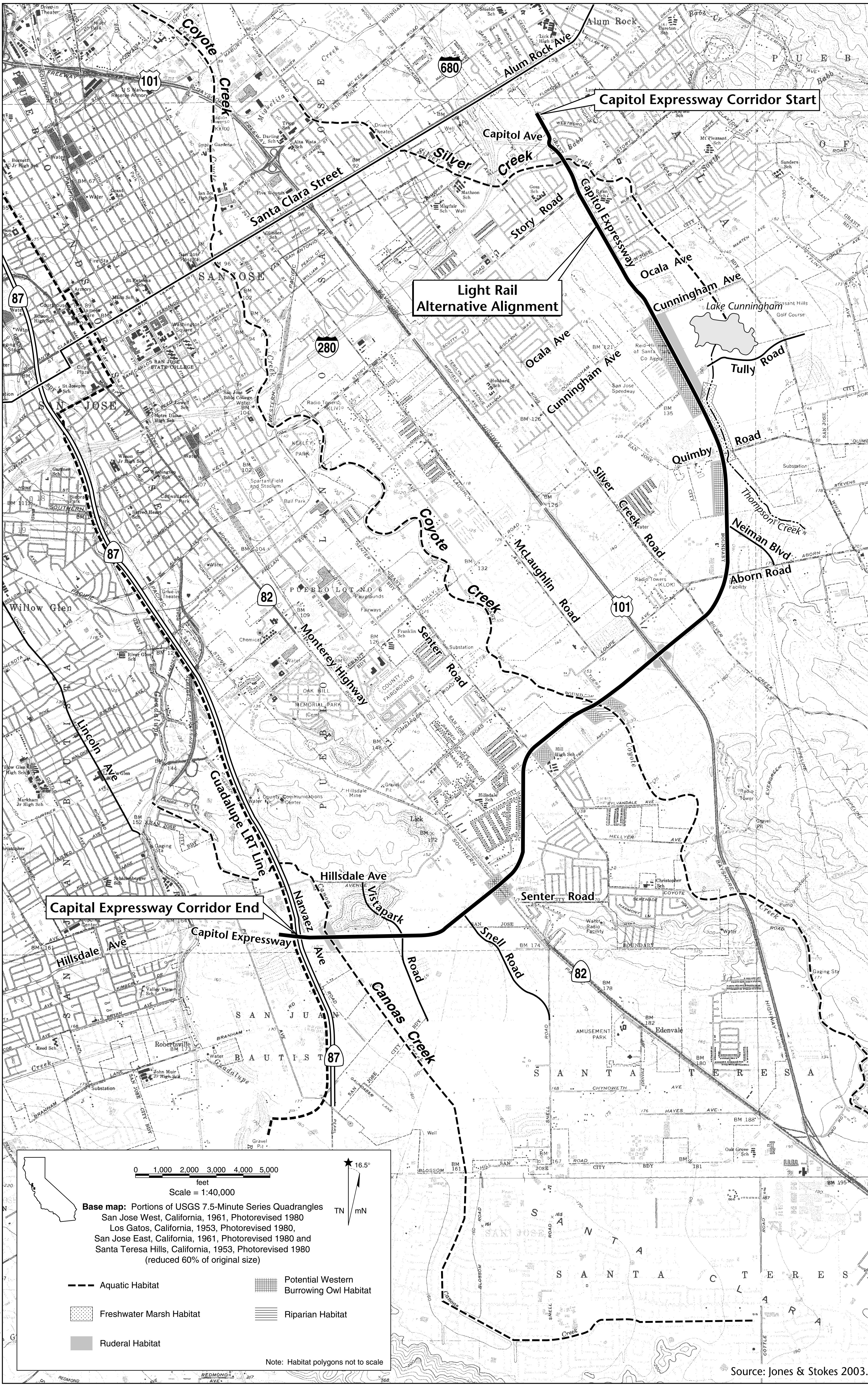


Figure 4.4-1
Biological Habitats within Capitol Expressway Corridor

Table 4.4-1. Biological Habitats Along the Capitol Expressway Corridor

Habitat Type (Location)	Approximate Acreage in Study Area	Approximate Acreage in Study Area Vicinity
Central Coast Cottonwood-Sycamore Riparian		
Coyote Creek	0.00	1.93
Total Riparian	**0.00**	**1.93**
Freshwater Marsh		
Thompson Creek	0.00	5.74
Total Freshwater Marsh	**0.00**	**5.74**
Ruderal		
Canoas Creek	0.00	0.33
Monterey Highway	0.70	3.73
Senter Road	0.00	2.00
*Coyote Creek	0.73	3.13
U.S. 101 loops	0.52	11.23
Thompson Creek	0.00	0.62
Lake Cunningham hillside	2.50	2.51
Reid-Hillview Airport	3.14	--
Silver Creek	0.05	0.18
Total Ruderal	**7.64**	**23.73**
Aquatic		
Silver Creek	0.08	0.18
Thompson Creek	0.00	0.77
Coyote Creek	0.10	0.41
Canoas Creek	0.11	0.13
Total Aquatic	**0.29**	**1.49**

* Approximately 0.68 acre of the ruderal habitat within the study area at Coyote Creek is exposed soil that occurs beneath the bridge on the sloped embankments that extend from the edge of the creek bank up to the bridge abutments.

Central Coast Cottonwood-Sycamore Riparian Forest

Central coast cottonwood-sycamore riparian forest is dominated by a canopy of broad-leafed deciduous trees, including Western sycamore *(Platanus racemosa)* and Fremont cottonwood *(Populus fremontii)*. The understory generally contains dense stands of willows (*Salix* spp.), coyote brush *(Baccharis pilularis)*, blackberries (*Rubus* spp.), and poison oak *(Toxicodendron diversilobum)*. Because riparian forest is restricted to the banks and floodplains of perennial or intermittent streams, it is locally and regionally rare.

Riparian habitat occurs adjacent to the study area at the Coyote Creek crossing (Figure 4.4-1). This habitat can be classified as Fremont cottonwood series (Sawyer and Keeler-Wolf 1995) or Central Coast cottonwood-sycamore riparian forest (Holland 1986). Canopy species consist of cottonwoods, Western sycamore, arroyo willow (*Salix lasiolepis*), narrowleaf willow (*Salix exigua*), and eucalyptus (*Eucalyptus* spp.). Understory species include Italian ryegrass *(Lolium multiflorum)*, coyote brush, blue elderberry (*Sambucus mexicana*), coast live oak (*Quercus agrifolia*), poison oak, giant reed (*Arundo donax*), wild oat (*Avena fatua*), and bull thistle *(Cirsium vulgare)*. The riparian area shades and buffers Coyote Creek from development and also functions as a regional park that is used for various recreational activities. Park facilities include an approximately 13-foot-wide paved trail that runs mostly parallel to the axis of the creek. Riparian forest provides most of the overwater vegetation component of shaded riverine aquatic (SRA) cover. SRA cover vegetation is the nearshore aquatic and overhead vegetative cover that grows at the interface between a river and adjacent riparian habitat. SRA cover vegetation is an important component of fish habitat and provides stream shading and contributes leaf litter, woody material, and insects to the channel.

Freshwater Marsh

Freshwater marsh habitat adjacent to the study area supports perennial emergent species, including cattails (*Typha* spp.) and sedges (*Scirpus* spp.). Freshwater marsh is found in limited amounts within the constructed channel of Thompson Creek, located between Tully and Quimby Roads. Relatively small patches of freshwater marsh may also occur along Coyote Creek and in the modified channels of Silver and Canoas Creeks.

Ruderal

Ruderal habitat occurs in disturbed areas throughout the study area and is typically dominated by nonnative grass species, including Italian ryegrass, orchardgrass *(Dactylus glomerata)*, and wild oat as well as bull thistle (*Cirsium vulgare*), and trees such as California pepper (*Schinus molle*), black walnut (*Juglans* sp.), olive (*Olea europaea*), and tree-of-heaven (*Alianthus altissima*).

Ruderal habitat is found along roads, in vacant areas between development, and in the channels and upland areas of Silver, Coyote, and Canoas Creeks. Some of the bare areas with low vegetation showed evidence of ground squirrel activity. These areas may support suitable habitat for the Western burrowing owl (*Athena cunicularia hypugea*). Suitable habitat for this species is defined in detail under *Special-Status Species* below. Figure 4.4-1 and Table 4.4-1 identify the locations and approximate amounts of ruderal habitat throughout the study area.

Aquatic

Aquatic habitat occurs in the channels of Silver Creek, Thompson Creek, Coyote Creek, and Canoas Creek (a tributary to the Guadalupe River). Aquatic habitat in Coyote Creek supports patches of aquatic, emergent vegetation, including water-cress *(Rorippa nasturtium-aquaticum)* and water speedwell *(Veronica anagallis-aquatica)*. Small patches of aquatic vegetation may also occur on sediment deposits in the constructed channels of Silver, Thompson, and Canoas Creeks, but Coyote Creek is the only creek in the study area that supports riparian vegetation. Special status species that could occur in aquatic habitat at Coyote Creek include California red-legged frog (*Rana aurora draytonii*), California tiger salamander (*Abystoma californiense*), and Southwestern pond turtle (*Clemys marmorata pallida*), in addition to chinook salmon *(Oncorhynchus tshawytscha*) and Central California coast steelhead (*Oncorhynchus mykiss*) evolutionary significant units (ESUs).

Silver and Canoas Creeks

Silver and Canoas Creeks are modified concrete channels that flow beneath Capitol Expressway at the northern and southern ends of the study area respectively. Past channel modifications in the creeks have generally resulted in poor habitat conditions for fish, especially salmonids (i.e., steelhead and chinook salmon). Canoas Creek is approximately 4–6 feet wide where Capitol Expressway crosses over the creek the channel widens to approximately 15–20 feet (Figure 4.4-2). Where Silver Creek flows beneath Capitol Expressway, the wetted channel is approximately 6–8 inches deep and approximately 8 feet wide, and fills the entire bottom of the channel. The channel is concrete-lined and reinforced in some areas with rock, and provides poor habitat conditions . The channel is bordered by development on both sides, with only an 8- to 10-foot maintenance road between the top of the concrete channel and development.

Coyote Creek

Coyote Creek flows beneath Capitol Expressway and is separated from the roadway by an elevated bridge. Coyote Creek flows approximately 30 feet below the grade of the bridge and is channelized and incised upstream of the bridge (Figure 4.4-3). At the time of the survey, the wetted channel was approximately 10 feet wide and up to 1 foot deep. Further downstream the creek is less incised, but still disconnected from the floodplain. Although modified, Coyote Creek provides spawning and rearing habitat for chinook salmon, and possibly steelhead.

Thompson Creek

Thompson Creek is a modified channel that flows parallel to Capitol Expressway for approximately 0.5 mile within the study area. Past channel modifications in Thompson Creek have generally resulted in poor habitat conditions for fish, especially salmonids. Thompson Creek is flanked on both sides by earthen berms, and the width of the constructed channel is 75–100 feet. The 4- to 8-foot-wide creek bed is located at the center of the channel and is slightly incised. At the time of the surveys, the southern section of the creek still held standing water in its scoured areas, but most of the creek bed was dry. However, the northern section of the creek contained water in a channel approximately 3–6 feet wide. The substrate of both of these sections is gravelly.

During the field survey, it appeared that a fire in the constructed channel had burned some understory vegetation, as well as some trees adjacent to the creek. Species present in the creek bed include willows, thistles, grasses such as ripgut brome (*Bromus diandrus*) and creeping wild-rye (*Leymus triticoides*), and perennial pepperweed (*Lepidium latifolium*). The creek is thick with cattails along the stretch that is located farthest north, just before the creek and Capitol Expressway diverge. The cattails were dead near the southern edge of the vegetation, but farther north they appeared healthy. Other species observed in or near the wetted creek channel included: sedges, watercress, and coyote brush.

A large amount of trash was present in the creek channel at the time of the surveys, indicating the potential for poor water quality. The presence of algal mats on the banks and in backwater areas also suggests that the water is typically slow-moving and warm.

Special-Status Species Known to Occur or With Potential to Occur

Jones & Stokes biologists compiled a list of special-status species known to occur or with the potential to occur within the study area. The list was compiled from existing data sources and with information provided in the California Department of Fish and Game (CDFG) and U.S. Fish and Wildlife Service (USFWS) databases, including the CNDDB and the California Wildlife Habitat Relationships system (Appendix E). Jones & Stokes biologists consulted with

Special-Status Plant Species

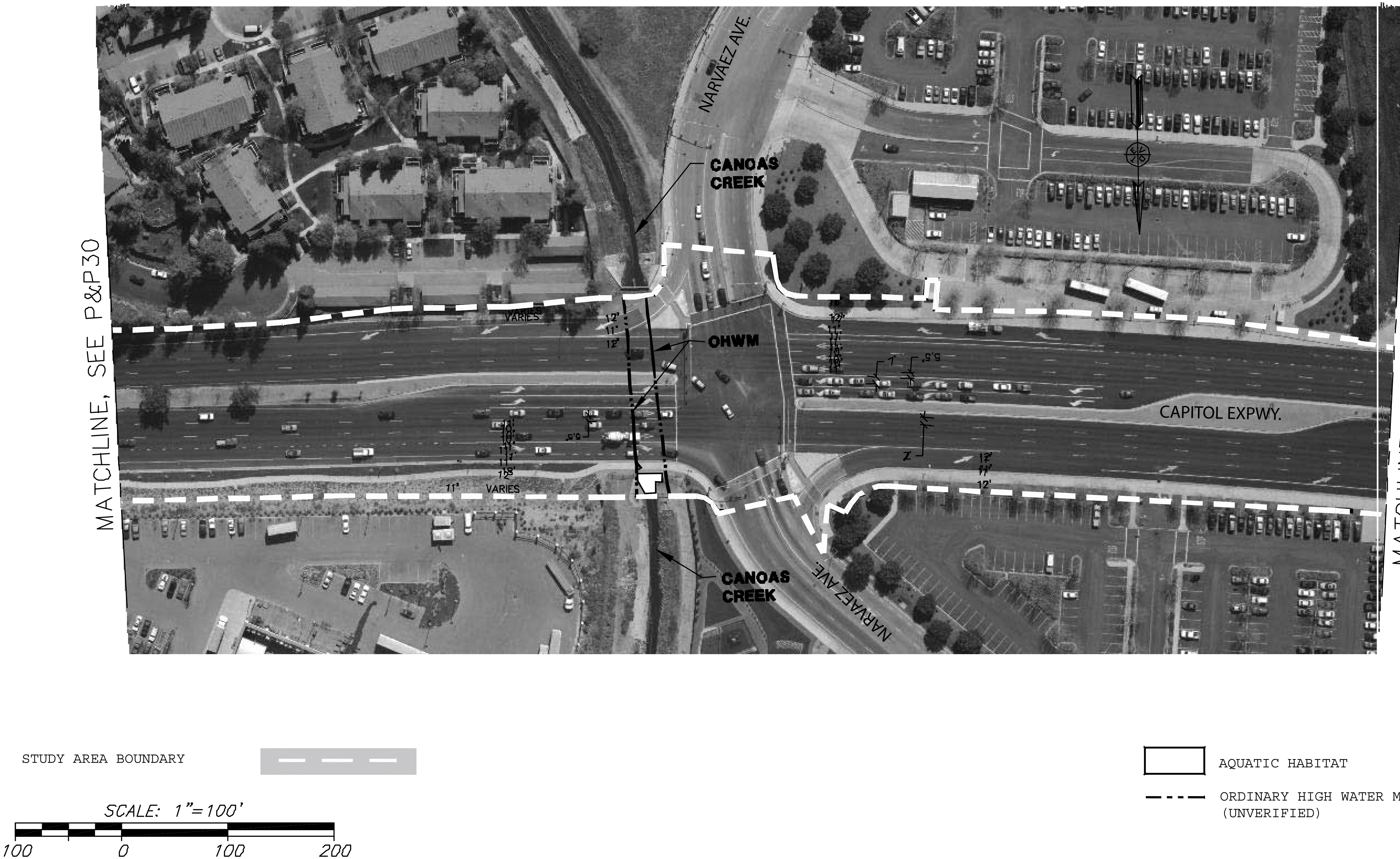
Table E-1a (Appendix E) lists special-status plant species identified in the prefield inventory as having potential to occur in the study area. Based on existing information and recent field surveys, special-status plant species are not expected to occur in the Capitol Expressway Corridor. The areas within the corridor are highly disturbed and do not provide suitable habitat for any of the special-status plant species.

Special-Status Wildlife Species

Table E-1b (Appendix E) lists the special-status wildlife species identified in the prefield inventory with the potential to occur in the study area. Based on known species distribution, habitat requirements, and the results of the 2001 and 2002 field surveys (Appendix E), the following special-status wildlife species may occur in the study area: California red-legged frog, California tiger salamander, Southwestern pond turtle, Western burrowing owl, chinook salmon, Central California coast steelhead ESU, yellow warbler *(Dendroica petechia brewsteri)*,

01277.01 007 (03/03)

Figure 4.4-2
Potential Waters of the United States and Biological Habitats in Coyote Creek Study Area



Source: Jones & Stokes 2003.

01277.01 007 (03/03)

Figure 4.4-3
Potential Waters of the Unitrd States and Biological Habitats in Canoas Creek Study Area

nesting raptors and special-status bat species. These species are described in detail below.

California Red-Legged Frog

California red-legged frog is federally listed as threatened and is a state species of concern. This species requires permanent or semipermanent riparian and upland habitat. Adults prefer dense, shrubby, or emergent vegetation closely associated with deep (depths greater than 2 feet) still or slow-moving water. The largest densities of California red-legged frogs are associated with deep water pools with dense stands of overhanging willows and an intermixed fringe of cattails. California red-legged frog have been found to disperse up to 3 miles from water sources during warm, rainy nights. Where water sources dry during the summer months, California red-legged frog may use upland areas that contain small mammal burrows and moist leaf litter for aestivation or refuge.

The study area is also not located within an area designated as critical habitat for the California red-legged frog. However, the riparian and aquatic habitat in Coyote Creek may provide suitable habitat for California red-legged frog, and some of the smaller streams may function as dispersal corridors for this species when they contain water. One record of this species occurs within the Coyote Creek watershed approximately 3.7 miles northeast of the study area in Alum Rock Park.

California Tiger Salamander

California tiger salamander (CTS) is a candidate for federal listing and is a state species of special concern. CTS is terrestrial and spends most of its time underground in small mammal burrows, emerging only for brief periods to breed. Breeding is known to occur in temporary pools and may also occur in more permanent bodies of water that do not contain bullfrogs or other non-native predators. Breeding habitat requirements for the CTS are not present in stream or creek areas within the study area. However, there are several records of this species within the study area vicinity, and suitable estivation habitat occurs within the study area. CTS has been recorded near the UPRR tracks approximately 1.1 miles north of the study area (north of Hillsdale Avenue), as well as southeast of the study area between Aborn Road and U.S. 101. These occurrences are dated from 1993–2000 (California Natural Diversity Database 2002).

Southwestern Pond Turtle

Southwestern pond turtle is a state species of special concern. Southwestern pond turtles are found in quiet waters of lowland and foothill ponds, streams, marshes, and reservoirs. They require upland habitat for breeding. Southwestern pond turtle may travel long distances upslope from a permanent or nearly permanent water source to lay its eggs in grassland or scrub habitat. Habitat for this species is present in Coyote Creek. In September 2001, two adults were observed approximately 1.2 miles from the study area in Coyote Creek (Appendix E).

Western Burrowing Owl

Western burrowing owl is a state species of special concern. This species uses burrows created by other animals, usually ground squirrels. It also depends on ground squirrels to graze the surrounding vegetation to short grass or dirt, which is the species' preferred habitat. Burrowing owls are the only owl species that nests underground, and are fairly tolerant of human presence. Within the Capitol Expressway Corridor, burrowing owls may be found in open lots with short vegetation such as those found in or near Monterey Highway, Senter Road, Coyote Creek, U.S. 101, Lake Cunningham, and Reid-Hillview Airport. There are several records of this species occurring within the study area and vicinity. Figure 4.4-1 identifies suitable burrowing owl habitat within the study area.

Fall-Run Chinook Salmon

On March 9, 1998 (63 Federal Register [FR] 11481), a proposed rule to list fall-run chinook salmon as threatened was issued, but on September 16, 1999 (64 FR 50393), a subsequent federal study determined that the species did not warrant listing as threatened and downgraded it to candidate status. Adult fall-run chinook salmon migrate into rivers from July through December and spawn from early October through late December. Spawning typically peaks in October and November. Eggs incubate from October through March, and juveniles rear and smolts emigrate from January through June. Unlike steelhead, chinook salmon emigrate to the ocean within a few months following emergence from the gravel. Fall-run chinook salmon are known to spawn and rear in portions of Coyote Creek (Johnson pers. comm.).

Central California Coast Steelhead ESU

The Central California Coast steelhead ESU is currently listed as threatened under the federal ESA. This ESU includes all naturally spawned populations of steelhead in California streams from the Russian River to Aptos Creek and the drainages of San Francisco and San Pablo Bays eastward to the Napa River (inclusive), excluding the Delta. Adult steelhead in this ESU enter rivers from October (in larger basins) and late November (in smaller basins) and continue through June. Adult spawning begins in November (in larger basins) and December (in smaller basins) and can continue through April, with a peak in February and March. Adult steelhead are capable of spawning more than once, unlike chinook salmon, which die after spawning. Juvenile steelhead spend up to 3 years rearing in freshwater. Most juvenile steelhead typically migrate to the ocean as streamflow declines and water temperature increases in April, May, and June. Before they migrate, juvenile steelhead undergo physiological changes (smoltification) to prepare them for ocean life. Steelhead live in the ocean generally from 1–3 years before returning to fresh water to spawn. Steelhead are known to occur in Penitencia Creek, a tributary to Coyote Creek. The extent to which steelhead spawn and rear in the mainstem of Coyote Creek is not known.

Yellow Warbler

Yellow warbler is a California state species of special concern. This species nests in riparian corridors in and around the Bay Area, especially those dominated by willows, cottonwoods, sycamores, or alders. Nesting habitat for the yellow warbler is present in the Coyote Creek riparian corridor.

Nesting Raptors

Raptors such as red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk *(Accipiter cooperii)*, and great horned owl (*Bubo virginianus*) nest in riparian and woodland areas. The breeding season for these species generally lasts from February 1 to August 15. A variety of tree-nesting raptors may nest in riparian habitat at Coyote Creek, while ground-nesting raptors such as northern harrier (*Circus cyaneus*) may nest in grassland habitat in the study area vicinity. No active raptor nests were identified within the study area or its vicinity during the 2001 and 2002 surveys, but suitable nesting habitat is present. The potential for raptors to nest within the study area is considered moderate.

Swallows

Cliff swallow (*Petrochelidon pyrrhonota*), tree swallow (*Tachycineta bicolor*) and barn swallow (*Hirundo rustica*) are examples of swallows that may nest in the study area. Cliff swallows are colonial nesters and often nest in colonies of hundreds of birds; they build mud nests on the undersides of artificial structures such as bridges. Swallow nesting occurs from April to August, and southward migration occurs in September and October (Zeiner et al. 1990). Potential nesting habitat for nesting swallows occurs on the undersides of the bridge structures at Coyote Creek and in suitable cavities in and adjacent to riparian habitat. No nesting swallows were observed during the 2001 and 2002 surveys, but it is possible for swallows to colonize previously unused bridges that offer suitable habitat within the study area.

Bat Species

The highly disturbed and urbanized nature of the Capitol Expressway Corridor offers marginal roosting habitat for special-status bat species. Bat species such as yuma myotis (*Myotis yumanensis*), long-legged myotis (*Myotis volans*), Pacific western big-eared bat (*Plecotus townsendii*), and long-eared myotis (*Myotis evotis*) may roost and forage at the bridge over Coyote Creek and in adjacent riparian habitat. Most bat species are state species of special concern, and are therefore protected.

Regulatory Setting

Federal and state regulations apply to the proposed alternatives. Although VTA is not subject to local ordinances and policies, they are listed below because VTA accommodates them to the extent practicable. Detailed descriptions of the following regulations are included in Appendix E:

- Endangered Species Act, Sections 7 and 9;
- Migratory Bird Treaty Act;
- Bald and Golden Eagle Protection Act;
- Clean Water Act, Sections 401 and 404;
- California Endangered Species Act;
- California Native Plant Protection Act;

- California Fish and Game Code;
- Porter-Cologne Water Quality Control Act;
- City of San Jose Heritage Tree Ordinance; and
- City of San Jose Riparian Corridor Policy.

Waters of the United States (Unverified)

Silver, Thompson, Coyote, and Canoas Creeks occur within the Capitol Expressway Corridor. These creeks contain jurisdictional waters of the United States under Clean Water Act (CWA) Section 404 and may be subject to CDFG jurisdiction under California Fish and Game Code Sections 1601–1603.

The ordinary high water mark (OHWM) of a stream defines the area of jurisdictional waters subject to Corps jurisdiction under Section 404. The OHWM is usually defined by the bed and bank of the channel that is subject to flooding under normal conditions as indicated by scour lines, exposed roots, and deposition of debris. Because a formal wetland delineation was not conducted, the OHWM for these creeks was estimated by biologists at the time of survey. Figures 4.4-2 and 4.4-3 show the estimated (unverified) OHWM for Canoas and Coyote Creeks, respectively. The OHWM for Coyote Creek is located in the Coyote Creek riparian area below Capitol Expressway at Tuers Road. The OHWM for Canoas Creek is located in the Canoas Creek aquatic habitat area below the intersection of Capitol Expressway and Narvaez Avenue.

Waters of the State of California

"Waters of the state" are defined in the Porter-Cologne Water Quality Control Act as any surface water or groundwater, including saline waters, within the boundaries of the state. Within the Capitol Expressway Corridor, waters of the State include areas of the creek banks that are above the OHWM, as well as isolated wetlands that are not under the jurisdiction of the Corps. Activities in waters of the State that are outside of Corps jurisdiction may require Waste Discharge Requirements (WDRs) from the Regional Water Quality Control Board (RWQCB). In addition, the State Water Resources Control Board (SWRCB) has recently adopted General Waste Discharge Requirements (GWDRs) for activities that occur in waters of the State that lie outside of Corps jurisdictional waters.

4.4.3 Environmental Consequences and Mitigation Measures

Approach and Methodology

The assessment of adverse effects related to biological resources was evaluated by reviewing the proposed alternatives and engineering plans, in comparison to the status of existing biological resources as identified during previous field surveys. Identified adverse effects were reported as either temporary (short-term) or permanent (long-term). Temporary effects could result from construction noise, runoff, staging, and other construction activities. Permanent effects could result from continuing operation of new facilities and infrastructure, including roads, transit stations, parking and storage facilities, and pathways.

Thresholds of Significance

Based on significance criteria used by VTA and professional practice, the proposed alternatives may result in substantial adverse effects related to biological resources if they would:

- have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in regional plans, policies, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;
- have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, and coastal wetlands) through direct removal, filling, hydrological interruption, or other means;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites; or
- conflict with the provisions of an adopted habitat conservation plan (HCP), natural community conservation plan (NCCP), or other approved local, regional, or state HCP.

Environmental Consequences and Mitigation Measures of the No-Project Alternative

This analysis considers the effects of the No-Project Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5*, Other CEQA Considerations*, of this document.

BIO-1: Permanent Loss of Biological Habitats or Disturbance to Inhabiting Species

As described above under *Environmental Setting*, biological habitats within the study area include, aquatic habitat, and ruderal habitat. These biological habitats could support special-status species such as Western burrowing owl, California red-legged frog, Southwestern pond turtle, and special-status fish species. Under the No-Project Alternative, the existing transit and roadway network within the Capitol Expressway Corridor would remain in place and environmental conditions would not change. Therefore, there would not be any adverse effects resulting from the permanent loss of biological habitats or disturbance to inhabiting species within the corridor from implementation of this alternative.

Mitigation: No mitigation is required.

BIO-2: Loss of Urban Trees

Under the No-Project Alternative, the existing transit and roadway network within the Capitol Expressway Corridor would remain in place. As a result, no new transit improvements would occur, and environmental conditions would not change. Therefore, no adverse effects resulting in the loss of urban trees would result from implementation of this alternative.

Mitigation: No mitigation is required.

BIO-3: Temporary Degradation of Water Quality

As described above, under the No-Project Alternative, no transit improvements would be made, and environmental conditions would not change. Therefore, no adverse effects resulting in the temporary degradation of water quality would occur under implementation of this alternative.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Baseline Alternative

Anticipated adverse effects associated with the projects included in the approved 1996 Measure B Improvement Program are independent of the proposed alternatives and are or will be reviewed in their respective environmental compliance documents. Additionally, the potential cumulative effects of these alternatives are considered in Chapter 5, *Other CEQA Considerations*, of this document. This analysis considers the effects of the bus service improvements that are included in the Baseline Alternative as outlined in Chapter 3, *Alternatives Considered*.

BIO-4: Permanent Loss of Biological Habitats or Disturbance to Inhabiting Species

Under the Baseline Alternative, proposed bus service improvements mainly include service frequency upgrades, increasing enhanced limited-stop services, and implementation of transit priority measures to minimize traffic congestion and improve bus circulation through the Capitol Expressway Corridor. As described above under *Environmental Setting*, the Capitol Expressway Corridor includes several biological habitats that could be inhabited by special-status wildlife and fish species. However, there would not be any large-scale construction of structures or facilities associated with transit improvements proposed under the Baseline Alternative. Therefore, there would not be any adverse effects resulting in the permanent loss of biological habitats or disturbance to any inhabiting species under implementation of this alternative.

Mitigation: No mitigation is required.

BIO-5: Loss of Urban Trees

The nature of the bus service improvements proposed under this alternative would not involve construction of any large-scale structures or facilities that could require removal of existing biological resources within the corridor. Therefore, no substantial adverse effects resulting in the loss of urban trees would result from implementation of this alternative.

Mitigation: No mitigation is required.

BIO-6: Temporary Degradation of Water Quality

Bus service improvements proposed under this alternative would not involve any large-scale construction of structures or facilities that could result in water pollutants such as sediment or soil from earthmoving activities, or fuels, oils, or other construction-vehicle related pollutants. Therefore, no adverse effects resulting in the temporary degradation of water quality would occur under implementation of this alternative.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Light Rail Alternative

This analysis considers the effects of the Light Rail Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

This section discusses construction-related effects of the Light Rail Alternative, which represent the vast majority of effects to biological resources, as well as effects related to the operation and maintenance. Construction-related impacts refer to the temporary effects of activities such as site preparation, construction staging, and installation of trackways and structures, which by nature generally result in temporary effects to biological resources.

BIO-7: Permanent Loss of Biological Habitats and Disturbance to Inhabiting Species

Implementation of the Light Rail Alternative would result in a permanent loss of approximately 3.29 acres of ruderal habitat within the Capitol Expressway Corridor. Habitat loss would result from realignment of Capitol Expressway between Ocala and Cunningham Avenues, reconstruction of the U.S. 101 overpass loop ramps, and construction of new pedestrian sidewalks, park-and-ride facilities, and light rail vehicle storage facilities. Implementation of the Light Rail Alternative would also result in the temporary disturbance of a total of approximately 3.76 acres of ruderal habitat within the Capitol Expressway Corridor. Construction of the at-grade light rail alignment over the existing U.S. 101 overpass would require reconstruction of the loop ramps and would remove approximately 0.52 acre of ruderal habitat. Construction of the Ocala Avenue Station at the Ocala Avenue intersection would require realignment of Capitol Expressway between Ocala Avenue and Cunningham Avenue and would permanently remove approximately 1.15 acres of ruderal habitat adjacent to the Reid-Hillview Airport. Construction of the proposed park-and-ride facility on the southwest corner of Ocala Avenue and Capitol Expressway would permanently remove approximately 0.87 acre of ruderal habitat adjacent to the Reid-Hillview Airport.

Based on the biological surveys conducted in November 2002, ruderal habitat within the Capitol Expressway Corridor was identified as potential habitat for Western burrowing owl (a state species of special concern and federal species of concern). Although the habitat is not currently occupied by burrowing owls, the species is known to occur near the corridor and could colonize currently unoccupied habitat before construction begins.

Although ruderal habitat is not a sensitive natural community and is common both locally and regionally, the permanent loss of 3.29 acres and temporary disturbance to 3.76 acres of ruderal habitat that could potentially be occupied by the special-status Western burrowing owl would be considered a substantial adverse effect. However, implementation of the following mitigation measures would minimize this effect.

Mitigation Measure BIO-7: Conduct Preconstruction Surveys for Nesting and Wintering Western Burrowing Owls and Implement Measures to Avoid or Minimize Adverse Effects if Owls Are Present
Preconstruction surveys for Western burrowing owls shall be conducted by a qualified ornithologist before any development within the habitat identified in Figure 4.4-1. These surveys, which shall include any potentially suitable habitat within 250 feet of construction areas, shall be conducted no more than 30 days before the start of site grading, regardless of the time of year in which grading occurs. If breeding owls are located on or immediately adjacent to the site, a construction-free buffer zone (typically 250 feet) around the active burrow must be established as determined by the ornithologist in consultation with CDFG. No activities, including grading or other construction work or relocation of owls, would proceed that may disturb breeding owls.

If owls are resident within 250 feet of the Project Area during the nonbreeding season a qualified ornithologist, in consultation with CDFG, shall passively relocate (evict) the owls to avoid the loss of any individuals if the owls are close enough that they or their burrows could potentially be harmed by associated activities. VTA will ensure that the loss of Western burrowing owl habitat in the project area is replaced with habitat of equal or greater value. Habitat replacement will be based on CDFG’s recommended habitat allocation of 6.5 acres for each pair impacted. Location of the compensation habitat will be identified in conjunction with CDFG through a mitigation agreement. Compensation habitat may be located on-site or off-site, depending on approval from CDFG. If necessary, VTA will construct two artificial burrows for each occupied burrow lost or rendered unsuitable as a result of construction activities. VTA will ensure that the mitigation habitat (including artificial burrows) is maintained for owls in perpetuity by an appropriate instrument such as a conservation easement or a mitigation bank.

BIO-8: Temporary Disturbance of Riparian Forest during Construction

Construction activities associated with the retrofit of the Capitol Expressway Bridge at Coyote Creek may result in the temporary disturbance of riparian forest adjacent to the existing roadway. Although construction plans would not result in the permanent loss of riparian forest, the removal of individual trees or disturbance of understory vegetation through soil movement, soil compaction, or use of heavy machinery may temporarily reduce the function and value of riparian forest habitat, including SRA cover habitat, adjacent to the Capitol Expressway bridge. Similar riparian forest habitat of equivalent function and value occurs along Coyote Creek immediately upstream and downstream of the proposed construction site. This would be considered a substantial adverse effect. However, implementation of the following mitigation measures would minimize this effect.

Mitigation Measure BIO-8a: Conduct Preconstruction Surveys to Identify Environmentally Sensitive Habitat Areas

VTA shall provide qualified and approved biologists to conduct preconstruction surveys of identified habitat areas and to flag environmentally sensitive areas to be avoided during construction.

Mitigation Measure BIO-8b: Compensate for Disturbed Riparian Forest

VTA shall mitigate effects on the riparian habitat and creek banks located within CDFG and RWQCB jurisdiction at a ratio of at least 2:1 (replacement:loss) commensurate with a detailed riparian restoration plan to be prepared. This plan shall provide for the on-site replacement of lost acreage as well as values and functions of riparian habitat and non-jurisdictional wetlands, including SRA cover vegetation, and locations of restoration opportunities, with a technical approach to create high-quality riparian and SRA cover habitat. Success criteria typically would include 80% survival of planted trees, shrubs, and groundcover, assured by up to 5 years of post-installation monitoring. Monitoring reports shall be submitted annually, with CDFG and RWQCB confirmation of the fulfillment of the success criteria.

Before construction, VTA shall obtain a Streambed Alteration Agreement from CDFG, a WDR from RWQCB and a GWDR from SWRCB. VTA shall comply with all conditions of the permits. In addition to conditions contained in the Streambed Alteration Agreement, VTA shall coordinate with CDFG, RWQCB and SWRCB to develop, implement and monitor other compensatory measures as may be necessary.

BIO-9: Placement of Fill within Open Waters of the United States and Aquatic and Bare Soil (Ruderal) Habitats under the Jurisdiction of the California Department of Fish and Game

The proposed retrofit of the Capitol Expressway bridge at Coyote Creek would require construction of new pile columns and pier wall support structures beneath the existing bridge and would place up to 0.0015 acre of fill in the open waters (or bed and bank) of Coyote Creek. Construction activities would occur at or below the OHWM (unverified) of Coyote Creek, within an approximately 143-linear-foot segment of creek bed beneath the existing bridge (Figure 4.4-2).

The bed and bank beneath the existing bridge are both potential waters of the United States, waters of the State and CDFG aquatic and bare soil (ruderal) habitats. Vegetation is absent from both the creek channel and bank in the section of Coyote Creek where construction activity would occur. This would be considered a substantial adverse effect. However, implementation of the following mitigation measure would minimize this effect.

Mitigation Measure BIO-9: Restore or Create Jurisdictional Waters of the United States

VTA shall mitigate effects to the Corps' jurisdictional areas through replacement of lost functions and values of jurisdictional habitat on site and in kind at a ratio of at least 2:1 (replacement:loss). VTA shall also mitigate effects to creek banks, or waters of the State, that are under RWQCB jurisdiction.

Before construction, VTA shall obtain permits from the Corps and RWQCB and shall comply with the conditions of these permits. In addition to the conditions contained in the permits, VTA shall coordinate with the Corps and RWQCB to develop, implement and monitor other compensatory measures. Specific performance criteria shall include verifiable restoration and/or creation of waters of the United States and waters of the State, including wetlands, as appropriate. Restoration and/or creation results shall be monitored for site success for a minimum of 5 years and will be terminated with the permission of the resource agencies. Monitoring reports shall be provided annually to the Corps, RWQCB, and CDFG.

BIO-10: Temporary Degradation of Water Quality

Retrofit of the Capitol Expressway bridge at Coyote Creek and widening of the concrete culvert at Canoas Creek may temporarily degrade water quality during construction. Increased turbidity or siltation could adversely affect aquatic invertebrates (a food source for fish), fish (through reductions in spawning and rearing habitat quality), and amphibians on or adjacent to this area of proposed construction activities. Furthermore, increases in sedimentation could degrade downstream spawning and rearing habitat, especially for steelhead and chinook salmon, which require relatively clean gravels for spawning. This would be considered a substantial adverse effect. However, implementation of the following mitigation measure would minimize the potential for this effect.

Mitigation Measure BIO-10: Implement Water Quality Control Measures

VTA shall conform to Best Management Practices (BMPs) as described under Section 7-1.01G 'Water Pollution' (California Department of Transportation 1992). In addition, the following recommendations by CDFG per the Section 1601 requirements shall be followed, whether or not the watercourse on-site is dewatered, to comply with proper mitigation measures:

- No equipment shall be operated in the live stream channel.

- When work in a flowing stream is unavoidable, any stream flow shall be diverted around the work area by a barrier, temporary culvert, or a new channel capable of permitting upstream and downstream fish movement.
- Construction of the barrier or the new channel normally shall begin in the downstream area and continue upstream, and the flow shall be diverted only when construction of the diversion is completed.
- No debris, soil, silt, sand, bark, slash, sawdust, cement, concrete, washings, petroleum products, or other organic or earthen material shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into waters of the state.

BIO-11: Permanent Loss or Temporary Disturbance of Potential Habitat for California Red-Legged Frog

Coyote Creek contains potential habitat for the federally threatened California red-legged frog[1]. As described above under BIO-9, construction activities associated with implementation of the Light Rail Alternative would result in permanent loss of 0.0015 acre of aquatic habitat at Coyote Creek. Loss of this habitat may affect any individual California red-legged frogs that may inhabit or could inhabit the area. Temporary disturbance of aquatic and riparian habitat at Coyote Creek may also affect potential habitat for California red-legged frog. These effects would be considered substantially adverse. However, implementation of the following mitigation measures would minimize these effects.

Mitigation Measure BIO-8b: Compensate for Disturbed Riparian Forest (see previous text)

Mitigation Measure BIO-9: Restore or Create Jurisdictional Waters of the United States (see previous text)

Mitigation Measure BIO-10: Implement Water Quality Control Measures (see previous text)

Mitigation Measure BIO-11a: Avoid and Minimize Effects to California Red-Legged Frog Habitat

VTA shall implement the following measures to avoid and minimize effects to California red-legged frog habitat.

- Prior to the initial site investigation and subsequent ground disturbing activities, a qualified biologist will instruct all project personnel in worker awareness training, including recognition of California red-legged frogs and their habitat.

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[1] Protocol-level surveys were not conducted for this species because effects associated with the proposed construction are primarily temporary and would be minimized through implementation of the described mitigation measures.

- A qualified biologist will conduct pre-construction surveys within the project area no earlier than 2 days before ground-disturbing activities.
- No activities shall occur in suitable habitat after October 15 or the onset of the rainy season, whichever occurs first, until May 1 except for during periods greater than 72 hours without precipitation unless otherwise specified in conservation measures. Activities can only resume after site inspection by a qualified biologist. The rainy season is defined as: a frontal system that results in depositing 0.25 inches or more of precipitation in one event.
- Vehicles to and from the project site will be confined to existing roadways to minimize disturbance of habitat unless otherwise specified in conservation measures.
- If a California red-legged frog is encountered during excavations, or any project activities, activities will cease until the frog is removed and relocated by a USFWS-approved biologist. Any incidental take will be reported to the USFWS immediately by telephone.
- If suitable California red-legged frog habitat is disturbed or removed, VTA will restore the suitable habitat in concert with Mitigation Measures BIO-8b and BIO-9.

Mitigation Measure BIO-11b: Compensate for Loss of Aquatic Habitat through Protection or Enhancement of Suitable California Red-Legged Frog Habitat

Any permanent loss of aquatic habitat at Coyote Creek identified by USFWS as suitable to support California red-legged frog will be minimized through protection or enhancement of degraded aquatic and riparian habitat consistent with Mitigation Measures BIO-8b and BIO-9.

BIO-12: Permanent Loss of Aquatic, Temporary Disturbance of Riparian Habitat, and Temporary Disturbance of Southwestern Pond Turtle

Southwestern pond turtle is a state species of special concern that could occur in the aquatic and riparian habitat identified within the Capitol Expressway Corridor. In particular, Coyote Creek contains suitable breeding and basking habitat for this species, and Canoas Creek may contain potential dispersal habitat for the Southwestern pond turtle. Construction activities associated with the Light Rail Alternative in or near the creeks would result in the loss of 0.0015 acre of aquatic habitat and temporary disturbance to riparian habitat that could support Southwestern pond turtle. Although no Southwestern pond turtles were observed in the area during reconnaissance-level surveys, the loss of and disturbance to their potential habitat would be considered a substantial adverse effect. However, implementation of the following mitigation measures would minimize these effects.

Mitigation Measure BIO-8a: Conduct Preconstruction Surveys to Identify Environmentally Sensitive Habitat Areas (see previous text)

Mitigation Measure BIO-8b: Compensate for Disturbed Riparian Forest (see previous text)

Mitigation Measure BIO-9: Restore or Create Jurisdictional Waters of the United States (see previous text)

Mitigation Measure BIO-10: Implement Water Quality Control Measures (see previous text)

Mitigation Measure BIO-12: Conduct Preconstruction Surveys for Western Pond Turtles and Implement Measures to Avoid or Minimize Adverse Effects if Turtles are Present

A qualified biologist will conduct a preconstruction survey for western pond turtles in all suitable aquatic habitat. This survey will involve the biologist walking along the bank of Coyote Creek scanning the creek beds and basking sites for turtles. The biologist will use high-powered binoculars to assist in visibility. The survey area will include 300 feet upstream and downstream from the study area. This survey will be conducted 24 hours prior to the onset of in-water construction activities. If individual pond turtles are located they will be captured by a qualified, permitted biologist and relocated to the nearest suitable habitat upstream or downstream of the study area. If individuals are relocated, then the contractor will install barrier fencing along each side of the work area to prevent individual turtles from re-entering the work area. In the event barrier fencing is installed the qualified biologist will conduct relocation surveys for three consecutive days to ensure that all animals are removed from the disturbance area.

BIO-13: Temporary Disturbance of Steelhead and Chinook Salmon in Coyote Creek

Coyote Creek contains potential habitat for the federally listed steelhead trout and listing candidate chinook salmon. Spawning habitat occurs downstream and possibly within the study area, and these species may move through the study area to reach upstream spawning areas. The proposed construction activities under the Light Rail Alternative within the creek areas could affect fish by temporarily preventing migration between downstream areas and upstream spawning sites for adults. Furthermore, juveniles migrating to the ocean from upstream rearing areas also could be adversely affected by construction activities within Coyote Creek. Temporary degradation of water quality (as describe above under BIO-10) may also adversely affect adult spawning and juvenile rearing downstream from the site. Finally, individual fish could be injured or killed as result of construction activities within the channel. These temporary disturbances would be considered substantial adverse effects on fish, including steelhead and chinook salmon. However, implementation of the following mitigation measures would minimize these effects.

Mitigation Measure BIO-8b: Compensate for Disturbed Riparian Forest (see previous text)

Mitigation Measure BIO-9: Restore or Create Jurisdictional Waters of the United States (see previous text)

Mitigation Measure BIO-10: Implement Water Quality Control Measures (see previous text)

Mitigation Measure BIO-13a: Limit In-Water Construction Activities to Dry Season

Construction within and along the creek will be restricted to the dry season (June 1 to October 15, or as arranged by NOAA Fisheries), the period in which there is minimal water in the channel and in which movement of adults and juveniles of these species within the area affected by the proposed alternatives is expected to be minimal.

Mitigation Measure BIO-13b: Divert Live Flow around Active Construction Area

If dewatering of the site occurs, water shall be diverted through the site by way of a resource agency-approved fish-friendly bypass structure designed, installed and maintained in a manner consistent with resource agency requirements and those identified in VTA's Fish-Friendly Channel Design Recommendations (March 2000).

BIO-14: Temporary Disturbance of Nesting Raptors during Construction

Nonlisted special-status raptors and common raptor species are protected under California Fish and Game Code Section 3503.5. Disturbance related to human activity and construction noise could cause nest abandonment and death of young or loss of reproductive potential at active nest sites. Construction of the Light Rail Alternative would result in the temporary disturbance of riparian forest habitat adjacent to Coyote Creek and approximately 3 acres of ruderal forb-grassland habitat, both of which contain suitable nesting habitat for a variety of special-status raptors. Construction of the light rail alternative throughout the study area may also disturb raptor nesting activity in habitat adjacent to the study area. These would be considered substantial adverse effects.

No mitigation is required if construction activities occur during the nonbreeding season (August 16 to February 28). However, if construction activities occur during the breeding season, disturbance of nesting special-status raptors would be minimized and avoided through implementation of the following mitigation measures.

Mitigation Measure BIO-14a: Conduct a Preconstruction Survey for Nesting Raptors

Preconstruction surveys for nesting raptors will be conducted by a qualified ornithologist to ensure that no raptor nests will be disturbed during implementation of the light rail alternative. This survey shall be conducted no more than 14 days before initiation of construction activities during the early part of the breeding season (January through April) and no more than 30 days before initiation of construction during the late part of the breeding season (May through August). During this survey, the ornithologist would inspect all trees and suitable grassland habitat in and immediately adjacent to the affected areas for raptor nests. If the survey does not identify any nesting special-status raptor species in the area potentially affected by the proposed activity, no further mitigation is required.

Mitigation Measure BIO-14b: Avoid Active Raptor Nests during the Nesting Season

If an active raptor nest is found close enough to the construction area to be disturbed, the ornithologist, in consultation with CDFG, would determine the extent of a construction-free buffer zone (typically 250 feet) to be established around the nest. VTA shall require that no grading or construction be allowed within this buffer during the nesting seasons for special-status raptor species that are present, except as approved by USFWS or CDFG, as applicable.

BIO-15: Temporary Disturbance to Nesting Habitat for Migratory Birds, Including Swallows

Construction of the Light Rail Alternative could disturb nesting migratory birds, including swallows, at the Coyote Creek bridge site. Swallows and migratory birds are not considered special-status species, but their occupied nests and eggs are protected by federal and state laws, including the Migratory Bird Treaty Act and California Fish and Game Code Section 3503.5. Temporary disturbance of nesting swallows and other migratory birds would be considered a substantial adverse effect. However, implementation of the following mitigation measures would minimize this effect.

Mitigation Measure BIO-8a: Conduct Preconstruction Surveys to Identify Environmentally Sensitive Habitat Areas (see previous text)

Mitigation Measure BIO-8b: Compensate for Disturbed Riparian Forest (see previous text)

Mitigation Measure BIO-15: Conduct Preconstruction Surveys for Nesting Migratory Birds

If construction activities are scheduled to occur during the bird breeding season (March 15–August 15), a preconstruction survey for nesting migratory birds shall be conducted prior to commencement of construction activities. If an active nest is identified within the study area, construction activities will stop (only where a nest is located) until the young fledge or the nest is removed in accordance with CDFG approval.

BIO-16: Temporary Disturbance of Roosting and Foraging Habitat for Special-Status Bat Species

There is potential for special-status bat species (described above under *Environmental Setting*) to roost and forage at the Coyote Creek overpass and in adjacent riparian habitat areas. Construction activities at or near this location would include disturbance from noise and human presence. This temporary disturbance to potential special-status bat species would be considered a substantial adverse effect. However, implementation of the following mitigation measure would minimize this effect.

Mitigation Measure BIO-16: Conduct Preconstruction Survey of Coyote Creek Overpass

A qualified biologist will conduct a preconstruction survey to determine occupancy by roosting special-status bats. If it is determined that bats are roosting beneath the bridge or in adjacent riparian habitat, then appropriate modifications to construction time and method will be implemented. The modifications will be developed through consultation with CDFG. Modifications may include timing construction activities to avoid breeding periods, establishment of buffers, or biological monitoring. In some cases bats may be actively encouraged to avoid roosting in the area affected prior to the onset of construction activities.

BIO-17: Conflict with the Provisions of an Adopted Habitat Conservation Plan or Natural Community Conservation Plan

As described in Section 4.13, *Land Use*, two HCPs that could affect future development in San Jose are currently being developed. The first is a countywide multispecies HCP/NCCP being prepared by the County, Santa Clara Valley Water District (SCVWD), the City, and VTA with an expected completion date of 2009. The second is the Coyote Valley Specific Plan HCP, which began its initial planning stages in August 2002. Both HCP projects are at a stage at which conclusive information regarding biological policies that could affect the Light Rail Alternative is not known. However, each HCP will take into account existing and planned future developments within Santa Clara Valley. As such, the Light Rail Alternative is expected to be included within the HCP's list of planned future developments within the Santa Clara Valley. This inclusion would ensure that any development associated with the Light Rail Alternative would not conflict with the intentions of either HCP. There would be no adverse effects.

Mitigation: No mitigation is required.

BIO-18: Loss of Urban Trees

Construction of the Light Rail Alternative may result in the removal of trees in landscaped areas along the proposed alignment. Trees that may be removed include California pepper, olive, tree-of-heaven, and blue gum eucalyptus (*Eucalyptus globulus*). These large trees may serve as nest sites or perches for raptors, and loss of these trees would be considered a substantial adverse effect. However, implementation of the following mitigation measures would minimize this effect.

Mitigation Measure BIO-18a: Conduct a Tree Survey to Assess Tree Resources Impacted by the Light Rail Alternative
VTA will conduct a tree survey along the Capitol Expressway Corridor to identify trees subject to removal or loss during construction. If the survey determines that no trees would be lost, no further mitigation is required. However, if the survey identifies trees that would be removed or damaged, VTA will also implement Mitigation Measure BIO-18b.

Mitigation Measure BIO-18b: Replace Trees
All urban trees that are to be removed or lost shall be replaced. Trees with a diameter less than 12 inches shall be replaced at a 2:1 ratio. All trees with a diameter of 12 inches or more shall be replaced at a 3:1 ratio. If urban trees (nonnatives and ornamentals) are replaced with native trees, a reduced mitigation ratio of 1:1 for all trees smaller than 12 inches in diameter, and 2:1 for all trees with a diameter 12 inches or more, shall be implemented. These trees shall be irrigated and maintained for a period of not fewer than 3 years.

Proposed Options

As described in Chapter 3.0, *Alternatives Considered*, the Light Rail Alternative includes station, segment, park-and-ride, and light rail vehicle storage location options. The station options include at-grade, aerial, and depressed open-air station designs. Several platform configurations are also being explored including side platforms, single center platforms, offset platforms, and a platform on the west side of the expressway. With the exception of the Eastridge Transit Center segment and the side-running option between Eastridge and Nieman Boulevard, the light rail alignment would remain within the median at-grade, on an aerial structure above the corridor, or in a tunnel. These options could adversely affect biological resources. The effects on biological resources discussed above would result depending on the alignment options or station designs selected. The effects from specific options are discussed below.

Cunningham Avenue Station Option

BIO-7: Permanent Loss of Biological Habitats and Disturbance to Inhabiting Species

Construction of the Cunningham Station at the Cunningham Avenue intersection would also require realignment of Capitol Expressway between Ocala Avenue and Cunningham Avenue and would permanently remove approximately 1.15 acres of ruderal habitat adjacent to the Reid-Hillview Airport. Biologists have identified this area as containing potential habitat for the special-status Western burrowing owl. This would be considered a substantial adverse effect. Implementation of the following mitigation measures would minimize this effect.

Mitigation Measure BIO-7: Conduct Preconstruction Surveys for Nesting and Wintering Western Burrowing Owls and Implement Measures to Avoid or Minimize Adverse Effects if Owls Are Present (see previous text)

Monterey Highway Station Park-and-Ride Options

BIO-7: Permanent Loss of Biological Habitats and Disturbance to Inhabiting Species

Construction of the proposed park-and-ride facility for the Monterey Highway Station would permanently remove a maximum of 0.70 acre of ruderal habitat within the loop ramps on the east side of Monterey Highway both north and south of Capitol Expressway. Biologists have identified this area as containing potential habitat for the special-status Western burrowing owl. This would be considered a substantial adverse effect. Implementation of the following mitigation measures would minimize this effect.

Mitigation Measure BIO-7: Conduct Preconstruction Surveys for Nesting and Wintering Western Burrowing Owls and Implement Measures to Avoid or Minimize Adverse Effects if Owls Are Present (see previous text)

Section 4.5
Community Services

4.5.1 Introduction

This section describes the environmental setting and effects of the alternatives analyzed in this EIR with regard to community services. Specifically, this section discusses existing community service conditions within the Capitol Expressway Corridor and describes applicable regulations pertaining to community services. The assessment of adverse effects and mitigation measures of the alternatives related to community services is also described.

4.5.2 Existing Conditions

Environmental Setting

An inventory of community services and facilities located within the Capitol Expressway Corridor is shown in Table 4.5-1, and a map of the services and facilities is shown in Figure 4.5-1. Table 4.5-1 identifies the community facilities in the corridor and their proximity to Capitol Expressway. Facilities located within 0.25 mile of Capitol Expressway are shaded. The 0.25-mile threshold is significant because, as a general rule, the distance at which people are willing to walk to a transit stop is about 5 minutes or 1,000 feet. The threshold expands to about 1,500–2,000 feet around high-frequency transit service. People are generally willing to spend more time walking if they can spend less time waiting for or traveling on transit. (Barton-Aschman Associates 1990.)

Police Protection

Police protection services for San Jose are provided by the City of San Jose Police Department (SJPD). SJPD consists of 1,389 sworn police officers and approximately 400 non-sworn personnel. It is responsible for policing an area over 175 square miles with a population over 918,800. The city is divided into 17 police districts of varying sizes. Each district was created based on the number of incidents reported—districts that receive fewer calls per capita are larger, and districts with more calls per capita are smaller. The Capitol Expressway Corridor is located within five districts, for a combined total of 217 officers.

In 2002, San Jose was rated the safest city in the United States with a population over 500,000 (Morgan Quitno Press 2003). In 2002, there were 90,361 reported incidents in the city. Of this total, 36% were reported in the five police districts within Capitol Expressway Corridor. Police protection in the vicinity of the Capitol Expressway Corridor is higher than in many other parts of the city. Districts near the corridor are typically smaller and have more officers. The average number of reported incidents for each district was approximately 5,600, indicating that more incidents are reported in the districts surrounding the Capitol Expressway Corridor than are reported in other parts of the city.

There are no police stations located within 0.25 mile of Capitol Expressway. SJPD headquarters is located approximately 4.5 miles north of the corridor. The nearest community police facility is the Foothill Community Policing Center, located at Oakridge Mall, approximately 1.2 miles west of the corridor. This facility is available for residents to make reports, get information on police and city services, and attend public safety forums.

Security services for VTA light rail trains, right-of-way, and stations are provided by VTA Protective Services. VTA Protective Services coordinates law enforcement activities with a contracted Santa Clara County Sheriff's Department unit and a private security contractor. Additional information about VTA security services can be found in Section 4.15, *Safety and Security*. SJPD and the Santa Clara County Sheriff’s Department provide general law enforcement and public safety oversight within VTA’s service area.

Fire Protection

Fire protection services within Capitol Expressway Corridor are provided by the City of San Jose Fire Department (SJFD) in accordance with the San Jose Fire Code, San Jose Municipal Code, and San Jose 2020 General Plan. The codes and general plan guide city departments, other government agencies, private developers, and the public in reference to the construction, maintenance, and operation of fire protection facilities in the city. In addition, the codes and general plan establish standards for the distribution, design, construction, and location of fire protection facilities. These standards specify fire-flow criteria, minimum distances to fire stations, hydrant specifications, and access provisions for firefighting vehicles and personnel.

The Capitol Expressway Corridor is located within the service area of seven fire stations, one of which is located within 0.25 mile of Capitol Expressway. The fire station locations are shown in Figure 4.5-1.

Table 4.5-1. Inventory of Community Services and Facilities

Feature	Address (Nearest Major Cross Street)	Proximity to Capitol Expressway
Elementary Schools		
Donald Meyer	1824 Daytona Drive (Ocala Avenue)	0.4 mile west on Ocala Avenue to Daytona Drive
Dove Hill	1460 Colt Way (Silver Creek Road)	0.3 mile south on Silver Creek Road to Colt Way
Hillsdale	3200 Water Street (Monterey Road)	0.3 west between Senter Road and Seven Trees Drive; no direct access
Holly Oak	2995 Rossmore Way (White Road)	0.5 mile east between Quimby and Aborn Roads; no direct access
John Montgomery	2010 Daniel Maloney Drive (Silver Creek Road)	0.2 mile south on Silver Creek Road to Daniel Maloney Drive
Katherine Smith	2025 Clarice Drive (Tully Road)	0.5 mile west on Tully Road to Quimby Road to Clarice Drive
Los Arboles	455 Los Arboles Avenue (Senter Road)	0.2 mile east between Senter Road and Seven Trees Drive; no direct access
Lyndale	13901 Nordyke Drive (White Road)	0.4 mile east on Wilbur Avenue
Mildred Goss	2475 Van Winkle Lane (Story Road)	0.1 mile west on Story Road to Galahad to Van Winkle Lane
Most Holy Trinity	1940 Cunningham Avenue (King Road)	0.6 mile west on Ocala Avenue to Winter Park Way to Cunningham Avenue
Park View	330 Bluefield Drive (Vista Park Drive)	0.2 mile south on Vista Park Drive to Bluefield Drive
Rachel Carson	4245 Meg Drive (Narvaez Avenue)	0.2 mile south on Bluefield Drive to Albion Drive to Meg Drive
Seven Trees	3975 Mira Loma Way (Seven Trees Drive)	0.1 mile south on Seven Trees Drive to El Cajon Drive to Mira Loma Way
Sylvia Cassell	1300 Tallahassee Drive (Story Road)	0.3 mile west between Story Road and Ocala Avenue; no direct access
Thomas Ryan	1241 McGinness Avenue (Story Road)	0.2 mile east on Story Road to McGinness Avenue
William Rogers	2999 Ridgemont Drive (Ocala Avenue)	0.4 mile east on Ocala Avenue to Ridgemont Drive
Windmill Springs	2880 Aetna Way (McLaughlin Avenue)	0.3 mile north on McLaughlin Avenue to Sylvia Drive
Junior High/Intermediate/Middle Schools		
Clyde Fischer Middle	1720 Hopkins Drive (Ocala Avenue)	0.6 mile west on Ocala Avenue to Hopkins Drive
George Leyva Intermediate	1865 Monrovia Drive (Aborn Road)	0.2 mile west on Aborn Road to Irwindale Drive
Ocala Middle	2800 Ocala Avenue (Capitol Expressway)	0.2 mile east on Ocala Avenue
Sylvandale Junior High	653 Sylvandale Avenue (Senter Road)	0.4 mile south on Silver Creek Road to Sylvandale Avenue
High Schools		
Andrew P. Hill High	3200 Senter Road (Capitol Expressway)	0.1 mile south on Senter Road; school grounds abut Capitol Expressway
Apollo High	1835 Cunningham Avenue (King Road)	0.5 mile west on Ocala Avenue to Winter Park Way
East Valley Christian High	2715 South White Road (Quimby Road)	0.6 mile east on Quimby Road to White Road
Foothill High	230 Pala Drive (Capitol Avenue)	0.7 mile north on Capitol Avenue to Gay Avenue
James Lick High	57 North White Road (Alum Rock Avenue)	0.3 mile east on Alum Rock Avenue
Liberty Baptist High	2790 South King Road (Aborn Road)	0.6 mile north on King Road
Mount Pleasant High	1750 South White Road (Ocala Avenue)	0.6 mile east on Ocala Avenue to White Road
Silver Creek High	3434 Silver Creek Road (Capitol Expressway)	0.2 mile south on Silver Creek Road
William C. Overfelt High	1835 Cunningham Avenue (King Road)	0.5 mile east on Ocala Avenue to Winter Park Way
Community Centers		
Hank Lopez	1694 Adrian Way (Ocala Avenue)	0.3 mile west on Ocala Avenue to Adrian Way
Solari Park	3590 Cas Drive (Seven Trees Drive)	0.1 mile east between Senter Road and Seven Trees Drive; no direct access
Libraries		

Feature	Address (Nearest Major Cross Street)	Proximity to Capitol Expressway
Alum Rock Branch	75 South White Road (Alum Rock Avenue)	0.4 mile east on Alum Rock Avenue to White Road
Evergreen Branch	2635 Aborn Road (White Road)	0.6 mile east on Aborn Road
Hillview Branch	2255 Ocala Avenue (Capitol Expressway)	0.3 mile west on Ocala Avenue
Pearl Branch	4270 Pearl Avenue (Branham Lane)	0.5 mile south on Pearl Avenue
Seven Trees Branch	3597 Cas Drive (Capitol Expressway)	0.1 mile east between Senter Road and Seven Trees Drive; no direct access
Cemeteries		
Calvary Catholic	2655 Madden Avenue (Alum Rock Avenue)	0.6 mile north on Capitol Avenue to Madden Avenue
Oak Hill Memorial	300 Curtner Avenue (Monterey Road)	1.4 miles north on Monterey Road
Major Parks		
Capitol	Bambi Lane (Capitol Expressway)	0.2 mile west on Bambi Lane
Coyote Creek	Tuers Road (Capitol Expressway)	At Tuers Road
Hillview	2251 Ocala Avenue (Capitol Expressway)	0.3 mile west on Ocala Avenue
Lake Cunningham	2305 South White Road (Tully Road)	0.2 mile east on Tully Road
Meadowfair	Corda Drive (King Road)	0.3 mile west between Quimby and Aborn Roads; no direct access
Solari	Cas Drive (Seven Trees Drive)	0.1 mile east between Senter Road and Seven Trees Drive; no direct access
Welch	1900 Santiago Drive (Tully Road)	0.6 mile west on Tully Road to Brahms Drive
Fire Stations		
Station No. 2	2933 Alum Rock Avenue (White Road)	0.2 mile east on Alum Rock Avenue
Station No. 13	4380 Pearl Avenue (Branham Lane)	0.5 mile south on Pearl Avenue
Station No. 16	2001 South King Road (Cunningham Avenue)	0.9 mile west on Ocala Avenue to King Road
Station No. 18	4430 Monterey Road (Skyway Drive)	0.6 mile south on Monterey Road to Skyway Drive
Station No. 21	1749 Mount Pleasant Road (Marten Avenue)	1.4 miles east on Ocala Avenue to Mount Pleasant Road
Station No. 24	2525 Aborn Road (Nieman Boulevard)	0.4 mile east on Aborn Road
Station No. 26	528 Tully Road (Senter Road)	1.2 miles north on Senter Road to Tully Road
Regional Facilities		
Eastridge Shopping Center	1 Eastridge Center (Capitol Expressway)	At Eastridge Loop
National Hispanic University	14271 Story Road (White Road)	0.7 mile east on Story Road
Raging Waters	2333 South White Road (Tully Road)	0.2 mile east on Tully Road
Reid Hillview Airport	2350 Cunningham Avenue (Capitol Expressway)	0.2 mile west on Cunningham Avenue
Santa Clara County Fairgrounds	344 Tully Road (Monterey Road)	1.4 miles north on Monterey Road

Note: Facilities located within 0.25 mile of Capitol Expressway are shaded. The 0.25-mile threshold is significant because, as a general rule, the distance at which people are willing to walk to a transit stop is about 5 minutes or 1,000 feet.

Source: Korve Engineering 2004b.

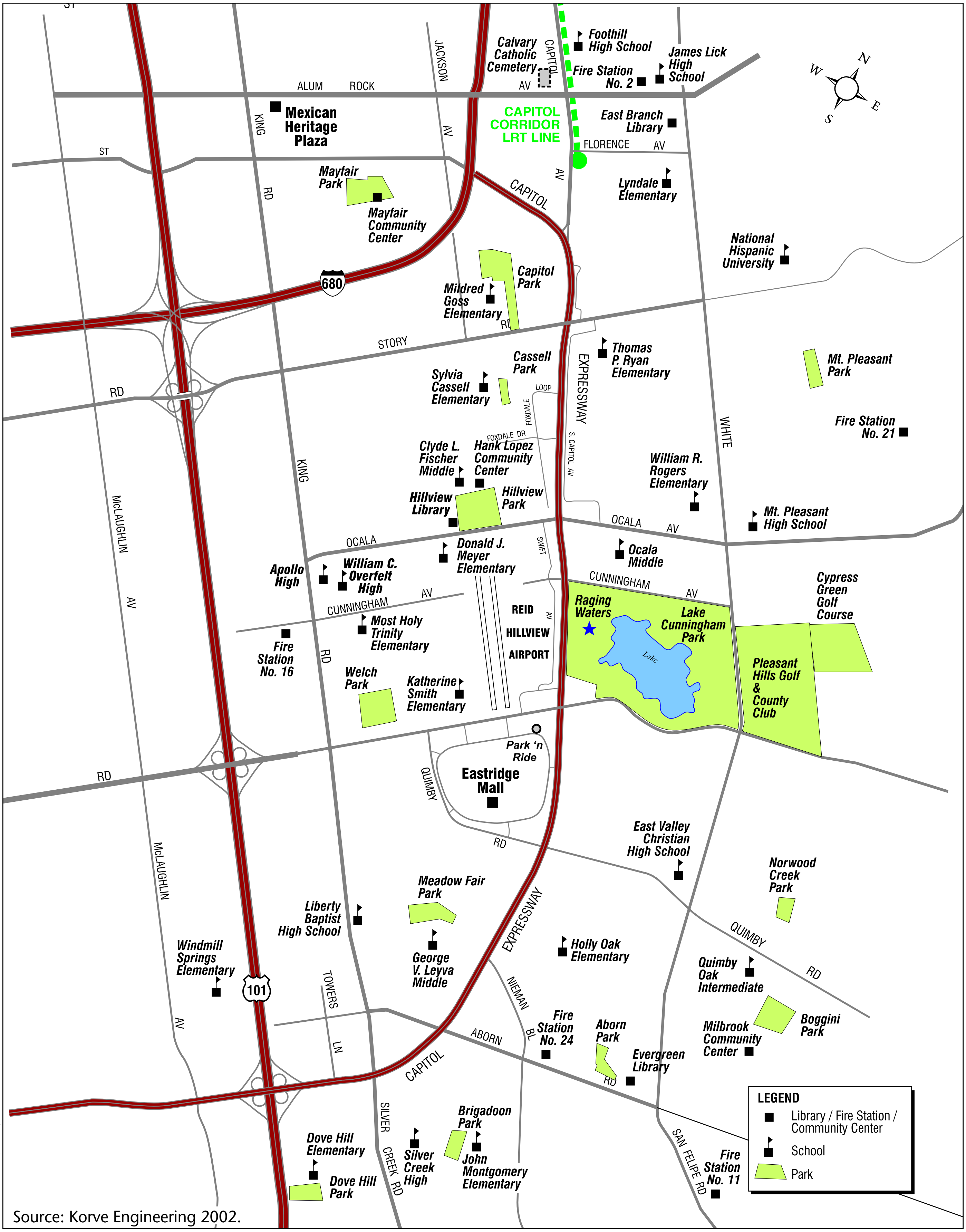

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Figure 4.5-1a
Existing Community Features

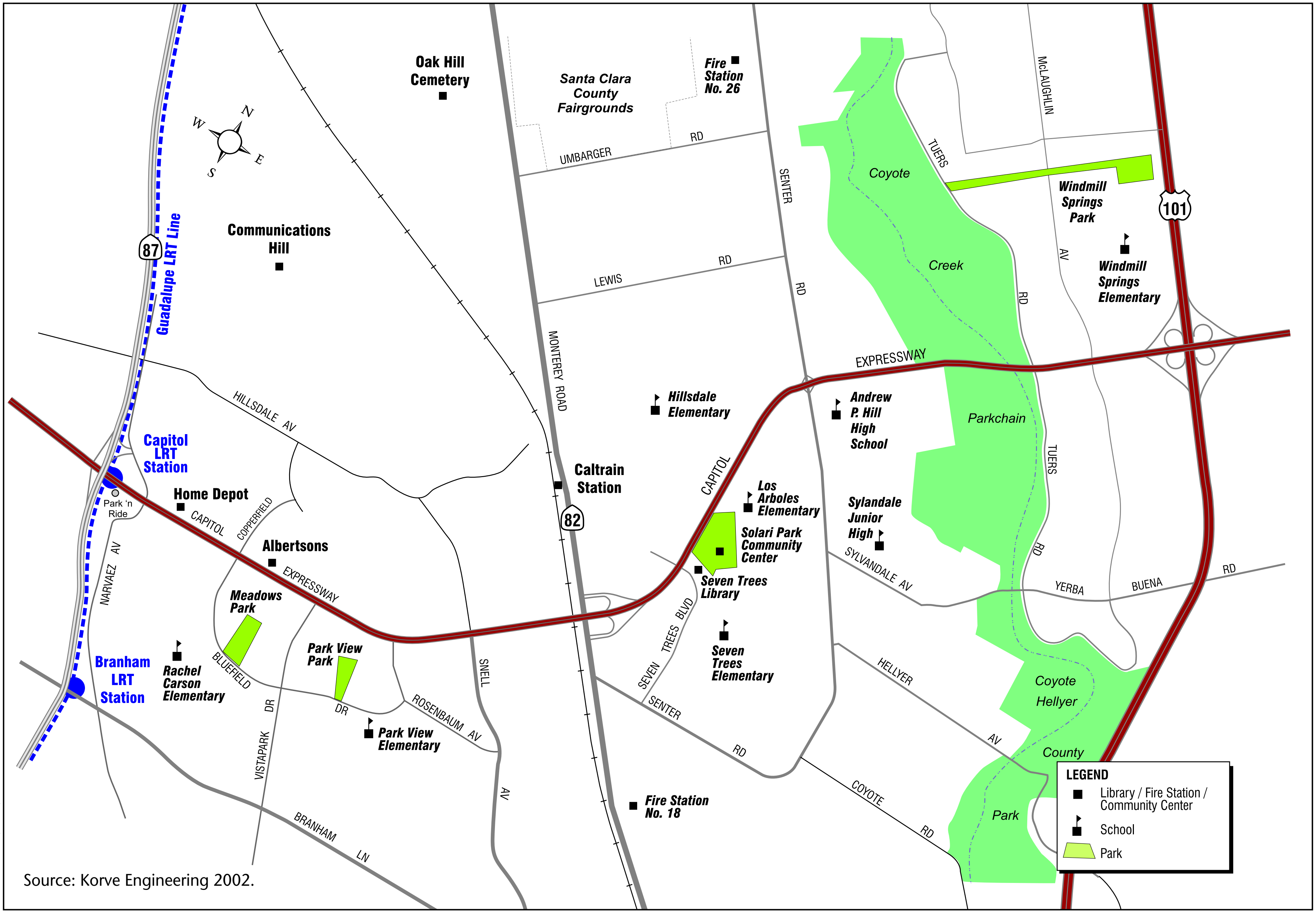

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Figure 4.5-1b
Existing Community Features

Schools

Thirty-three public school districts are located in San Jose. Seven districts serve the communities surrounding the Capitol Expressway Corridor: San Jose Unified School District, Oak Grove School District, Franklin-McKinley Elementary School District, Alum Rock Union Elementary School District, Evergreen Elementary School District, Metropolitan Education District, and East Side Union School District. There are also private and parochial schools in the study area.

Seven elementary schools are located within 0.25 mile of Capitol Expressway: John Montgomery Elementary School, Los Arboles Elementary School, Mildred Goss Elementary School, Park View Elementary School, Rachel Carson Elementary School, Seven Trees Elementary School, and Thomas P. Ryan Elementary School (Table 4.5-1). These schools typically serve 500–900 students and are located in residential areas away from major streets.

Two middle schools are located within 0.25 mile of Capitol Expressway: George V. Leyva Middle School and Ocala Middle School (Table 4.5-1). These schools typically serve about 1,000 students and are located on roads with direct access to Capitol Expressway.

Two high schools are located within 0.25 mile of Capitol Expressway: Andrew P. Hill High School and Silver Creek High School (Table 4.5-1). Andrew P. Hill High School is located directly adjacent to the Capitol Expressway Corridor. Andrew P. Hill High and Silver Creek High Schools typically serve 2,000–2,500 students.

Parks and Community Centers

The City of San Jose Department of Parks, Recreation, and Neighborhood Services maintains 15 neighborhood parks within 0.25 mile of the corridor (Figure 4.5-1). The neighborhood parks range in size from 1–11 acres and average about 5.5 acres. Many of the parks feature restrooms, playgrounds, picnic areas, and sports fields. Four major park facilities are located within 0.25 mile of Capitol Expressway: Capitol Park, Coyote Creek Park, Solari Park and Lake Cunningham Regional Park.

Coyote Creek Park is located directly adjacent to Capitol Expressway (Figure 4.5-1). The park is part of a 593-acre park chain located along Coyote Creek. The park includes a 15-mile multiple-use paved trail, rest areas, and emergency call boxes.

Solari Park and Community Center is directly located adjacent to Capitol Expressway and covers 8.8 acres and features a community center, restrooms, picnic areas, two playgrounds, a basketball court, tennis courts, and a softball field.

Lake Cunningham Regional Park is located adjacent to Capitol Expressway (Figure 4.5-1) and is maintained by the city. The park features open space, a 50-acre lake, picnic areas, sports fields, restrooms, and a marina. Passive recreation uses, such as bird watching, exist within the park. An amusement park, Raging Waters Water Park, is located on the grounds of Lake Cunningham Regional Park.

Hospitals

The Regional Medical Center of San Jose is located in eastern San Jose about 0.7 mile north from Capitol Expressway (Figure 4.5-1). The hospital has a 204-bed capacity and treats approximately 45,000 emergency-room patients per year. Hospital departments include obstetrics, in-patient and out-patient surgery, pediatric services, critical care, and general medicine.

Libraries

Libraries in the vicinity of Capitol Expressway are managed by the San Jose Public Library. Five libraries serve the area; the Seven Trees Branch is located about 0.1 mile from the corridor across the street from Solari Park.

Places of Worship

There are three places of worship located within 0.25 mile of Capitol Expressway: First Samoan Assemblies of God Church, Grace Community Baptist Church, and Harvest Community Church (Figure 4.5-1). First Samoan Assemblies of God Church and Harvest Community Church are located adjacent to Capitol Expressway. Several other religious institutions also serve the study area.

4.5.3 Environmental Consequences and Mitigation Measures

Approach and Methodology

A qualitative assessment was used to evaluate adverse effects on community services resulting from implementation of the proposed alternatives. The assessment included evaluation of effects on all community services and facilities located within 0.5 mile of the Capitol Expressway Corridor. Mitigation measures are provided to minimize adverse effects.

Thresholds of Significance

Based on significance criteria used by VTA and professional practice, the proposed alternatives may result in adverse effects related to community services if they would:

- result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any the following public services:
    - fire protection,
    - police protection,
    - schools,
    - parks, or
    - other public facilities.

Environmental Consequences and Mitigation Measures of the No-Project Alternative

This analysis considers the effects of the No-Project Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

CS-1: Physical Alteration of Existing Government Facilities or Required Construction of New Government Facilities

The No-Project Alternative would keep in place the existing transit services and roadway network within the Capitol Expressway Corridor. There would not be any large-scale construction of structures or facilities associated with transit improvements and environmental conditions would not change. Therefore, there would be no need for physical alteration of existing governmental facilities or construction of new governmental facilities that could result in adverse effects on the surrounding environment. There is no adverse effect.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Baseline Alternative

Anticipated adverse effects associated with the projects included in the approved 1996 Measure B Improvement Program are independent of the proposed alternatives and are or will be reviewed in their respective environmental compliance documents. Additionally, the potential cumulative effects of these projects are considered in Chapter 5, *Other CEQA Considerations*, of this document. This analysis considers the effects of the bus service improvements that are included in the Baseline Alternative as outlined in Chapter 3, *Alternatives Considered*.

CS-2: Physical Alteration of Existing Government Facilities or Required Construction of New Government Facilities

Under the Baseline Alternative, there would be bus service improvements consisting of service frequency upgrades, a new route providing continuous, limited-stop service along Capitol Expressway, and enhanced limited-stop service along various routes throughout the existing bus transit network. These improvements would operate using the service structures, route network, and bus stop locations currently in place and would not require the construction of any new structures or facilities. Therefore, there would be no need for physical alteration of existing governmental facilities or construction of new governmental facilities that could result in adverse effects on the surrounding environment. There is no adverse effect.

Moderate improvements in access to schools, parks, libraries, community centers, and places of worship located in the vicinity of the Capitol Expressway Corridor would occur under this alternative. This is considered a beneficial effect.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Light Rail Alternative

This analysis considers the effects of the Light Rail Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

CS-3: Ability to Maintain Acceptable Service Ratios, Response Times, or Other Performance Objectives for Fire and Police Protection

Under the Light Rail Alternative, there is potential for traffic delays at light rail grade crossings that could result in delayed emergency response times. The response time for emergency services depends in part on the distance from fire and police stations to the areas served, and on the size and number of fire and police officers in a district.

The fire stations identified in the vicinity of the Capitol Expressway Corridor are distributed evenly along the corridor. SJFD has a goal of responding to all calls within 4 minutes; that goal is currently met about 90% of the time. Emergency vehicle access could be disrupted by light rail grade crossings and could affect emergency response times; however, the Light Rail Alternative would operate in two-car consists[1] that would typically clear the intersection in less than 1 minute.

VTA would extend coverage provided by its Protective Services unit to any new light rail transit operations. The additional police protection service needs associated with new light rail service would be supported by the Santa Clara County Sheriff's Department and SJPD.

It is anticipated that VTA would work with the fire and police departments during preliminary engineering and final design of the Light Rail Alternative to ensure that fire and life safety issues are adequately addressed. It is also anticipated that in accordance with its Systems Safety Plan, VTA would coordinate development of evacuation plans for the below-grade and aerial portions of the Light Rail Alternative to ensure the safety of light rail patrons and operators. As a result, there would be no adverse effect on police and fire services.

Mitigation: No mitigation is required.

CS-4: Required Construction of New Schools and Libraries

Implementation of the Light Rail Alternative would result in an improvement in the accessibility to schools along the Capitol Expressway Corridor. As noted in *Environmental Setting*, schools are located within 0.25 mile of Capitol Expressway and would therefore be within a 0.25 mile of a proposed light rail station. This is considered a beneficial effect.

Implementation of the Light Rail Alternative would not result in increased student enrollment in any of the school districts in which the corridor is located. Implementation of this alternative does not include elements that would induce

[1] A *consist* (kän-"sist) is the makeup or composition rail cars in a train.

substantial population growth beyond planned growth levels. The alternative would serve existing populations and forecasted population levels reflected in the San Jose 2020 General Plan. In the general plan, the Capitol Avenue corridor has been designated as an "Intensification Corridor," where higher residential densities, mixed uses and non-residential uses would be centered along an existing or planned light rail line. Planned growth is therefore accommodated in the City's plans, and current school capacities would also be sufficient to address this growth.

Implementation of the Light Rail Alternative would result in an improvement in the accessibility to libraries along the Capitol Expressway Corridor. As noted in *Environmental Setting*, the Seven Trees branch library is located within 0.25 mile of Capitol Expressway and would therefore be within a 0.25 mile of a proposed light rail station. There would be no adverse effect related to use of or access to existing libraries under implementation of this alternative. As noted above, implementation of this alternative does not include elements that would induce substantial population growth beyond planned growth levels. The San Jose 2020 General Plan threshold for additional library facilities requires 10,000 square feet of library space per 36,000 in population. Therefore, no additional library facilities would be required to address existing population and planned growth.

Mitigation: No mitigation is required.

CS-5: Physical Alteration of Existing Schools and Libraries

Implementation of the Light Rail Alternative would not require any or alterations to the existing schools and libraries along the proposed light rail alignment. There would be no adverse effect.

Mitigation: No mitigation is required.

CS-6: Physical Alteration of Existing Parks and Community Centers

Implementation of the Light Rail Alternative would not require any or alterations to the existing parks and community centers along the proposed light rail alignment. There would be no adverse effect

Mitigation: No mitigation is required.

Proposed Options

As described in Chapter 3.0, *Alternatives Considered*, the Light Rail Alternative includes station, segment, park-and-ride and light rail vehicle storage location options. The station options include at-grade, aerial and depressed open air station designs. Several platform configurations are also being explored including side platforms, single center platforms, offset platforms and a platform on the west side of the expressway. With the exception of the Eastridge Transit Center segment and the side-running option between Eastridge and Nieman Boulevard, the light rail alignment would remain within the median at-grade, on an aerial structure above the corridor, or in a tunnel. These options could adversely affect community services. The effects on community services discussed above would result depending upon the alignment options or station designs selected.

Section 4.6
Cultural Resources

4.6.1 Introduction

This section describes the environmental setting and effects of the alternatives analyzed in this EIR with regard to cultural resources. Specifically, this section discusses existing archaeological, architectural, and paleontological conditions within the Capitol Expressway Corridor, discusses results of the cultural resources investigation, discusses sensitive cultural resources located within the corridor, and describes applicable federal and state regulations. The assessment of substantial adverse effects and mitigation measures of the alternatives related to cultural resources are also described.

4.6.2 Existing Conditions

Environmental Setting

Prehistoric Setting

Santa Clara Valley has been a region of intense human occupation far back in prehistory, long before the European explorers arrived in the eighteenth century. However, few native inhabitants remained when Alfred Kroeber and other researchers began to study the aboriginal culture throughout the area. In the early twentieth century, the prehistory of the region was virtually unknown aside from sparse ethnographic information and the discovery of a few sites at the southern end of San Francisco Bay. However, since 1972, as a result of rapid population growth and the requirements of environmental legislation, numerous sites have been discovered within the Bay Area. These sites and corresponding research have led to a much greater understanding of the prehistory of the region.

Between 1912 and 1960, researchers from the University of California, including the University of California Archaeological Survey and the University of California Museum of Anthropology, recorded 43 sites in the Santa Clara Valley and many more around the Bay Area. Both L. Loud and N. C. Nelson conducted excavations at Ca-SCl-1, a large shellmound located on the shores of San Francisco Bay. Loud excavated 50 burials at this site, and another 100 burials were excavated in 1931 by a Stanford University anatomy professor (Allen et al. 1999).

Advances were made in archaeological dating methods and, in the 1930s, researchers applied these new techniques to distinguish temporally and culturally discrete assemblages of shell beads and ornaments. More recently, new techniques were developed for determining obsidian sources and exchange routes among different Native American groups throughout California and beyond. In addition, obsidian hydration and radiocarbon dating have been instrumental in establishing dates of occupation for many of the sites in Santa Clara Valley. Information on human occupation prior to 3000 B.C. is almost nonexistent in part because of the depositional environment and dramatic environmental changes that took place at this time.

Results from previous archaeological investigations in the Capitol Expressway Corridor and the surrounding region have shown that mobile hunter-gatherers inhabited the Santa Clara Valley. Over time, their foraging strategies became more focused on the locally obtainable resources and their lives became increasingly more sedentary. These changes are reflected in the cultural sequence developed by Fredrickson and Bennyhoff, which defines three basic cultural patterns throughout the Bay Area and interior Delta for the period between 2500 B.C. and A.D. 1500: the Windmiller, Berkley, and Augustine Patterns (Fredrickson and Bennyhoff 1969).

The Windmiller Pattern (2500–1000 B.C.) is characterized by a mixed economy of game procurement and the use of wild plant foods. The archaeological record contains numerous projectile points associated with a wide range of faunal, or animal, remains. Hunting was not limited to terrestrial animals, as shown by tools in the Windmiller Pattern such as fishing hooks and fish bone (Moratto 1984). Plant resources were also used, as indicated by the presence of stone tools such as milling slabs and handstones. The Windmiller Pattern reflects a seasonal adaptation that includes winter habitation sites in the valley and summer camps in the foothills (Fredrickson and Bennyhoff 1969).

The Windmiller Pattern shifted to the Berkeley Pattern, which spanned the period between about 1500 B.C. and A.D. 500. A decrease in the presence of milling slabs and handstones and a shift to mortar and pestle technology is evident in the archaeological record and indicates an increased dependence on acorns. Large shellmounds are found near water sources, and the presence of projectile points and atlatls (i.e., spear- or dart-throwing devices) suggests that hunting was still an important part of subsistence (Fredrickson 1973). In the southern Bay Area, the Berkeley Pattern is characterized by a heavy reliance on the bayshore environment.

The Augustine Pattern followed the Berkeley Pattern around A.D. 500. The Augustine Pattern exhibits an increase in ceremonialism, social organization, and stratification. Trade is an important element of this pattern and can be seen in the different types of obsidian from other regions, as well as shell beads. The presence of Gunther Barbed–series projectile points indicates the use of the bow and arrow. The increase in ceremonialism is evidenced by flexed burials associated with artifacts such as shell beads, mortars and pestles, and projectile points.

Late Holocene (time period beginning around 2000 B.C.) archaeological sites in Santa Clara Valley indicate some variations from larger patterns. Throughout the Late Holocene, the environment of the southern Bay Area eventually evolved into a local tidal marsh/wetlands. The prehistoric inhabitants created large shellmounds in which the dominant species of shellfish were hornsnail, oyster, clam, and bay mussel. Archaeological sites closer to the bay demonstrate subsistence based on tidal marsh resources, whereas the interior valley sites to the north reveal an emphasis on terrestrial resources (Hylkema 1998).

People in Santa Clara Valley, though somewhat inland, still exploited wetland resources (unlike Late Holocene Pattern), whereas their interior neighbors to the north focused largely on terrestrial resources (fitting in with the general Late Holocene Pattern), such as deer and rabbit.

Another specific difference seen in southern Bay Area archaeology is the appearance of a different group of people at about 500–200 B.C. This group is thought to have spread southward from the southern Bay Area. Its cultural traits suggest a mix between the earlier Windmiller Pattern and the Berkeley Pattern, blended with the local bay tradition to form the Meganos Aspect (Bennyhoff 1968 in Hughes 1994). The archaeological remains of Meganos Aspect include sites containing mortars and pestles, with an absence of projectile points, and extended burials with very few grave goods, implying seasonal mobility with frequent residential shifts. As the Augustine Pattern developed, evidence of the Meganos Aspect became more prevalent toward the San Joaquin River (Hylkema 1998).

The Emergent Period (A.D. 1200–1777) in the southern Bay Area is characterized by an elaborate social organization and the formation of small autonomous sociopolitical groups called tribelets. An economic relationship was maintained among the many small groups, and trade was frequent between the coastal groups and the valley/bayshore groups. Tools characteristic of the Augustine Pattern are found through the Emergent Period. Artifacts from this period include well-shaped mortars and pestles, decorated Olivella beads, rectangular Olivella beads, tubular stone pipes, and many small projectile points that were used with the bow and arrow. Haliotis pendants and large amounts of Olivella beads are found in association with graves as well (Hylkema 1998).

Ethnographic Setting

At the time of European contact, Santa Clara Valley was occupied by a group of Native Americans whom ethnographers called the Ohlone or Costanoan. The Ohlone is a linguistically defined group composed of several autonomous tribelets speaking eight different but related languages. The Ohlone languages, together with Miwok languages, compose the Utian language family of the Penutian stock. The territory of the Ohlone people extended along the coast from Golden Gate in the north to just beyond Carmel in the south, and as much as

60 miles inland. This territory encompassed a lengthy coastline as well as several inland valleys (Levy 1978).

The Ohlone were hunter-gatherers and relied heavily on acorns and seafood. They also consumed a wide range of other foods, such as various seeds (the growth of which was promoted by controlled burning), buckeye, berries, roots, land and sea mammals, waterfowl, reptiles, and insects. The Ohlone used tule balsas (i.e., reeds) for watercraft, bow and arrow, cordage, bone tools, and twined basketry to procure and process their foodstuffs (Levy 1978).

Aboriginally, the Ohlone were politically organized by tribelet, each having a designated territory. A tribelet consisted of one or more villages and camps in a territory designated by physiographic features. Tribelets generally had 100–250 members (Kroeber 1925). The office of tribelet chief was inherited patrilineally and could be occupied by a man or a woman. Duties of the chief included providing for visitors; directing ceremonial activities; and directing fishing, hunting, gathering, and warfare expeditions. The chief served as the leader of a council of elders, which functioned primarily in an advisory capacity to the community (Levy 1978).

The Capitol Expressway Corridor area was inhabited by the Tamien tribelet, whose territory encompassed central Santa Clara Valley along the banks of the Guadalupe River from Agnews to present-day downtown San Jose, as well as the flatlands westward to Stevens Creek and present-day Cupertino (Milliken 1995). Mission Santa Clara, which was founded in 1777, was built in Tamien territory and drew Native Americans from many surrounding tribes (Milliken 1995).

Seven Spanish missions were founded in Ohlone territory between 1777 and 1797. While living within the mission system, the Ohlone commingled with other groups, including Esselen, Yokuts, Miwok, and Patwin. Mission life was devastating to the Ohlone population. It has been estimated that, in 1770, when the first mission was established in Ohlone territory, the Native American population numbered around 10,000, but rapidly declined to fewer than 2,000 by 1832 as a result of introduced disease, harsh living conditions, and reduced birth rates. After the secularization of the missions, circa 1830, Indians gradually left the missions; many went to work as wage laborers on the ranchos, in mines, and as domestic servants. There was a partial return to aboriginal religious practices and subsistence strategies, but, for the most part, the Ohlone culture was greatly diminished (Levy 1978). Today, descendants of the Ohlone still live in the area, and many are active in maintaining their traditions and advocating Native American causes.

Historic Setting

Spanish Colonization

The Spanish government sent military expeditions to present-day California to explore the region for harbors that could provide secure military bases, called presidios. The presidios were important for the colonization of an area and the protection of the settlers. Don Gaspar de Portola, the leader of the first expedition, found both Monterey and San Francisco Bays and crossed through Santa Clara Valley. The Guadalupe River became the central feature of the Spanish Colonial settlement in the valley.

Portola was accompanied by Father Juan Crespi, whose objective was to assess the area's suitability for establishing a Franciscan mission. The mission system was created to convert the native peoples to Catholicism; the goal was to gain control of the native people and to create self-sufficient communities. The missions were the central economic units of the Spanish colonial system. The rich soil, good potential pasture lands, and large numbers of Native Americans living in the Santa Clara Valley region created optimum conditions for placement of a mission.

The military presence of the presidios supported the missions with a force of arms and controlled the native people. Despite a high death rate among the native population, the combination of the mission priests and the military worked to make the missions productive institutions for many years. More expeditions traveled through Santa Clara Valley, including one headed by Colonel Juan Bautista de Anza, who crossed the Guadalupe River in 1776 and chose the site for Mission Santa Clara. The mission was officially established on January 12, 1777. At the time, there were more than 40 rancherias of Native Americans within a radius of approximately 10 miles (Spearman 1963).

The pueblo represented the third institution in the Spanish effort to colonize what is now California. Pueblos were civil settlements that supplied agricultural products and provided an example of proper Spanish society to the natives. The first pueblo in Santa Clara Valley, consisting of 66 settlers and retired soldiers, was named Pueblo San Jose de Guadalupe on November 29, 1777. Some of the pueblo farmlands were situated directly across the Guadalupe River from the mission, and both the pueblo and mission were moved to higher ground as a result of flooding.

Mexican Period

In 1824, Mexico won independence from Spain and subsequently became a republic of states. One of the first acts of the new government was to secularize the missions and redistribute the mission holdings. Although secularization was intended to distribute the mission lands to the settlers and the native population, the rancheros (i.e., Spanish inhabitants of ranchos) claimed the bulk of the resources, and few Native Americans received parcels of land. The lands were redistributed in the form of land grants to individuals who promised to work the land, primarily by raising cattle. These cattle ranches became the driving force in the economy and the dominant culture of California, including Santa Clara Valley. The ranchero economy was fueled on native labor and produced tallow and hides for trade to the eastern United States and England.

One of the Mexican land grants in the vicinity of the Capitol Expressway Corridor was the Embarcadero Santa Clara land grant to the Bernal family. The grant was passed down to Barcelina Bernal and John Martin, who occupied the adobe house in the 1830s and 1840s. Although the adobe no longer stands, the estimated location of this site is south of Alviso near the intersection of State Route 237 (SR 237) and the Guadalupe River. Other land grants in the area included the Rancho Rincon de los Esteros to the Berryessa family and the Rancho Rincon de los Esteros to the Alviso family. Three adobe houses belonging to Guadalupe Berryessa during this period were located in the vicinity of the Capitol Expressway Corridor. Historic maps from 1859 show these adobes located just south of the previously mentioned adobe, along the Guadalupe River and just south of SR 237. In addition, two Alviso family adobes were located just north of the Martin/Barcelina adobe. The location of the Alviso family adobes is recorded as being on the bank of a curve in the Guadalupe River.

American Period

The latter half of the nineteenth century was a dynamic period of history in Santa Clara Valley. The region saw great change in a short amount of time. First, the United States military began occupation of California in 1846. In 1847, Mexican rule ended, and in 1848, the United States gained half of the Mexican territory that would become the states of California, Nevada, Arizona, New Mexico, Texas, and Colorado with the Treaty of Guadalupe-Hidalgo, signed in 1848. Within weeks of the end of the war, gold was discovered in the American River in the Sierra Nevada foothills. By summer 1849, word of the gold deposits had spread to the world, and thousands of people were arriving in California in search of their fortunes.

Americans who flooded into California at this time eyed the vast land grant holdings of the Californios. Soon, the federal government established a land commission to decide the legality of all the land grants, the outcome of which dealt a heavy blow to the Californios. Most land grants were judged invalid, and the land was subject to sale. Californios lost much of their land either from land commission decisions or as payment to lawyers to defend their claims in court. The opening of large acreages of land resulted in a change of ownership and the transformation from cattle ranches to farms that supplied the growing demand for fresh foods. The Bay Area population boomed and soon became one of the most densely populated areas in California (Hornbeck et al. 1983).

In the southern Bay Area, a combination of wheat and barley production, dairy farms, and orchards dominated agricultural use of the valley floor throughout the 1860s and 1870s. Until the collapse of the worldwide wheat market in the late 1870s, Santa Clara County was one of a number of counties with large amounts of acreage devoted to the crop. Beginning in the 1870s, grain farming transitioned to fruit farming in Santa Clara Valley. During this period, farmers conducted many experiments with horticulture and other crops. Following 1875, successful agricultural experiments and the overall expansion of agricultural markets via rail encouraged the further development of horticulture. Horticulture permitted the use of smaller parcels of land for cultivation in an increasingly populated valley and provided a labor-intensive but profitable product.

Although few farmers specialized in fruit production in the 1870s, it was the dominant agricultural activity in Santa Clara Valley by the 1890s. Farmers who planted large orchards were often successful, and the trend caught on quickly. Transportation was essential to the growth of fruit farming. The development of the refrigerated railroad car in the 1880s allowed agricultural produce to be transported to distant markets and greatly increased the development of horticulture in Santa Clara Valley. As a result, between the 1870s and 1940s, fruit production became a major industry. From 1875 onward, expanding markets nationwide led to innovations in fruit preservation and shipping, including the drying and canning of fruit for long-term storage and transportation as well as the shipment of fresh fruit in refrigerated cars. In turn, these innovations created a wider economic boom, which attracted many new residents to Santa Clara Valley (Hornbeck et al. 1983).

The predominance of fruit production and processing continued until after World War II. Well into the twentieth century, San Jose remained a compact city surrounded by acres of agricultural lands dotted with small agriculture-oriented communities such as Berryessa, Alum Rock, and Hillsdale. Early growth corridors in San Jose extended south along the Southern Pacific Railroad and east (originally East San Jose) along Santa Clara/Alum Rock Avenue (U.S. Geological Survey 1899, 1953; Sanborn Map Company 1915, 1950).

Beginning in the mid-twentieth century, the agrarian land use pattern on the outskirts of San Jose was replaced by suburban housing, commercial centers, and the technology industry that created Silicon Valley. This development pattern is typical throughout the Bay Area. During the late 1940s, after more than a decade of limited housing construction because of the Great Depression and materials rationing during World War II, new residential construction skyrocketed to meet existing demand and to accommodate new residents from other areas of the country. Between 1940 and 1950, the population of Santa Clara County grew from about 175,000 to 291,000. In 1949 alone, Bay Area local governments issued more than 25,000 permits for family dwelling units, including 5,000 permits in Santa Clara County. The following year, the number of permits issued nearly doubled (Scott 1985).

During the 1950s and 1960s, the City undertook an aggressive annexation campaign, opening large areas to city services such as road and sewer improvements. Those annexations, combined with the attraction of new industries and major employers to the area, propelled sustained residential and commercial development on former orchard lands (Beilharz and DeMars 1980). Population growth in the vicinity of San Jose was fast even by postwar Bay Area standards; by the mid-1950s, Santa Clara County accounted for nearly half the total population increase in the Bay Area. Following pre–World War II development patterns, several new subdivisions clustered in the Alum Rock neighborhood during the 1950s, extending east and north toward the San Jose Country Club and Alum Rock Park. Subdivisions south of Alum Rock Avenue were more modest, and entire tracts were built up with nearly identical ranchstyle houses. Other portions of the current Capitol Expressway Corridor developed later, between the 1960s and 1980s, particularly after the construction of Capitol Expressway provided convenient cross-town travel.

Paleontological Setting

The Capitol Expressway Corridor area lies in Santa Clara Valley, which is a structural depression filled with mostly unconsolidated Holocene (i.e., less than 11,000 years before present) sediments composed of gravel, sand, silt, and clay. These sediments have washed into the valley from bordering mountains and ridges (i.e., areas of significantly higher elevations, such as the Santa Cruz Mountains), forming two alluvial fan deposits of two different depositional periods (Helley and Brabb 1971). The young alluvial fan deposit exposed in the San Jose area is about 20 feet thick (66 meters) and overlies an older alluvial fan system. The total sediment thickness is greater than 1,000 feet (328 meters) in the Santa Clara Valley near San Jose (Schlocker 1971).

The alluvial fan deposits overlie Jurassic- to Tertiary-age bedrock of the Franciscan Complex. The Franciscan Complex is a mélange of greywacke (a type of sandstone), thinly bedded chert, siltstone, and silty shale (Robbins 1971). In places, the Franciscan Complex is overlain by the sedimentary rocks of the Knoxville Formation (Jurassic in age), which in turn is overlain by the Pliocene to Quaternary Santa Clara Formation, which consists of nonmarine sediments (California Division of Mines and Geology 1961, 1966).

Identification of Cultural Resources

Record Search

To identify cultural resources in the corridor and vicinity, a search for records of previously identified resources was conducted at the Northwest Information Center at Sonoma State University. All studies and records of previously identified archaeological sites within 0.5 mile of the corridor were consulted. Several studies conducted encompass portions of the Capitol Expressway Corridor; however, few have been conducted during the last 5 years or prior to the development of the area. Inventories and studies of historic architectural resources within 0.25 mile of the corridor were also consulted.

Sources consulted during the record search included:

- maps from previous cultural resource studies and of known resource locations,
- historic maps of Santa Clara County (Bailey and Philips 1887) and U.S. Geological Survey (USGS) 15-minute San Jose quadrangle (U.S. Geological Survey 1895),

- *California Historical Landmarks* (California Department of Parks and Recreation 1996),
- National Register of Historic Places (NRHP) listings and determinations of eligibility (1996 and updates),
- California Points of Historical Interest (California Department of Parks and Recreation 1992 and updates),
- *California Place Names* (Gudde 1969),
- Caltrans Local Bridge Survey (1989) and State Bridge Survey (1987),
- Directory of Properties in the Historical Resources Inventory (California Department of Parks and Recreation 1999 and updates), and
- *Historic Spots in California* (Hoover et al. 1966, 1990).

A letter was sent by facsimile transmittal to the Native American Heritage Commission (NAHC) on November 18, 2001, requesting that NAHC consult its sacred lands database and provide Jones & Stokes with a list of individuals who might have information regarding the presence of cultural resources in or near the Capitol Expressway Corridor. Upon receipt of the list of knowledgeable parties, Jones & Stokes sent a letter to each party on November 20, 2001, requesting information concerning cultural resources in the corridor. Concerns were expressed regarding construction at the Eastridge Transit Center.

In addition, letters were sent to potentially interested local parties, including the San Jose Historic Preservation Officer, History San Jose, and Santa Clara County Historical and Genealogical Society, requesting historical information and comments on the proposed alternatives. No responses have been received.

The evaluation of paleontologic sensitivity of the Capitol Expressway Corridor was based on a review of geologic maps of the region, a review of paleontologic literature of the region, and professional judgement.

Known Resources in the Capitol Expressway Corridor

Archaeological Resources

Archival research indicates that there may be at least three prehistoric archaeological sites in or adjacent to the right-of-way. Previous reports (Holman and Associates 1991; Anastasio et al. 1988) suggest that these sites are disturbed; both studies were conducted well after significant development in the area had occurred. The current landscape has been completely altered, and attempts to relocate the sites were unsuccessful because the sites have been covered by development in the area of potential effects (APE) or on adjacent properties (e.g., landscaping, parking lots, buildings) (Holman and Associates 1991). However, subsurface portions of these sites may have retained some integrity. The following archaeological sites have been recorded in or adjacent to the right-of-way.

- **CA-SCl-327:** In a 1978 site record, this site is described as a buried site with many artifacts in dark brown, ashy midden soil, which indicates long-term human occupation (Whitlow 1978). No burials have been identified at this site, but the potential for burials to be present is high.
- **CA-SCl-778:** A 1996 site record describes how this site was discovered during excavation for the construction of commercial development (Reddington 1996). Boundaries of the site were indiscernible because it was found under an asphalt parking lot. The site covered the entire 11- by 15-meter pit that had been excavated for construction. Burials were uncovered, as well as chert artifacts, baked clay, and charcoal; however, no shell was observed.
- **CA-SCl-68:** In a 1973 site record, this site is described as a large scattered midden with many artifacts and fire-affected rock (Anderson et al. 1973). There was a burial excavated from this site before the 1973 recording (Edwards n.d.). More burials likely would be found at a site this size. According to Anastasio et al. (1988), this site was mostly under fill that was used for the roadway. Construction may have destroyed the portion of the site that was directly within the construction right-of-way.

Historic Resources

There are several inventoried historic resources in the vicinity of the project area but beyond the limits of the APE. The "Spillman Engineering 3-Abreast Car," built in 1920, is located at 139B Eastridge Mall and was inventoried but not evaluated for NRHP eligibility. The building at 1715 Capitol Avenue, constructed in 1910, was determined by consensus not to be eligible for listing in the NRHP in 1991. A 1987 study of the entire Capitol Expressway Corridor through San Jose found no historic architectural resources within the right-of-way (Anastasio et al. 1988).

Paleontological Resources

Macrofossils (mostly marine invertebrates) have been found in isolated localities in hills bordering Santa Clara Valley. Mesozoic fossils found near the study area are most likely derived from two areas: the Sierra Azul Range of the Santa Cruz Mountains, where thin slivers of upper Jurassic and lower Cretaceous rocks are exposed, and a band of upper Jurassic and Cretaceous rocks of the Great Valley Sequence along the west side of the Diablo Range (Elder and Miller 1993). Specifically, at a site 2.48 miles (4 kilometers) east of the Capitol Expressway Corridor, several species of the bivalve *Buchia* have been collected from float (i.e., isolated rocks washed out of a geologic formation and out of context with the surrounding rocks and sediments) of late Jurassic age on the east side of Silver Creek Road (Elder and Miller 1993). Additional Jurassic *Buchia* have been found 4.35 miles (7 kilometers) southwest of the corridor near a drainageway located north of San Felipe Road (Elder and Miller 1993). A diverse assemblage of late Jurassic fossils including bivalves (*Nuculana* sp. and *Parvamussium* sp.), belemnites, ammonites, scaphapods, and corals have been identified 6.8 miles (11 kilometers) to the south of Capitol Expressway Corridor on the north side of a ridge one mile north of the Calero Reservoir dam (Elder and Miller 1993).

Field Survey

Archaeology

A Jones & Stokes archaeologist conducted a site visit of the Capitol Expressway Corridor area on March 13, 2002. Initially, the archaeologist drove the entire corridor to determine whether there were any undeveloped areas where native soils might be visible. The entire visible ground surface appeared to have been graded, landscaped, or developed.

The archaeological APE includes all areas of potential ground disturbance within the existing and proposed rights-of-way, including all construction staging and access areas and proposed parking and storage areas.

The Jones & Stokes archaeologist attempted to relocate the three previously recorded sites near the Capitol Expressway Corridor area. The location of site CA-SCl-778 was completely covered by a building and parking lot. This site was recorded in 1996 during the construction, and one human burial was removed (Reddington 1996). During this excavation, only a portion of the site was exposed and addressed. It is assumed that there are intact deposits below the paved surfaces. There was no evidence of CA-SCl-778 at the time of the Jones & Stokes field visit.

The Jones & Stokes archaeologist examined the reported location of CA-SCl-327 for evidence of archaeological materials. It appeared that soil, gravel, and garbage had been dumped recently in the area. A few small bits of clamshell were observed, but they were not clearly related to the deposit. Recent dumping of fill obscured the ground surface. An archaeologist familiar with the site has suggested that large parts of this site are likely intact, with integrity sufficient to warrant listing in the NRHP (Cartier pers. comm.). No evidence of the site was visible on the surface when the Jones & Stokes archaeologist examined the site location.

The Jones & Stokes archaeologist attempted to re-locate CA-SCl-68 during the field survey. Because of development of the area, there was no visible evidence of the site. However, according to the archaeologist who excavated the site extensively in 1987, intact deposits remain (Cartier pers. comm.). This site is currently listed in the NRHP and may continue to yield important information.

There are numerous other archaeological sites between 0.25 and 0.5 mile around the right-of-way. The environmental setting of the Capitol Expressway Corridor area and the abundance of previously recorded archaeological resources in the immediate vicinity of the corridor strongly suggest that the area is highly sensitive for the discovery of cultural materials during subsurface excavation and construction activities. The fact that the area is almost entirely developed does not preclude the presence of intact buried deposits.

Historic Architecture

The architectural APE generally consisted of land in the current and proposed rights-of-way. In addition, where partial and entire parcels would be acquired for the right-of-way, the entire parcels are included in the APE. However, in areas where alternatives include elevated vertical alignments, adjacent properties were included in the APE to account for potential adverse visual effects that would result from the proposed aerial profile.

The APE generally consists of a mix of post–World War II residential, commercial, and light-industrial development. Typically, the built environment on the north end of the corridor is older than that on the south/west end. The north area, particularly where Capitol Avenue splits from Capitol Expressway, is dominated by 1950s housing that has or will soon reach the 50-year threshold.

On May 24 and 29, 2002, a Jones & Stokes architectural historian conducted a pedestrian survey of the APE. There are 256 properties within the architectural APE; 241 contain buildings constructed after 1957 or no buildings or structures, and 15 contain buildings constructed in 1957 or earlier. The year 1957 was selected as a cutoff date because properties younger than 50 years are not considered historic unless they meet the stringent exceptional significance criteria consideration. Properties constructed after 1957 will not reach the 50-year threshold for at least 5 years.

The 15 properties that contain buildings constructed in 1957 or earlier were inventoried and evaluated for eligibility for listing in the NRHP and for historical significance under CEQA. Results of the evaluations were recorded on California Department of Parks and Recreation Series 523 forms included in the cultural resources technical report. None of the properties appeared to be eligible for listing in the NRHP, and none is currently listed. Furthermore, none appeared to be a historical resource for the purposes of CEQA or have been designated a local or state landmark or point of interest. None of the 241 properties that contain buildings constructed after 1957 or no buildings or structures at all appeared to meet the exceptional significance criteria consideration for buildings less than 50 years old, and none were inventoried. In addition, there are seven bridges in the APE; all have been rated “Category 5” (not NRHP-eligible) by Caltrans. All are less than 50 years old; and none appeared to meet the exceptional significance criteria consideration.

Regulatory Setting

The following federal and state laws and regulations govern historic and archaeological resources.

- Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (Section 106);
- federal Department of Transportation Act of 1966, Section 4(f);

- Archaeological and Historic Preservation Act of 1974; and
- CEQA.

Section 106 (16 U.S. Government Code [USC] 470) requires that projects receiving federal money, or those permitted or licensed by federal agencies, must take into account the effects of the undertaking on historic properties and must afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on these actions. Regulations for implementing Section 106 are included in 36 CFR 800, "Protection of Historic Properties." These regulations encourage Section 106 consultation to be completed in parallel with the NEPA compliance process.

The section of the Department of Transportation Act of 1966 that specifically addresses the natural and cultural environment is usually referred to as "Section 4(f)" for its former designation in the act, although it is now codified as 49 USC 303. This section states that "special effort" shall be made for the preservation of historic sites. It further states that the Secretary of Transportation may approve a transportation project or program that requires the "use" of land designated as historically significant on the federal, state, or local level "only if: there is no prudent and feasible alternative to using that land, and the program or project includes all possible planning to minimize harm to the…historic site resulting from the use." Chapter 6, *Section 4(f) Evaluation* provides documentation of Section 4(f) compliance for the proposed action.

The Archaeological and Historic Preservation Act of 1974 (16 USC 469) provides for

> the preservation of historical and archaeological data…which might otherwise be irreparably lost or destroyed as the result of…any alteration of the terrain caused as a result of any Federal construction project or federally licensed activity or program.

The act addresses actions federal agencies are required or encouraged to take concerning proposed projects.

CEQA (13 PRC 21000–21178) requires that public or private projects financed or approved by public agencies assess the effects of the project on historical resources. Historical resources are defined as buildings, sites, structures, objects, or districts that may have historical, architectural, archaeological, cultural, or scientific significance. Significant properties are listed in or eligible for listing in the NRHP or California Register of Historical Resources, or are designated local historic landmarks.

4.6.3 Environmental Consequences and Mitigation Measures

Approach and Methodology

The effects of the alternatives related to cultural resources were assessed based on archival research, a review of relevant literature, a request for information from Native American communities, and a reconnaissance-level survey.

Thresholds of Significance

Based on significance criteria used by VTA and professional practice, the proposed alternatives might have a substantial adverse effect on cultural resources if they would:

- cause a substantial adverse change in the significance of a historical resource as defined in the State CEQA Guidelines, Section 15064.5;
- cause a substantial adverse change in the significance of an archaeological resource pursuant to the State CEQA Guidelines, Section 15064.5;
- directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or
- disturb any human remains, including those interred outside of formal cemeteries.

When determining substantial adverse effects on historical or archaeological resources, the following definitions were used:

- *Substantial adverse change* in the significance of a historical or archaeological resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surrounding such that the significance of a historical resource would be materially impaired (State CEQA Guidelines Section 15064.5[b][1]).
- *Materially impaired* significance of a historical resource mans when a project demolishes or materially alters in an adverse manner those physical characteristics that convey its historic significance (State CEQA Guidelines Section 15064.5[b][2][A–C]).

Federal Criteria: National Historic Preservation Act Section 106

For federal projects, cultural resource significance is evaluated in terms of eligibility for listing in the NRHP. NRHP criteria for eligibility are defined as follows:

The quality of significance in American history, architecture, archeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that:

- are associated with events that have made a contribution to the broad pattern of our history;
- are associated with the lives of people significant in our past;
- embody the distinct characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- have yielded, or are likely to yield, information important in prehistory or history (36 CFR 60.4).

In addition to meeting the significance criteria, a significant property must possess integrity to be considered eligible for listing in the NRHP. Integrity refers to a property's ability to convey its historic significance (National Park Service 1991). Integrity is a quality that applies to historic resources in seven specific ways: location, design, setting, materials, workmanship, feeling, and association. A resource must possess two, and usually more, of these kinds of integrity, depending on the context and the reasons why the property is significant.

The NHRP criteria also limit the consideration of moved properties because significance is embodied in locations and settings. Under NRHP criterion B, a moved building destroys the integrity of location and setting. A moved property can be eligible if it is significant primarily for architectural value or if it is a surviving property most importantly associated with a historic person or event (National Park Service 1991).

Standard Practice if Buried Cultural Resources or Human Remains Are Encountered

In reference to several criteria stated above, ground-disturbing activities associated with construction of the Light Rail Alternative could result in the discovery of and potential disturbance of unknown archaeological resources, including human remains. The following procedures represent standard practice that would be followed in the case of inadvertent discovery of cultural resources or human remains.

- **Stop work if buried cultural deposits are encountered during construction activities:** Should any cultural and/or archaeological resources be discovered (such as structural features, unusual amounts of bone or shell, artifacts, human remains, or architectural remains) during construction activities, VTA shall suspend work in the immediate vicinity, and VTA's construction inspector shall coordinate site investigations by a qualified archaeologist to assess the materials and determine their significance. VTA shall notify all appropriate local jurisdictions.
- **Stop work if human remains are encountered during construction activities:** If human remains are unearthed during construction, pursuant to Section 50977.98 of the PRC and Section 7050.5 of the State Health and Safety Code, VTA shall suspend work in the immediate vicinity and the county coroner will be immediately notified, as well as local planning and permitting jurisdictions and NAHC.

Environmental Consequences and Mitigation Measures of the No-Project Alternative

This analysis considers the effects of the No-Project Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

CR-1: Direct or Indirect Impacts to an Archaeological or Historic Resource

As described in Chapter 3, the No-Project Alternative would keep in place the existing transit and roadway network in the Capitol Expressway Corridor. As a result, no new transportation improvements would occur and environmental conditions would not change. Therefore, there would not be any adverse effects on archaeological or historic resources under implementation of this alternative.

Mitigation: No mitigation is required.

CR-2: Direct or Indirect Destruction of a Unique Paleontological Resource or Site

No unique paleontological resource or site, even if present, would be affected under the No-Project Alternative.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Baseline Alternative

Anticipated adverse effects associated with the projects included in the approved 1996 Measure B Improvement Program are independent of the proposed alternatives and are or will be reviewed in their respective environmental compliance documents. Additionally, the potential cumulative effects of these projects are considered in Chapter 5, *Other CEQA Considerations*, of this document. This analysis considers the effects of the bus service improvements that are outlined in Chapter 3, *Alternatives Considered.*

CR-3: Direct or Indirect Impacts to an Archaeological Resource

As described in Chapter 3, the Baseline Alternative would primarily include bus service improvements within the Capitol Expressway Corridor. The proposed improvements include service frequency upgrades, enhanced limited-stop service, and transit priority measures. These transit improvements would not involve the construction of any large-scale structures or facilities. Therefore, there would be no adverse effects on archaeological or historical resources under implementation of this alternative.

Mitigation: No mitigation is required.

CR-4: Direct or Indirect Destruction of a Unique Paleontological Resource or Site

Although fossils clearly exist in the San Jose area, they do not appear to be abundant in Santa Clara Valley, or specifically near the Capitol Expressway Corridor, as demonstrated by the fact that no evidence of fossils in the Holocene alluvial sediments near the Capitol Expressway Corridor has been reported in the literature. The fossils described above occur in older strata that lie at significant depths beneath the thick Quaternary alluvial deposits of the Capitol Expressway Corridor.

The lack of fossils in the Holocene alluvial sediments and the fact that they are common bivalve buchia and other relatively common marine invertebrates suggests that there is low potential for a unique paleontological resource or site to occur in the Capitol Expressway Corridor. There would be no adverse effect.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Light Rail Alternative

This analysis considers the effects of the Light Rail Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

CR-5: Direct or Indirect Impacts to an Archaeological Resource

There are several known archaeological resources in the APE. Also, the Capitol Expressway Corridor has high sensitivity for the presence of additional archaeological sites. Ground-disturbing activities associated with construction of the Light Rail Alternative, such as grading and excavation at proposed station sites, park-and-ride lots, and below-grade alignment sections, have the potential to adversely affect known and unknown archaeological resources in the corridor. Specifically, the South of Eastridge Transit Center Tunnel Alignment could affect CA-SCI-327. However, implementation of the following mitigation measures would minimize these effects.

Mitigation Measure CR-5a: Retain Qualified Archaeologist and Native American Representative to Monitor Surface-Disturbing Construction Activities

VTA shall retain the services of a qualified archaeologist and Native American Representative who will monitor all surface-disturbing construction activities in sensitive areas. Construction contract documents shall include language that addresses the unexpected discovery of archaeological/historical resources.

Mitigation Measure CR-5b: Develop a Historic Properties Treatment Plan

VTA shall develop a historic properties treatment plan (HPTP). This document identifies the appropriate procedures to be implemented if archaeological resources are encountered during construction. Typically, these procedures include a process for assessing the value of the resource and a methodology for determining the appropriate preservation activities.

CR-6: Direct or Indirect Destruction of a Unique Paleontological Resource or Site or Unique Geologic Feature

Although fossils clearly exist in the San Jose area, they do not appear to be abundant in Santa Clara Valley, or specifically near the Capitol Expressway Corridor, as demonstrated by the fact that no evidence of fossils in the Holocene alluvial sediments near the Capitol Expressway Corridor has been reported in the literature. The fossils described above occur in older strata that lie at significant depths beneath the thick Quaternary alluvial deposits of the Capitol Expressway Corridor.

The lack of fossils in the Holocene alluvial sediments and the fact that they are common bivalve buchia and other relatively common marine invertebrates suggests that there is low potential for a unique paleontological resource or site to occur in the Capitol Expressway Corridor. There would be no adverse effect.

Mitigation: No mitigation is required.

CR-7: Change in Significance of a Historical Resource

Ground-disturbing activities, the demolition or relocation of historically significant buildings or sites, or changes in the visual or sound landscape of historical resources would be considered adverse effects on historical resources. However, there are no historic buildings or structures in the APE. Therefore, no adverse effects on historic architectural resources would occur because of construction of the Light Rail Alternative.

Mitigation: No mitigation is required.

Proposed Options

As described in Chapter 3.0, the Light Rail Alternative includes station, segment, park-and-ride, and light rail vehicle storage location options. These station options include at-grade, aerial, and depressed open-air station designs. Several platform configurations are also being explored including side platforms, single center platforms, offset platforms, and a platform on the west side of the expressway. With the exception of the Eastridge Transit Center segment and the side-running option between Eastridge and Nieman Boulevard, the light rail alignment would remain within the median at grade, on an aerial structure above the corridor or in a new tunnel. These options could adversely affect cultural resources. The effects on cultural resources discussed above would result depending on the alignment options or station designs selected. Specifically, footings of aerial structures in the vicinity of Tully Road (South of Eastridge Transit Center Aerial Crossing Option) and Aborn Road (Aerial Crossing at Aborn Road Option) could affect CA-SCI-327 and CA-SCI-778.

Section 4.7
Electromagnetic Fields

4.7.1 Introduction

This section describes the environmental setting and effects of the alternatives analyzed in this EIR with regard to electromagnetic fields (EMFs). Specifically, this section discusses existing conditions related to EMFs within the Capitol Expressway Corridor and describes applicable regulations pertaining to EMFs. The assessment of substantial adverse effects and mitigation measures of the alternatives related to EMFs are also described.

4.7.2 Existing Conditions

Environmental Setting

Electrical systems produce both electric and magnetic fields. Electric fields result from the strength of the electric charge, while magnetic fields result from the motion of the charge. Together, these fields are referred to as "electromagnetic fields." EMFs are invisible, non-ionizing, low-frequency radiation. Electric and magnetic fields are common throughout nature and are produced by all living organisms. Concern over EMF exposure, however, generally pertains to human-made sources of electromagnetism and the increased levels of exposure that interfere with other systems and may have adverse biological effects. Under extreme conditions (i.e., the presence of intense electrical fields), EMF hazards can include shock and burn, although such conditions are rare.

Electric field strength is measured in units of volts per meter (V/m); field strength increases as voltage rises. Any object with an electric charge has a voltage (potential) at its surface and can create an electric field. When electrical charges move together (an electric current), they create a magnetic field that can exert forces on other electric currents. All currents create magnetic fields, which occur throughout nature and are one of the basic forces of nature. The strength of a magnetic field depends on the current (higher currents create higher magnetic fields), configuration/size of the source, and distance from the source (magnetic fields grow weaker as the distance from the source increases). Magnetic field strength has several units of measure. The most commonly used are milligauss (mG) and microTesla (mT); 10 mG equal 1 mT. DC produces stronger EMFs than alternating current (AC). Consequently, EMF strength is measured in terms of mG.

VTA's light rail system is operated on a 525- to 875-V DC electrical system. Substations located along the alignment convert AC power to DC power. An overhead conductor, or catenary, supplies power to the trains. Each car on a train can draw a maximum of approximately 1,300 amps of current from the system. Therefore, two- and three-car trains could draw a maximum of approximately 2,600 and 3,900 amps, respectively.

During environmental review for the Vasona Corridor in 1999, the magnetic fields associated with the existing light rail system operated by VTA were measured at four light rail stations and one substation (Federal Transit Administration and Santa Clara Valley Transportation Authority 2000). The magnetic fields were found to vary considerably depending on factors such as train length, train mode (acceleration, deceleration, idling), number of trains, and number of passengers. The results of the measurements are summarized below.

- At a distance of 6.1–9.1 meters (20–30 feet) from the closest track, DC magnetic fields were typically within a few hundred mG of the Earth's ambient DC field;
- Measured AC magnetic fields were typically 5 mG or less within 3 meters (10 feet) of the tracks and 2 mG or less at 6.1 meters (20 feet) from the tracks.
- At the substation, DC magnetic field levels ranged from about 194–921 mG at the substation perimeter. The higher level is thought to be at the location where underground feeder cables to the system are located. AC magnetic fields ranged from 0.3 mG to a maximum of about 31.3 mG at one perimeter location. The higher level is thought to be at the location where the underground PG&E feeder cables enter the substation.

Regulatory Setting

Neither the federal government nor State of California has set standards for EMF exposure. Federal guidelines are under consideration by the U.S. Food and Drug Administration, Federal Communications Commission, U.S. Department of Defense, and EPA. The International Commission on Non-Ionizing Radiation Protection and the American Conference of Governmental Industrial Hygienists (ACGIH) have guidelines for AC magnetic fields that are much higher than levels found near the VTA's light rail system. ACGIH also has guidelines for DC magnetic fields: routine occupational exposures should not exceed 600,000 mG for the whole body or 6,000,000 mG for limbs on a time-weighted average basis. For persons with cardiac pacemakers and similar medical electronic devices, wearers should not be exposed to DC magnetic field levels exceeding 5,000 mG.

4.7.3 Environmental Consequences and Mitigation Measures

Approach and Methodology

The effects of the EMFs associated with the proposed alternatives were assessed based upon a review of the relevant literature and of prior environmental analyses prepared for VTA.

Thresholds of Significance

There are no established or regulatory governmental standards for magnetic fields directly applicable to the proposed alternatives. Most concerns regarding the potential health effects of magnetic fields has focused on AC magnetic fields. In 1993 (Decision 93-11-013), after reviewing existing research, CPUC states its conclusion of law that "[i]t is not appropriate to adopt any specific numerical standard in association with electromagnetic fields until we have a firm scientific basis for adopting any particular value" (California Public Utilities Commission 1993).

Based on significance criteria used by VTA and professional practice, the proposed alternatives may result in substantial adverse effects related to EMFs if they would:

- result in DC magnetic fields that exceed the guidelines of ACGIH.

Environmental Consequences and Mitigation Measures of the No-Project Alternative

This analysis considers the effects of the No-Project Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document. Because this alternative would not involve additional electrically powered facilities or services, no substantial adverse effects related to EMFs would result.

Environmental Consequences and Mitigation Measures of the Baseline Alternative

Anticipated adverse effects associated with the projects included in the approved 1996 Measure B Improvement Program are independent of the proposed alternatives and are or will be reviewed in their respective environmental compliance documents. Additionally, the potential cumulative effects of these projects are considered in Chapter 5, *Other CEQA Considerations*, of this document. This analysis considers the effects of the bus service improvements that are included in the Baseline Alternative as outlined in Chapter 3, *Alternatives Considered*.

EMF-1: Effects from Direct Current Magnetic Fields that Exceed the Guidelines of ACGIH

The effects of EMFs related to the Tasman, Vasona, and Capitol Corridors have been evaluated in their respective environmental documentation. The bus service improvements proposed under the Baseline Alternative are not electrically powered, although some elements, such as electrically powered traffic signals and fare machines, are included. The magnetic field associated with traffic signals diminishes with increased distance from the signals, and exposure to fare machines would be intermittent. The duration of exposure to EMFs from transit system elements is relatively brief compared to the daily exposure from office equipment and household appliances, electric power lines, and other electrically powered machines. For example, the maximum magnetic field from a hair dryer can range from 60–20,000 mG, but the strength of its magnetic field drops to 1–70 mG at a distance of 12 inches. Like household appliances, the fields associated with fare machines also decline with a minimal distance. No substantial adverse effects would result.

Environmental Consequences and Mitigation Measures of the Light Rail Alternative

This analysis considers the effects of the Light Rail Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

EMF-2: Effects from Direct Current Magnetic Fields that Exceed the Guidelines of ACGIH

The Light Rail Alternative would result in additional sources of EMF generation. The sources would include the traction power system and substations; light rail stations with various lighting, communications, utilities and fare machines; and the electrically powered light rail vehicles.

EMF intensities around electrically powered vehicles vary. Under the Light Rail Alternative, the greatest potential for exposure to increased magnetic fields would be within the light rail vehicles and at the proposed stations, where passengers and train operators would be exposed. Other VTA staff, such as maintenance and security personnel, would also be exposed. The magnitude of the increased magnetic field would vary considerably by location and from minute to minute. The magnetic field would fluctuate substantially, depending on factors such as train length, train mode (acceleration, deceleration, or idle), number of trains, and number of passengers at any given time. The strength of the magnetic field would also vary relative to an individual's proximity to the system.

Strong magnetic fields are not associated with the normal environment and the operation of light rail trains. The dominant source of magnetic field generation is the traction power and the control equipment under the vehicle's floor (Federal Railroad Administration 1993). The measurements of average magnetic fields for overhead powered rail vehicles have ranged from 400 mG at the head level to 1,500 mG at floor level. The actual field measurements inside existing light rail cars during peak commute periods in 1999 indicate that typical magnetic field levels are approximately 50% below ACGIH’s 5,000-mG threshold. No substantial adverse effects would result.

Proposed Options

As described in Chapter 3.0, *Alternatives Considered*, the Light Rail Alternative includes station, segment, park-and-ride, and light rail vehicle storage location options. The station options include at-grade, aerial, and depressed open-air station designs. Several platform configurations are also being explored including side platforms, single center platforms, offset platforms, and a platform on the west side of the expressway. With the exception of the Eastridge Transit Center segment and the side-running option between Eastridge and Nieman Boulevard, the light rail alignment would remain within the median at grade, on an aerial structure above the corridor, or in a tunnel. These options could adversely affect EMFs. The effects on EMFs discussed above would result depending on the alignment options or station designs selected.

Section 4.8
Energy

4.8.1 Introduction

This section describes the environmental setting and effects of the alternatives analyzed in this EIR with regard to energy. Specifically, this section discusses existing energy conditions within the Capitol Expressway Corridor and describes applicable regulations pertaining to energy. The assessment of adverse effects and mitigation measures of the alternatives related to energy are also described.

Santa Clara County is considered the study area for this analysis. The energy expenditure from the major regional transportation modes are analyzed. However, electricity is given special consideration in this document because of the recent events concerning California's electricity markets and the reliance of the Light Rail Alternative on electricity to power its operations.

4.8.2 Existing Conditions

Energy Supply and Demand

California is the tenth-largest energy consumer worldwide and is ranked second among the states behind Texas. Within California, the transportation sector uses the largest amount of energy. Petroleum, the largest component of California's fuel supply, is the major fuel used for transportation. Stationary users are the largest consumers of electricity and natural gas in general. Figure 4.8-1 shows the energy consumption in California by sector and the breakdown of major fuel types used in the state (California Energy Commission 2000).

Petroleum

California's petroleum (gasoline and diesel fuel) consumption is driven by its demand for transportation services, which mirrors its growth of population and economic output. Historical trends and current population and economic growth projections indicate that transportation-sector petroleum use will increase by approximately 40% between 1999 and 2020: gasoline from 13.9 billion gallons to 19.9 billion gallons, and diesel fuel from 2.4 billion gallons to 4.8 billion gallons.

The California Energy Commission (CEC) projects that, unless major changes to the in-state oil refining industry are made, in-state oil refining capacity will lag behind the forecasted increase in demand, leading to sudden price increases for gasoline and diesel fuels over sustained time periods. Also, foreign imports currently account for approximately 29% of the state's petroleum supply. This percentage is expected to increase as in-state and Alaskan oil production declines, adding to the supply-side risks for the state. (California Energy Commission 2002b.)

The transportation-fuel market is also affected by public and environmental concerns. Strong growth in gasoline demand, combined with the transition to Phase 3 reformulated gasoline due to the recent phase-out of fuel additive methyl tertiary butyl ether (MTBE) and the accompanying expanded use of ethanol to meet the federal minimum oxygen requirement, could substantially affect the balance between transportation fuel supply and demand in California and impair the ability of refiners to consistently supply sufficient volumes of gasoline to meet state demand.[1] Also, revisions of state and federal regulations to tighten specifications for diesel fuel to reduce its environmental impacts are underway. According to CEC (2002b), it will be difficult for the state to rely solely on petroleum-based fuels in the future if it desires a stable transportation fuel market.

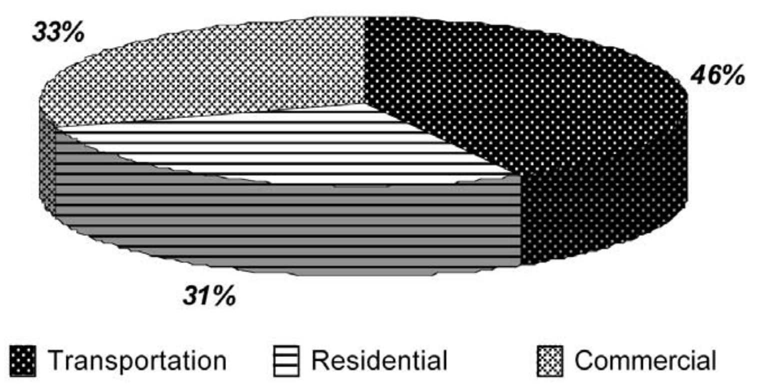
Natural Gas

California is the second largest consumer of natural gas in the nation, with consumption at more than 5.5 billion cubic feet (Bcf) (0.2 billion cubic meters [Bcm]) per day in 1997. Approximately 33% of this total daily consumption was for electricity generation. Residential consumption accounts for 25%, followed by industrial, resource extraction, and commercial. CEC's gas demand forecast projects continued growth at 1.3% annually, with volumes exceeding 7 Bcf (0.2 Bcm) daily by 2019. Natural gas supplies to California will remain plentiful for the next several decades. The total resource base (gas recoverable with today's technology) for the lower 48 states is estimated to be about 975 trillion cubic feet (Tcf) (28 trillion cubic meters [Tcm]), enough to continue current production levels for more than 50 years. Technology enhancements will continue to enlarge this resource base; however, increases to production capacity are less certain (California Energy Commission. 1999.).

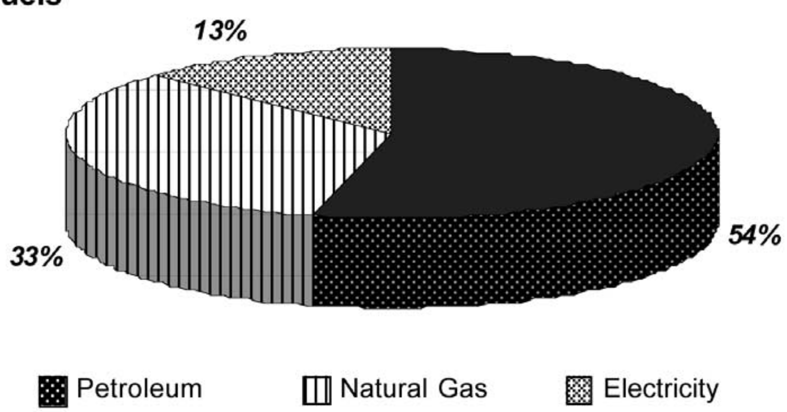
However, production in the continental U.S. is expected to increase from 19.36 Tcf (0.55 Tcm) in 2001 base year to 32.14 Tcf (0.91 Tcm) in 2020 (Unites States Department of Energy U.S. Department of Energy, Energy Information Administration. 2003.) As of 2001, in-state natural gas production accounted for

[1] MTBE is a gasoline blending component that was used in gasoline oxygenate to help control CO emissions before it was phased out in California-sold gasoline as of December 31, 2002, per a gubernatorial directive. Phase 3 reformulated gasoline prohibits the use of MTBE and uses only ethanol as an oxygenate.

California Energy Consumption by Sector



California Fuels



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Source: California Energy Commission 2000.

Jones & Stokes

Figure 4.8-1
1999 California Energy Consumption and Fuels

15% of total consumption. Out-of-state production areas include the Southwest (50%), the Rocky Mountains (10%), and Canada (25%) (California Energy Commission 2003c.)

California's Natural Gas Market

Although California's natural gas market is affected by nationwide price conditions, it has taken steps to insulate itself from the full magnitude of the price swing amplitudes. Starting in 2000 to 2001, during the last major price elevation, the state's natural gas utilities obtained additional interstate pipeline capacity rights on the El Paso Interstate Pipeline in the fall of 2002. This addition allowed the state to maintain adequate inflow rates, and reduce harm from price swings. During the recent price spike, pipelines serving California were running at 50% to 70% of capacity, indicating that excess capacity was available if it had been needed. The trend toward more pipeline capacity is being continued in California by projects such as the Kern River Expansion pipeline project, which became operational on May 1, 2003. Utilities in California have also invested in underground storage capacity, an effective mechanism for controlling annual costs that will allow them to dampen the effect of future severe price increases by drawing on stored gas instead of buying high-priced natural gas on the open market. Storage capacity was added in 1999 and in 2002 with the construction of Wild Goose Storage, located in Butte County, which can accommodate 14 Bcf (0.4 Bcm), with the further expansion of 15 Bcf (0.4 Bcm) expected in 2004, and Lodi Gas, which can accommodate 12 Bcf (0.3 Bcm).

The State of California has also provided utilities with the flexibility and the tools to manage gas costs by purchasing natural gas supplies under different contract lengths and pricing terms, and from a variety of supply sources. In addition, California is in the process of increasing its supplies of electricity from renewable power sources, such as wind, geothermal and solar energy. California legislation enacted in 2002 (Senate Bill 1078) , created the Renewable Portfolio Standard (RPS) Program which will require retail sellers of electricity to increase their purchases of electricity generated by renewable sources, and establishes a goal of having 20% of California's electricity generated by renewable sources by 2017. Increasing California's renewable supplies will diminish the state's heavy dependence on natural gas as a fuel for electric power generation. (California Energy Commission/California Public Utilities Commission 2003.)

Relationship between Natural Gas and Electricity Resources in California

Increases in gas prices directly affect the price of electricity because of the large role that natural gas plays in electricity production throughout the Southwest and in California in particular, where natural gas fueled 42.7% of electricity production in 2001. This percentage is likely to grow as the trend toward building natural gas power plants continues. During the spot-market price spike of February 2003, regional electricity prices rose 45% between early February

2003 and February 24, 2003 and an additional 150% between February 24 and February 26, 2003. Since late February, natural gas prices have steadily fallen, and prices for electricity have followed suit. (California Energy Commission/California Public Utilities Commission 2003.)

Notwithstanding the relationship between conditions in the natural gas market and electricity prices, the functioning of the natural gas market, as well as the consequences of price changes in the natural gas market, are fundamentally different from the electricity market. Unlike electricity, natural gas has the property of storability, which gives natural gas an advantage as a commodity over electricity. Because electricity is not storable, a true long-term futures market cannot function as it does for durable commodities, and rates are determined almost solely by electricity spot markets. The lack of a futures market makes electricity rates susceptible to the affects of extreme swings in supply and demand. Conversely, the storability of natural gas provides the advantages that a fairly well-functioning futures market offers with regard to upward pressure that risk puts on prices, and it allows utilities to buy natural gas when prices are low and store it until prices rise. In short, natural gas acts as any other durable commodity in the marketplace, including oil. Short-term shortages are mitigated by the above-stated mechanisms. Long-term price increases are corrected by increases in production capacity, the expectation of which, in turn, acts to bring prices down. Since the projected national in-the-ground natural gas reserves are expected to last for at least the next 50 years, actual supplies are not considered to be limiting, and short- and long-term prices are mostly a function of market conditions, assuming the trend toward improvements in production and transmission capacity continues. (California Energy Commission/California Public Utilities Commission 2003.)

Electricity

Electricity Market Deregulation

California began to restructure and divest its electricity market under Assembly Bill 1890 in 1998. Before the bill was enacted, utility companies were vertically integrated. They owned and operated the three major utility functions: electrical generation, transmission, and distribution. The bill separated the three major utility functions into individually owned and operated entities. The state's investor-owned utilities—Southern California Edison (SCE), PG&E, and San Diego Gas & Electric Company—became local utility distribution companies whose primary responsibility was distribution service (California Public Utilities Commission 1998).

The bill also created a vertically disaggregated wholesale power grid (the network of long-distance, high-voltage transmission lines, and substations that carry bulk electricity to local utilities for distribution to customers). The California Independent System Operator (Cal-ISO) (2002b), a not-for-profit public benefit corporation regulated by the Federal Energy Regulatory Commission, was created to act as the grid's impartial operator, providing for open and nondiscriminatory transmission service and ensuring safe and reliable grid operations. According to Cal-ISO (2003), the extent of its mandated purview was equivalent to the boundaries of the three investor-owned utilities, which represents approximately 75% of the state's electrical deliveries.

Also, a Power Exchange (PX) was set up to provide the market for electric power sales and purchases and allow all power producers to compete on common ground using transparent rules. The investor-owned utilities were required to sell their generated power to the PX and to then purchase all their electricity from it. The PX scheduled its deliveries through Cal-ISO (California Public Utilities Commission 1998). The transition from the regulated market to a deregulated market structure has been volatile with many charges that fraudulent business practices were to blame for some of the well-publicized California electricity crisis that occurred in the summer of 2000 and winter/spring of 2001.

Current Supply and Demand

According to CEC (2001), state electricity consumption grew from 166,979 gigawatt-hours (GWh) in 1980 to 228,038 GWh in 1990, an annual increase of 3.2%. Demand growth slowed in the early and mid-1990s because of economic recession; statewide consumption was 244,599 GWh in 1998, indicating an average annual increase of 0.9% from 1990–1998. In 2001, according to CEC (2002a), statewide consumption was about 250,000 GWh.

Peak electricity demand, also referred to as peak load and expressed in megawatts (MW), measures the largest electricity requirement during a specified period of time, usually 1 hour.[2] It is an important factor in evaluating system reliability; determining congestion points on the electrical grid; and identifying potential areas where additional transmission, distribution, and generation facilities are needed. Peak demand in the state typically occurs between 3:00 p.m. and 5:00 p.m. on an August day, when high temperatures lead to increased air conditioning use that combines with industrial loads, commercial lighting and office equipment, and residential refrigeration (California Energy Commission 2001). In 2001, peak demand for the Cal-ISO area was 41,419 MW and peak generating capacity about 42,000 MW (California Energy Commission 2002a). Cal-ISO controls the electrical grid from which the Light Rail Alternative would draw its power.

Future Supply and Demand

Studies have been conducted by CEC to predict the short- and long-term outlooks for electricity supply and demand balance. CEC considers short-term outlook for supply adequacy promising; current assessments estimate an operating margin of 16% for summer 2003, assuming a 1-in-2-year peak temperature condition, in the Cal-ISO-controlled grid, with supply outpacing demand by approximately 6,000 MW (California Energy Commission 2003). In the long term, a statewide

[2] 1 MW of electricity is enough to meet the needs of 1,000 typical homes in California.

planning reserve margin of 3.0% is projected as far ahead as August 2008, when statewide generating capacity is anticipated to be 64,669 MW, compared to a projected demand of 59,459 MW, leaving a surplus of 5,210 MW. The decline in reserve margin projections results from the short planning horizon for electric power resource additions, which is usually only 2–3 years, making it difficult to predict the amount of new power that may come online. Cal-ISO (2002a) estimates that additional net generation capacity of 1,000–1,500 MW per year will be necessary to maintain current operating margins. In the first half of 2003 alone, 3,106 MW are expected to come online. If this trend continues, electricity surplus margins should be adequate to meet statewide demand (California Energy Commission 2003b).

Transmission Capacity

Transmission capacity refers to the maximum amount of electricity that can be carried from a generating source to a utility provider. This capacity is a key component in the electricity delivery system. Since the start of the electricity crisis, some parts of the state electrical grid have occasionally not had adequate capacity to transmit electricity to certain areas at a rate sufficient to satisfy the quantities of electricity demanded. Such parts are known as a "transmission bottleneck." One bottleneck occurs at a major transmission line between northern and southern California through the Central Valley, called Path 15. According to the Western Area Power Administration (2002), PG&E plans to increase the rating of Path 15 from 3,900 MW to 5,400 MW by 2004. Three more examples of transmission improvements, all of which pertain specifically to the Bay Area, are the 230-kilovolt (kV) Northeast San Jose Project, Tri-Valley 230-kV Underground Transmission Line, and the Jefferson Martin 230-kV Transmission Project, which serves San Francisco, Daly City, and Northern San Mateo County. The first was completed in the July of 2003, and increased the electricity importation capability in the San Jose area by 800 MW, or 35% of the pre-improvement 2,300-megawatt transmission capability (Mercury News 2003). The second upgrade, a 230-kV upgrade, was completed in December 2003, and services the cities of Dublin, Livermore, Pleasanton, and San Ramon, in addition to unincorporated areas of Alameda and Contra Costa Counties that are adjacent to these cities. 230 kV transmission lines can increase capacity by between 400 and 800 MW, depending on the types of materials used (ABB 2001). The third upgrade, also a 230-kV upgrade, is still in the planning process (Aspen Environmental 2003). The two completed upgrades translate to about 1,400 MW[3] in system upgrades for the Bay Area. The third, if approved would result in 600 MW more. In all, the state has added the equivalent of 13,000 MW of transmission equipment with the implementation of 124 transmission projects since January 2001, statewide (CPUC 2004).

[3] Assumes that the 230-kilovolt upgrades for the Tri-Valley project would result in 600 MW of transmission capability.

Vehicle Miles Traveled

The VMT in a given area relates directly to energy use; in the Bay Area, high VMT is the main contributor to area air pollution. It is also important data in determining the demand for infrastructure improvements. VTA estimates future VMT in Santa Clara County. VTA's current transportation model, the Santa Clara County CMP countywide model, forecasts a 12.9% increase in daily VMT between 2000 and 2010 (41.83 million to 47.23 million miles) and a 22.8% increase in daily VMT between 2000 and 2025 (41.83 million to 51.37 million miles) (Santa Clara Valley Transportation Authority 2003a). This equates to countywide transportation energy consumption of approximately 42,000 barrels of crude oil in 2000, more than 47,000 in 2010, and more than 51,500 in 2025.

Regulatory Setting

Federal

Corporate Average Fuel Economy Standards

Corporate Average Fuel Economy (CAFE) standards are federal regulations set to reduce energy consumed by on-road motor vehicles. They specify minimum fuel consumption efficiency standards for new automobiles sold in the United States. The current standard for passenger cars is 27.5 miles per gallon (mpg). The 1998 standard for light trucks was 20.7 mpg (Competitive Enterprise Institute 1996). In April 2002, the National Highway Traffic Safety Administration, part of the U.S. Department of Transportation, issued a final rule for CAFE standards for model-year 2004 light trucks that codified the 20.7-mpg standard; this level is now in effect (U.S. Department of Transportation 2002a).

Transportation Equity Act for the 21st Century

The federal Transportation Equity Act for the 21st Century, passed in 1998, is intended to protect and enhance communities and the natural environment as development occurs in the transportation sector. It builds on the initiatives established in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), the previous major authorizing legislation for surface transportation. The ISTEA identified planning factors for use by metropolitan planning organizations in developing transportation plans and programs, which under the ISTEA are required to "[p]rotect and enhance the environment, promote energy conservation, and improve quality of life" and to consider the consistency of transportation planning with federal, state, and local energy goals (U.S. Department of Transportation 2002b).

State

California Assembly Bill 1X

On February 1, 2001, Governor Gray Davis signed into law Assembly Bill 1X, which authorized the California Department of Water Resources to purchase electricity under long-term contracts and resell it to SCE and PG&E, which, as a result of financial constraints, were unable to enter into long-term power contracts with power generators. Assembly Bill 1X is significant because it made the state government an active participant in the California power industry (California Energy Commission 2002a).

4.8.3 Environmental Consequences and Mitigation Measures

Approach and Methodology

The methods used to evaluate the potential effects from operation (direct energy effects) of the proposed alternatives are described below. The effects that each proposed alternative would have on regional energy supply (the combination of energy derived from petroleum fuels and electrical energy) were assessed. The effects on electricity reserves by the Light Rail Alternative during periods of peak-demand were also assessed.

Regional Overall Energy Supply

The analysis of operational effects on regional energy supplies estimates quantitatively the total amount of energy expected to be consumed by the proposed alternatives from operation. Overall regional energy consumption refers to the energy used by the operation of vehicles (automobile, truck, bus, or train) within the region, regardless of the type of fuel used. Overall regional energy consumption, measured in British thermal units (BTU)[4], was converted to the equivalent barrels of oil for comparison of alternatives. The change in annual BTU was also calculated for each proposed alternative. For the calculation of overall energy, the annual countywide VMT for automobiles/trucks, buses, and LRT vehicles and their respective rates of fuel consumption were considered.

The energy-consumption calculation for each of the proposed alternatives was based on projected 2025 regional traffic volumes and total VMT. The 2025 daily traffic volumes for Santa Clara County were modeled with the CMP countywide model and annualized using a factor of 250 days per year. The VMT fuel consumption method used is outlined in the *Technical Guidance on Section 5309*

[4] 1 BTU is the quantity of energy necessary to raise 1 pound of water 1°F.

New Starts Criteria (Federal Transit Administration 1999). Energy consumption factors for the various modes are identified in Table 4.8-1.

Table 4.8-1. Energy Consumption Value

Mode	Factor (BTU per vehicle mile)
Passenger Vehicles (auto, van, light truck)	5,815
Transit Bus (all vehicle types)*	42,955
Transit Rail (light or heavy)	71,360

* FTA recommends utilizing a transit bus energy consumption factor of 42,955 BTU/VMT for all bus types (including alternative-fuel buses). Sufficient data have not been available to develop consumption factors for alternative fuels such as compressed natural gas, liquefied natural gas, and others.

Source: Oak Ridge National Laboratory 2002.

Electricity Generation and Transmission

The peak-period electricity demand by the Light Rail Alternative was determined using the energy consumption factor for light rail vehicles obtained from the *Transportation Energy Book: Edition 22* (Oak Ridge National Laboratory 2002) and the proposed headway and round-trip durations described in Chapter 3, *Alternatives Considered*. Demand was calculated in megawatts and compared to current estimates of future peak-demand for electricity and electricity generating capacity and transmission capabilities within the Cal-ISO-controlled grid. This is a cumulative analysis because it combines the electricity demand estimates for the proposed project with statewide demand when making the determination as to whether electricity generating and transmitting infrastructure would be adequate to supply electricity to the proposed project in addition to each of other existing and future electricity consumers.

Thresholds of Significance

Based on significance criteria used by VTA and professional practice, the proposed alternatives may result in adverse effects related to energy if they would:

- lead to a wasteful, inefficient, and unnecessary usage of energy;
- place a substantial demand on regional energy supply or require substantial additional capacity; or
- significantly increase peak and base period electricity demand.

Environmental Consequences and Mitigation Measures of the No-Project Alternative

This analysis considers the effects of the No-Project Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

E-1: Place a Substantial Demand on Regional Energy Supply

Analysis of VMT projections for 2010 and 2025 indicates that the No-Project Alternative would result in higher overall energy consumption than the other alternatives (Table 4.8-1). The No-Project Alternative would consume approximately 70,243 billion BTU and 76,269 billion BTU, respectively, in 2010 and 2025. These BTU figures correspond to about 12.1 million and 13.1 million barrels of oil, respectively. The Baseline Alternative would consume approximately 11.7 million and 12.8 million barrels of oil in 2010 and 2025, respectively, and the Light Rail Alternative would consume approximately 11.7 million and 12.7 million barrels of oil in 2010 and 2025, respectively. In percentage terms, the energy consumption under the No-Project Alternative would be approximately 3% more than that projected for the other alternatives. This represents an adverse effect.

Mitigation: No mitigation is available.

E-2: Significantly Increase Peak and Base Period Electricity Demand

Implementation of the No-Project Alternative would not add to the LRT system, which is the only mode of travel under consideration that would require substantial amounts of electricity to operate. Therefore, no effects on electricity reserve are expected, and no additional capacity would be required.

Mitigation: No mitigation is required.

E-3: Increase Demand on Electricity Transmission Infrastructure

Implementation of the No-Project Alternative would not add to the LRT system, which is the only mode of travel under consideration that would require substantial amounts of electricity to operate. Therefore, no effects on electricity transmission infrastructure are expected.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Baseline Alternative

Anticipated adverse effects associated with the projects included in the approved 1996 Measure B Improvement Program are independent of the proposed alternatives and are or will be reviewed in their respective environmental compliance documents. Additionally, the potential cumulative effects of these projects are considered in Chapter 5, *Other CEQA Considerations*, of this document. This analysis considers the effects of the bus service improvements that are included in the Baseline Alternative as outlined in Chapter 3, *Alternatives Considered*.

E-4: Place a Substantial Demand on Regional Energy Supply

Analysis of VMT projections for 2010 and 2025 indicates that the Baseline Alternative would result in lower overall energy consumption than the No-Project Alternative. The Baseline Alternative would consume approximately 68,107 billion and 74,329 billion BTU in 2010 and 2025, respectively. These BTU figures correspond to about 11.7 million and 12.8 million barrels of oil, respectively. The No-Project Alternative would consume approximately 12.1 million and 13.1 million barrels of oil in 2010 and 2025, respectively. Therefore, the Baseline Alternative represents energy savings equivalent to about 370,000 and 330,000 barrels of oil annually in 2010 and 2025, or about 3% of No-Project Alternative energy consumption. Therefore, as compared to the No-Project Alternative, a beneficial effect would result from implementation of the Baseline Alternative.

Mitigation: No mitigation is required.

E-5: Significantly Increase Peak and Base Period Electricity Demand

Implementation of the Baseline Alternative would not add to the LRT system, which is the only mode of travel under consideration that would require substantial amounts of electricity to operate. Therefore, no effects on electricity reserve are expected, and no additional capacity would be required.

Mitigation: No mitigation is required.

E-6: Increase Demand on Electricity Transmission Infrastructure

Implementation of the Baseline Alternative would not add to the LRT system, which is the only mode of travel under consideration that would require substantial amounts of electricity to operate. Therefore, no effects on electricity transmission infrastructure are expected.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Light Rail Alternative

This analysis considers the effects of the Light Rail Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

E-7: Place a Substantial Demand on Regional Energy Supply

Analysis of VMT projections for 2010 and 2025 indicates that the Light Rail Alternative would result in lower overall energy consumption as compared to both of the No-Project Alternative (Table 4.8-1). The total energy consumed by implementation of the Light Rail Alternative would be approximately 68,042 billion and 74,084 billion BTU in 2010 and 2025, respectively. These BTU figures correspond to approximately 11.7 million and 12.7 million barrels of oil, respectively. The No-Project Alternative would consume approximately 12.1 million and 13.1 million barrels of oil in 2010 and 2025, respectively. Therefore, the Light Rail Alternative represents annual energy savings equivalent to about 380,000 barrels of oil in 2010 and 2025, or about 3% of No-Project Alternative energy consumption. Therefore, compared to the No-Project Alternative, a beneficial effect would result from implementation of the Light Rail Alternative. In considering the Light Rail Alternative relative to other reasonably foreseeable transportation projects in the region with similar electrical demands, it should be noted that the Baseline Alternative includes both the Warm Springs Extension and additional Caltrain service. These programmed projects have already been considered in the analysis.

Mitigation: No mitigation is required.

E-8: Significantly Increase Peak and Base Period Electricity Demand

Electrical power demanded by the Light Rail Alternative would increase the load on the Cal-ISO–controlled system by 1.87 MW during the peak period of demand in 2010 and 2025, equivalent to the amount required to power about 1,870 average homes. Electricity supply and demand projections are not available for 2025 because such large time horizons are uncertain—it is not possible to predict capacity additions more than 2–3 years into the future because they depend on fluctuating market conditions. However, it is useful to compare the Light Rail Alternative rate of peak-period electricity usage to currently available projections of future electricity reserves. As indicated in the environmental setting section, above, 2008, which is the most distant year for which statewide projections of demand and supply are available, is forecasted to have an electricity surplus of 5,210 MW. The additional load placed on the Cal-ISO grid by the Light Rail Alternative would represent approximately 0.04% of the 2008 statewide electricity surplus. Assuming current trends continue, the additional load on the system would not be considered adverse.

Mitigation: No mitigation is required.

E-9: Increase Demand on Electricity Transmission Infrastructure

Although the potential for future electricity transmission bottlenecks exists, deficiencies in the transmission capacity of the current grid system are being addressed by projects such as the Path 15 upgrade (see Section 4.8.2), which has been the electricity transmission bottleneck of biggest concern to the Cal-ISO. Projects specific to the Bay Area could net up to 2,000 MW more transmission capability, if the Jefferson-Martin transmission upgrade, addressed in the Environmental Setting section of this chapter, is permitted and built. Even if it is not, the Northeastern San Jose upgrade project added 35% to the electricity importation capability of the San Jose area taking it from a 2,300-megawatt capacity to a 2,900-megawatt importation capability. The estimated 1.87-megawatt demand by Light Rail Alternative would represent 0.06 % of the overall importation capacity in the San Jose area. If the trend toward increased transmission capacity continues, there would be sufficient capacity in the future to accommodate the Light Rail Alternative in addition to existing and anticipated future demand, including other reasonably foreseeable transportation projects. Therefore, there would be no adverse effect on transmission infrastructure.

Mitigation: No mitigation required.

Proposed Options

As described in Chapter 3.0, *Alternatives Considered*, the Light Rail Alternative includes station, segment, park-and-ride, and light rail vehicle storage location options. The station options include at-grade, aerial, and depressed open-air station designs. Several platform configurations are also being explored including side platforms, single center platforms, offset platforms, and a platform on the west side of the expressway. With the exception of the Eastridge Transit Center segment and the side-running option between Eastridge and Nieman Boulevard, the light rail alignment would remain within the median at grade, on an aerial structure above the corridor, or in a tunnel. These options could adversely affect energy resources. The effects on energy resources discussed above would result depending on the alignment options or station designs selected.

Section 4.9
Environmental Justice

4.9.1 Introduction

This section describes the relationship between the socioeconomic characteristics of area residents and neighborhoods, and the potential effects of the proposed alternatives analyzed in this EIR. This section discusses the existing demography within the Capitol Expressway Corridor and describes applicable regulations pertaining to environmental justice. The assessment of substantial adverse effects and mitigation measures of the proposed alternatives related to environmental justice communities are also described.

4.9.2 Existing Conditions

Environmental Setting

The information in this setting is derived from 2000 U.S. Census information (U.S. Bureau of the Census 2000). Average income per capita and the racial breakdown of San Jose and the study area are shown in Table 4.9-1. In addition to a slightly higher percentage of people below the poverty line, the study area has a lower income per capita than San Jose as a whole. The average income per capita of San Jose is $26,697, while the study area averages $19,912, ranging from $12,565 (census tract 5032.17) to $39,877 (census tract 5031.16). Only four of the census tracts included in the study area (5031.16, 5120.05, 5120.19, and 5120.20) have higher average incomes per capita than elsewhere in the city.

The study area has a substantially lower proportion of whites and a higher proportion of minorities than elsewhere in the city. Minorities represent approximately 63% of the total population of San Jose, but approximately 82% of the study area population.

Population characteristics indicative of transportation dependency are also generally higher in the study area than in San Jose as a whole. Transit dependency is characterized by the population unlikely to drive (those under 18 and over 65 years of age), the number of workers using public transportation, and the number of persons below the poverty line. People under the age of 18 and over 65 are unlikely to drive their own vehicles and therefore more likely to be transit dependent. The percentages of people under 18 and over 65 are similar in the study area (29% and 7%, respectively) and San Jose (26% and 8%, respectively), although the study area has a slightly higher percentage of persons under 18 and a slightly lower percentage of persons over 65. Workers who use public transportation are also considered a transit-dependent group. The study area and city have the same percentage of workers that use public transportation (4%). The individual census tracts have varying percentages of workers that use public transportation, varying from 1–9%. Automobile ownership rates in the study area are below the county average.

In almost every demographic category analyzed for environmental justice issues, the population of the study area had percentages equal to or higher than the city as a whole. The study area has a larger minority population than San Jose as a whole, a lower income per capita, and a higher number of people living below the poverty line. Therefore, based upon the demographic information collected and reported in Table 4.9-1, there appears to be a target population pursuant to Executive Order 12898. (A target population has a substantial presence of low-income or minority residents, based on proportionality.)

Regulatory Setting

Executive Order 12898

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations," was signed by President Clinton on February 11, 1994. This order requires each federal agency, as part of its mission, to achieve environmental justice by identifying and addressing disproportionately high and adverse human health or environmental effects of its activities on minority and low-income populations. When there is substantial federal involvement in a project, the federal agency (in this instance, FTA) must collect and analyze data on race, national origin, and income for the populations of concern (i.e., minority and low-income populations). The federal agency must ensure that its activities do not discriminate against persons or groups on the basis of race, national origin, or income.

U.S. Department of Transportation Order 5610.2

In April 1997, the U.S. Department of Transportation (DOT) issued the DOT Order on Environmental Justice to Address Environmental Justice in Minority Populations and Low-Income Populations (DOT Order 5610.2) to summarize and expand on the requirements of Executive Order 12898. The order generally describes the process for incorporating environmental justice principles into all DOT existing programs, policies, and activities. DOT and FTA provide that transit agencies:

- ensure that new investments and changes in transit facilities, services, maintenance, and vehicle replacement deliver equitable levels of service and benefits to minority and low-income populations;
- avoid, minimize, or mitigate disproportionately high and adverse effects on minority and low-income populations; and
- enhance public involvement activities to identify and address the needs of minority and low-income populations in making transportation decisions.

4.9.3 Environmental Consequences and Mitigation Measures

Approach and Methodology

This analysis was based on a qualitative assessment of adverse effects on the environment that would result from the proposed alternatives for each resource area evaluated in this EIR. A determination of an environmental justice impact is made if these adverse effects would occur specifically where target populations are located within the corridor and no reasonable and feasible mitigation for adverse effects is available.

Thresholds of Significance

Based on significance criteria used by VTA and DOT and FTA guidance, the proposed alternatives may result in adverse effects related to environmental justice if they would:

- would have a disproportionate effect on environmental justice populations (a disproportionate effect is defined as an effect that is predominantly borne, more severe, or of a greater magnitude in areas with environmental justice populations than in other areas).

Environmental Consequences and Mitigation Measures of the No-Project Alternative

This analysis considers the effects of the No-Project Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

The No-Project Alternative would not bring new transportation facilities or service improvements to the Capitol Expressway Corridor. Because of the lack of improvements under this alternative, residents of the corridor would have limited mobility and accessibility, which would lead to increased traffic congestion and a resulting degradation of air quality. These adverse effects are discussed in Section 4.2, *Transportation* and in Section 4.3, *Air Quality*. However, the magnitude of these effects would be equal along the corridor, study area, and region, and would not disproportionately affect a single area or group of areas along the corridor.

As discussed in Section 4.13, *Land Use*, and in Section 4.16, *Socioeconomics*, the failure to add transportation improvements or increased transit service to the Capitol Expressway Corridor is not consistent with several local and regional land use plans and policies, including the San Jose General Plan and the Valley Transportation Plan 2020. Higher residential densities and mixed uses would not be developed along the Capitol Expressway Corridor, designated an Intensification Corridor, where vigorous economic growth is envisioned. This would not be consistent with the city general plan, and could impede efforts to economically revitalize the corridor. This is considered a substantial and unavoidable adverse effect, and no mitigation is feasible. Because this effect would occur only within the corridor and because the study area population has a lower income per capita and higher percentage of minority and transit-dependents than the city as a whole, this is considered an environmental justice impact. A disproportionately high and adverse human health or environmental effect would occur to minority or low-income populations within the meaning of Executive Order 12898.

Environmental Consequences and Mitigation Measures of the Baseline Alternative

Anticipated adverse effects associated with the projects included in the approved 1996 Measure B Improvement Program are independent of the proposed alternatives and are or will be reviewed in their respective environmental compliance documents. Additionally, the potential cumulative effects of these projects are considered in Chapter 5, *Other CEQA Considerations*, of this document. This analysis considers the effects of the bus service improvements that are included in the Baseline Alternative as outlined in Chapter 3, *Alternatives Considered*.

The Baseline Alternative would primarily consist of bus service improvements within the Capitol Expressway Corridor, including service frequency upgrades, enhanced limited stop (ELS) service, and transit priority measures. The operation of ELS service, which operates in shared right-of-way would improve travel times. Although traffic delays for transit vehicles would be minimized through the implementation of transit priority measures, buses would continue to experience some delay as a result of overall traffic congestion in the corridor. By comparison, travel times in communities outside the study area would be shorter and mobility benefits would be greater as a direct result of the light rail extensions in the Tasman, Vasona, and Capitol Avenue corridors, which will not directly serve Capitol Expressway Corridor residents. There would also continue to be no direct linkages that would facilitate access from the study area to regional employment centers. Because of these outcomes, an impediment to economic revitalization of the corridor similar to that described for the No-Project Alternative would occur under the Baseline Alternative. This effect is considered adverse. Because this effect would occur only within the corridor and because the study area population has a lower income per capita and higher percentage of minority and transit-dependents than the city as a whole, this is considered an environmental justice impact. A disproportionately high and adverse human health or environmental effect would occur to minority or low-income populations within the meaning of Executive Order 12898.

Environmental Consequences and Mitigation Measures of the Light Rail Alternative

This analysis considers the effects of the proposed Light Rail Alternative and its ancillary facilities as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

Consistent with the stated purpose of the proposed action, the Light Rail Alternative would improve mobility options to employment, education, medical, and retail centers for corridor residents who are members of environmental justice target populations. Direct linkages would be provided from the Capitol Expressway Corridor to downtown San Jose and to regional employment and activity centers that are currently served by extensions in the Tasman, Vasona, and Capitol Avenue corridors. Regional connectivity would also be enhanced by expanding interconnected transit services along the U.S. 101 and I-680/I-280 corridors. These effects are considered beneficial.

As discussed in Section 4.2, *Transportation*, increased traffic congestion at local intersections in the corridor would have an adverse effect. Under this alternative, several intersections along Capitol Expressway would experience increases in volume delay and LOS deterioration. The options under consideration could substantially disrupt operations at the Capitol Expressway/Story Road, Eastridge Road/Quimby Road, Capitol Expressway/Aborn Road, and Capitol Expressway/McLaughlin Avenue intersections. These effects are considered adverse, but mitigation for traffic impacts in the form of added turn or through lanes has been proposed where feasible. Intersection congestion and traffic disruption would affect study area and corridor residents, as well as nonresidents traveling through the area along Capitol Expressway.

As discussed in Section 4.5, *Community Services*, seven elementary schools, two middle schools, and two high schools would be directly served by the Light Rail Alternative. As discussed in Section 4.18, *Visual Quality*, the Light Rail Alternative would result in some degradation of visual quality, largely because of the introduction of an aerial structure in the corridor viewshed. However, the

Light Rail Alternative would be placed within the median of an existing regional transportation facility, where well-established communities have developed with this physical feature in place. As discussed in Section 4.16, *Socioeconomics*, construction of the alignment, proposed stations, park-and-ride facilities, substations and light rail vehicle storage facilities could require some displacement and relocation of residents and businesses, as detailed in Table 4.16-3, and would be considered an adverse effect. However, mitigation has been proposed to minimize this effect.

Overall, there is no evidence that the minority and low-income populations in the study area would be disproportionately affected by the adverse effects associated with the Light Rail Alternative. In addition, no single type of adverse effect would disproportionately affect a minority or low-income community within the meaning of Executive Order 12898.

Section 4.10
Geology, Soils, and Seismicity

4.10.1 Introduction

This section describes the environmental setting and effects of the alternatives analyzed in this EIR with regard to geology, soils, and seismicity. Specifically, this section discusses existing geologic, soil, and seismic conditions within the Capitol Expressway Corridor and describes applicable regulations pertaining to geology, soils, and seismic hazards. The assessment of adverse effects and mitigation measures of the alternatives related to geology, soils, and seismicity are also described. A detailed geotechnical analysis supporting the findings in this section can be found in the geotechnical report (Parikh Consultants 2002), included as Appendix F of this document.

4.10.2 Existing Conditions

Environmental Setting

Geology

San Jose is located in the Santa Clara Valley, a northwest trending valley separated by intervening ranges within the seismically active Coast Range Geomorphic Province. Regional geology is characterized primarily by folded and faulted sedimentary and volcanic rocks, ranging in age from Mesozoic to Pliocene, that form the hills of the San Francisco Peninsula to the west and the Diablo Range and Berkeley Hills to the northeast. More recent alluvial and intertidal deposits are found in the immediate vicinity of the project area.

No borings were drilled specifically for this analysis, but borings have been drilled for numerous projects over the past several years (Parikh Consultants 2002). Based on a review of these previous studies, it can be determined that the geologic units underlying the Capitol Expressway Corridor are predominantly Holocene basin deposits (fine-grained alluvium with horizontal stratification) and older Holocene alluvial fan deposits and late Pleistocene alluvial fan deposits (older alluvium typically composed of sand, gravel, silt, and clay, moderately to poorly sorted and moderately to poorly beaded). (U.S. Geological Survey 1999.)

Landslides

The Capitol Expressway Corridor is an area with gentle slopes and low elevation. The area has little or no potential for the formation of slumps (downward slipping of a mass of rock or unconsolidated material moving as a single unit), translational slides (mass movements on planar surfaces), or earth flows, except along streambanks or terrace margins (Wentworth 1997). The proposed alternatives are not located in areas that are highly susceptible to landslides.

Soils

The U.S. Department of Agriculture (USDA) Soil Conservation Service (1958) has mapped the soils underlying the Capitol Expressway Corridor into three separate associations, which are listed below and shown in Figure 4.10-1:. There are approximately 22 individual soil map units that make up these three separate associations. The three separate associations include

- soils of the recent alluvial fans and floodplains, consisting of deep, medium-textured soils;
- soils of the older alluvial fans, consisting of nearly level, deep, medium-textured soils; and
- soils of the terraces, consisting of gently sloping medium- and fine-textured soils.

Soils of the recent alluvial fans and floodplains are typically deep, medium-textured soils, and have developed on deep, permeable, unconsolidated alluvium that originated mainly in areas of sandstone and shale rocks. They are well-drained.

Soils of the older alluvial fans are typically deep, medium-textured soils, and are on well-drained, unconsolidated older alluvium that originated mainly in areas of sandstone and shale rocks.

Soils of the terraces typically consist of gently sloping medium- and fine-textured soils, have dense claypan subsoils, contain some gravel, and have a parent material of old alluvial deposits that originated from sedimentary or meta-sedimentary rocks.

These soils have been altered by increased urbanization since the publication of the soil survey report.

Expansive Soils

Expansive soils are a common source of moderate damage to houses and light structures in the Bay Area, and clay-rich natural topsoil with a high shrink-swell potential is common in the project vicinity. These clay-rich soils contain montmorillonite and other minerals that swell under wet conditions and shrink

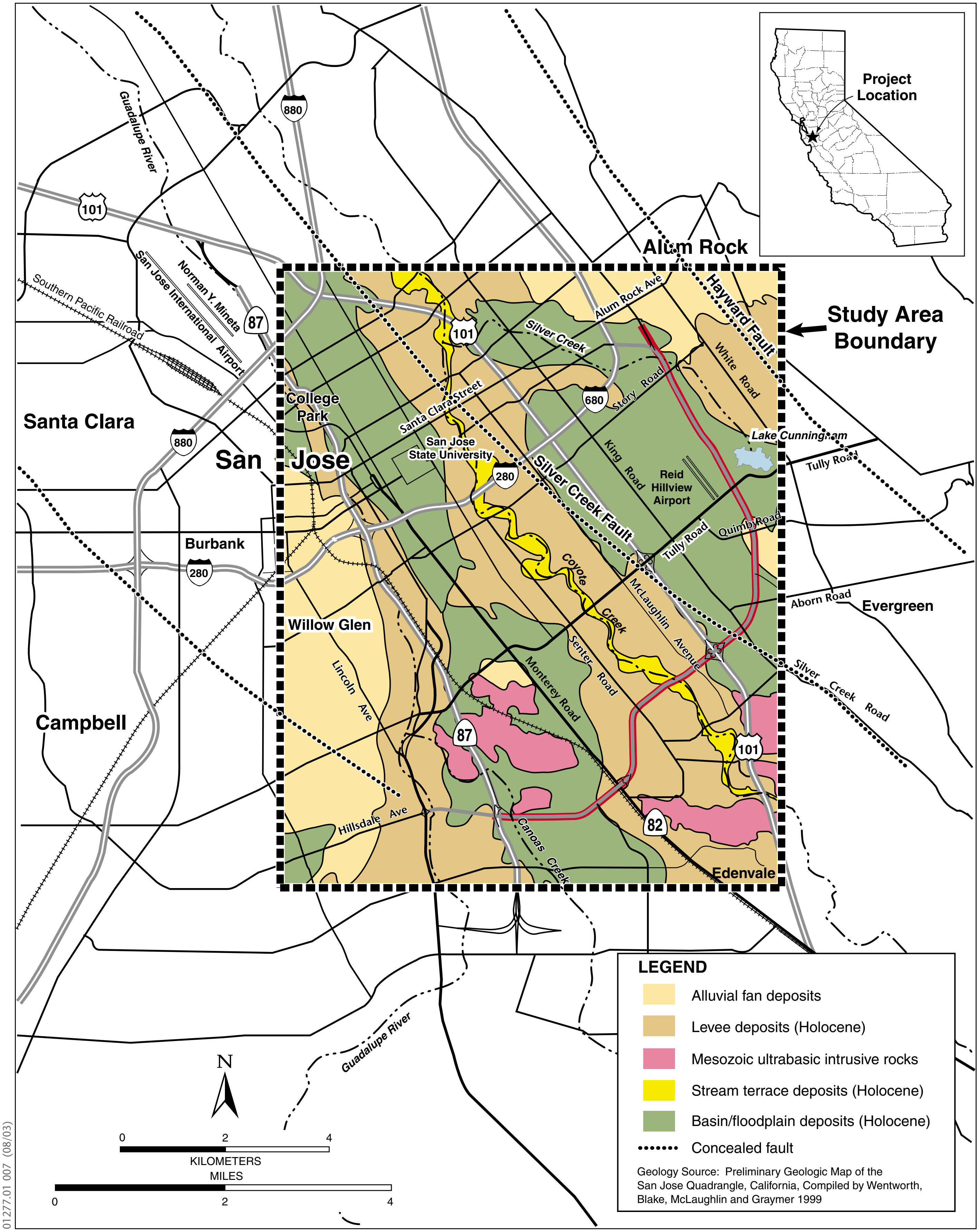

Figure 4.10-1
Geologic and Seismic Features

under dry conditions. Structural damage, such as cracked foundations, could result from differential movement and from several alternating periods of shrinking and swelling. Usually, damage caused by expansive soils can be minimized or eliminated by using site-specific engineering techniques.

According to Parikh Consultants (2002) (Appendix F), soils in the Capitol Expressway Corridor contain appreciable amounts of clay; therefore, they likely would be subject to shrink-swell episodes. Furthermore, the Soil Survey of the Santa Clara Area (USDA Soil Conservation Service 1958) indicates that most soils in the proposed project area are composed of clay loam or finer sediments. As such, information about shrink-swell potential is inferred from the mineralogy of the clay (smectite-type) and the clay content. Shrink-swell potential thus ranges from medium to high. However, these types of soils generally can be excavated and the excavation backfilled with material that does not contain clay content if any structures would be constructed over expansive soil areas in the corridor.

Erosion Hazards

The Soil Survey of the Santa Clara Area (USDA Soil Conservation Service 1958) indicates that most soils in the proposed project area have a negligible to moderate erosion hazard. The erosion hazard and landslide potential of the undisturbed soils in the Capitol Expressway Corridor rights-of-way is low because of high cohesion of soils and the nearly level slopes on which the soils are located. Soils in the street portion of the corridor right-of-way likely consist of coarse-textured fill material that poses an even lower erosion hazard.

Seismicity

The Capitol Expressway Corridor is located in a seismically active area of Santa Clara County, and earthquakes are common. Harm to people and damage to structures during earthquakes can be caused by actual surface rupture along an active fault or by ground shaking from a nearby or distant fault. These causes are described below.

Surface Rupture

Damage caused by surface rupture usually is limited to structures constructed across the trace of an active fault. The rupture zone is often narrow and no more than a few feet wide.

The Bay Area contains numerous faults and fault zones. The Alquist-Priolo Earthquake Fault Zoning Act (PRC Sec. 2621 et seq.), originally enacted in 1972 as the Alquist-Priolo Special Studies Zones Act, requires the state geologist to delineate all active fault traces in the state and to delineate appropriately wide Earthquake Fault Zones around these fault traces. The purpose of this and other requirements of the Alquist-Priolo Act is to prevent the location of most types of structures intended for human occupancy across the traces of active faults and thereby mitigate the hazard of surface fault rupture (Hart and Bryant 1997).

Under the Alquist-Priolo Act, faults are zoned and construction along or across them is strictly regulated if they are *sufficiently active* and *well defined*. A fault is considered *sufficiently active* if one or more of its segments or strands shows evidence of surface displacement during Holocene time (defined for purposes of the Act as referring to approximately the last 11,000 years). A fault is considered *well defined* if its trace can be clearly identified by a trained geologist at the ground surface or in the shallow subsurface using standard professional techniques, criteria, and judgment (Hart and Bryant 1997).

The major active and potentially active faults located within 50 miles of the corridor are shown in Figure 4.10-1. Most of these faults and fault zones are part of the historically active San Andreas Fault System. Of the faults shown in Figure 4.10-1, the Hayward fault zone is located essentially within the corridor (e.g., as close as 2.4 miles) and poses a potential surface fault rupture hazard to the proposed alternatives.

Surface displacement has occurred along the southern segment of the Hayward fault zone as a result of both major earthquakes and a process known as “aseismic fault creep.” Fault rupture during the Great 1906 San Francisco Earthquake resulted in surface displacement along the Hayward fault of up to 3 feet (Steinbrugge et al. 1987) and caused significant damage to the Southern Pacific Railroad tracks in the vicinity (Lawson 1908). Displacement resulting from fault creep has been subtler, but has been well studied and documented (Cluff and Steinbrugge 1966; Bonilla 1966; Borchardt et al. 1990; Nason 1971; Prescott and Lisowski 1983). Estimates of the average long-term slip rate along the Hayward fault range from 5 to 7.5 millimeters per year (Lienkaemper et al. 1991; Fox et al. 1985; Sarna-Wojcicki et al. 1986).

Seismic Ground Shaking

The risk of surface rupture in the project area is generally limited to the narrow strip of land immediately adjacent to an active fault, whereas earthquake-induced ground shaking poses a more serious threat to people and structures. Most of the seismic activity in the Bay Area (and therefore most of the seismic ground shaking hazard) is associated with the historically active San Andreas Fault System, which includes several major active and potentially active faults and fault zones, including the Hayward fault zone, San Andreas fault zone, Seal Cove–San Gregorio–Hosgri fault zone, Sargent fault, Calaveras fault zone, Green Valley–Concord fault zone, and Greenville fault zone (Figure 4.10-1).

The measurement of the energy released at the point of origin, or epicenter, of an earthquake is referred to as the magnitude, which is generally expressed in the Richter Magnitude Scale or as moment magnitude. The scale used in the Richter Magnitude Scale is logarithmic so that each successively higher Richter magnitude reflects an increase in the energy of an earthquake of about 31.5

times. Moment magnitude is the estimation of an earthquake magnitude by using seismic moment, which is a measure of an earthquake size utilizing rock rigidity, amount of slip, and area of rupture.

The greater the energy released from the fault rupture, the higher the magnitude of the earthquake. Earthquake energy is most intense at the fault epicenter; the farther an area from an earthquake epicenter, the less likely that ground shaking will occur there. Geologic and soil units comprising unconsolidated, clay-free sands and silts can reach unstable conditions during ground shaking, which can result in extensive damage to structures built on them (see *Liquefaction* below).

Ground shaking is described by two methods: ground acceleration as a fraction of the acceleration of gravity (g) or the Modified Mercalli scale, which is a more descriptive method involving 12 levels of intensity denoted by Roman numerals. Modified Mercalli intensities range from I (shaking that is not felt) to XII (total damage). According to the Association of Bay Area Governments (ABAG) (1999), the shaking amplification in the project area, based on underlying geologic materials, is estimated to be strong to very strong (Modified Mercalli VII–VIII).

> VII (Strong—Nonstructural Damage.) Difficult to stand. Noticed by drivers of motor cars. Hanging objects quiver. Furniture broken. Damage to masonry D[1], including cracks. Weak chimneys broken at roof line. Fall of plaster, loose bricks, stones, tiles, cornices (also unbraced parapets and architectural ornaments). Some cracks in masonry C. Waves on ponds; water turbid with mud. Small slides and caving in along sand or gravel banks. Large bells ring. Concrete irrigation ditches damaged.
>
> VIII (Very Strong.) Steering of motor cars affected. Damage to masonry C; none to masonry A. Fall of stucco and some masonry walls. Twisting, fall of chimneys, factory stacks, monuments, towers, elevated tanks. Frame houses moved on foundations if not bolted down; loose panels walls thrown out. Decayed piling broken off. Branches broken from trees. Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes.

Estimates of Earthquake Shaking

Below is a discussion of probabilities of magnitude 6.7 or greater earthquakes and moment magnitudes for eight of the major active and potentially active faults in the vicinity of the Capitol Expressway Corridor. This discussion is based off

[1] **Masonry A:** Good workmanship, mortar, and design; reinforced, especially laterally, and bound together by using steel, concrete, etc.; designed to resist lateral forces. **Masonry B:** Good workmanship and mortar; reinforced, but not designed in detail to resist lateral forces. **Masonry C:** Ordinary workmanship and mortar; no extreme weaknesses like failing to tie in at corners, but neither reinforced nor designed against horizontal forces. **Masonry D:** Weak materials, such as adobe; poor mortar; low standards of workmanship; weak horizontally (Richter 1958).

two USGS reports (Peterson et al. 1996[2]; Working Group On California Earthquake Probabilities 2003[3]).

- **Hayward Fault Zone:** The Hayward Fault Zone is located approximately 2 miles east of the corridor and is considered capable of producing the next major earthquake in the Bay Area. Segments of the zone capable of generating earthquakes that could affect the corridor include the northern and southern segments of the fault zone. According to the Working Group On California Earthquake Probabilities (2003), the probability of a Richter magnitude 6.7 or greater earthquake on the Hayward Fault Zone (including the Rodgers Creek extension) in the next 30 years is 27%. Specifically, the northern segment has a probability of 11.4%, and the southern segment has a probability of 12.3%. According to Peterson et al. (1996), the estimated probabilities for earthquakes of moment magnitudes of 6.9 on the northern and southern segments of the Hayward Fault Zone are each 18%. The expected maximum peak ground acceleration in the corridor during an MCE on the Hayward Fault Zone is estimated to be 0.6 g (where g is the acceleration due to gravity) (Parikh Consultants 2002).
- **San Andreas Fault Zone:** The San Andreas Fault Zone is located approximately 15 miles southwest of the corridor. Segments of the zone capable of generating earthquakes that could affect the corridor include the North Coast segment, the San Francisco Peninsula segment, and the southern Santa Cruz Mountains segment. According to the Working Group On

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[2] The annual number of earthquakes of various sizes that are assigned to each fault under the methodology of Peterson et al. (1996) is based on the slip rate information and is defined using a combination of two statistical distributions: (1) the characteristic earthquake model that implies that a typical size of earthquake ruptures repeatedly along a particular segment of the fault (Schwartz and Coppersmith 1984), and (2) the exponential model that implies that earthquakes on a given fault follow the Gutenberg-Richter relationship: $n(m) = 10^{a-bm}$ where n is the incremental number of earthquakes, a is the incremental number of earthquakes of $m>0$, b is the slope of the distribution, and m is moment magnitude (Richter 1958). These two distributions have been discussed at length in the scientific literature and are both considered to be reasonable models either for specific faults or for larger areas of California. A combination of the two distributions is also thought to characterize the behavior of many fault systems. This composite model allows for more large earthquakes than predicted by the exponential distribution, and also for earthquakes of sizes different than the characteristic event.

[3] The methodology of Working Group On California Earthquake Probabilities 2003 builds on previous analyses of earthquake likelihood, modifying some of the methodologies used in those studies and introducing new ones. The earthquake probabilities are the product of model calculations consisting of three basic elements. The first element is the SFBR earthquake model, which forecasts the average magnitudes and long-term rates of occurrence of earthquakes on the principal faults and for the region as a whole. These average long-term rates of earthquakes lead to average, time-independent probabilities of earthquakes at or above a particular magnitude level of interest (e.g., M>=6.7). The second element consists of a suite of time-dependent earthquake probability models that incorporate physical aspects of the causes and effects of earthquakes that vary with time. The two most important of these are the progression of faults through the "earthquake cycle" and the interactions of faults, through which the stress released by an earthquake on one fault is transferred in part to other faults or adjacent fault segments. The most significant interaction effect - that produced by the 1906 earthquake - figures prominently in the modeling. The third new element introduced in the calculations is the characterization of the rate of occurrence of "background" earthquakes - earthquakes in the Bay region that do not occur on the principal faults. The probability for these events is based on seismicity rates known since 1836, extrapolated to M>=6.7 events. Background earthquakes include events such as the September 2001 M5.1 Napa earthquake, and the 1989 M6.9 Loma Prieta earthquake.

California Earthquake Probabilities (2003), the probability of a Richter magnitude 6.7 or greater earthquake on the San Andreas Fault Zone in the next 30 years is 21%. Specifically, the North Coast segment has a probability of 11.4%; the San Francisco Peninsula segment has a probability of 13.2%; and the southern Santa Cruz Mountains segment has a probability of 11.2%. According to Peterson et al. (1996), the estimated probabilities for earthquakes of moment magnitudes of 7.6 on the North Coast, 7.1 on the San Francisco Peninsula, and 7.0 on the southern Santa Cruz Mountains segments of the San Andreas Fault Zone are negligible, 7.5, and 7.5%, respectively.

- **Calaveras Fault Zone:** The Calaveras Fault Zone is located approximately 7 miles east of the corridor. Segments of the zone capable of generating earthquakes that could affect the corridor include the northern, central, and southern segments of the fault zone (the Working Group On California Earthquake Probabilities (2003) identifies these segments; Peterson et al. (1996) identifies only two segments – the northern and southern segments). According to the Working Group On California Earthquake Probabilities (2003), the probability of a Richter magnitude 6.7 or greater earthquake on the Calaveras Fault Zone in the next 30 years is 11%. Specifically, the northern segment has a probability of 9.9%; the central segment has a probability of 2.9%; and the southern segment has a probability of 2.3%. According to Peterson et al. (1996), the estimated probabilities for earthquakes of moment magnitudes of 6.8 on the northern segment and 6.2 on the southern segment of the Calaveras Fault Zone are 20.5 and 90.9%, respectively.

- **Seal Cove–San Gregorio–Hosgri Fault Zone:** The Seal Cove–San Gregorio–Hosgri Fault Zone is located approximately 27 miles west of the corridor. Segments of the zone capable of generating earthquakes that could affect the corridor include the northern and southern segments of the San Gregorio Fault (Peterson et al. (1996) identify these as the San Gregorio Sur region and San Gregorio segments). According to the Working Group On California Earthquake Probabilities (2003), the probability of a Richter magnitude 6.7 or greater earthquake on the San Gregorio Fault in the next 30 years is 10%. Specifically, the northern segment has a probability of 7.6%, and the southern segment has a probability of 5.4%. According to Peterson et al. (1996), the estimated probabilities for earthquakes of moment magnitudes of 7.0 on the San Gregorio Sur region segment and 7.3 on the San Gregorio segment of the San Gregorio-Hosgri Fault Zone are 7.3 and 7.5%, respectively.

- **Sargent Fault:** The recognized active portion of the Sargent Fault is located approximately 28 miles southwest of the corridor. According to Peterson et al. (1996), the estimated probability for an earthquake of moment magnitudes of 6.8 on the Sargent Fault is 2.5%.

- **Greenville Fault Zone:** The Greenville Fault Zone is located approximately 29 miles east of the corridor. Segments of the zone capable of generating earthquakes that could affect the corridor include the northern and southern segments of the fault zone (the Working Group On California Earthquake Probabilities (2003) identifies these two segments; Peterson et al. (1996) identifies only one segment – the Greenville). According to the Working

Group On California Earthquake Probabilities (2003), the probability of a Richter magnitude 6.7 or greater earthquake on the Greenville Fault Zone in the next 30 years is 3%. Specifically, the northern segment has a probability of 2.3%, and the southern segment has a probability of 2.1%. According to Peterson et al. (1996), the estimated probability for an earthquake of moment magnitudes of 6.9 on the Greenville Fault Zone is 5.8%.

- **Green Valley–Concord Fault Zone:** The Green Valley and Concord faults are the primary faults in a 2-mile wide fault zone located approximately 27 miles east of the corridor. Segments of the zone capable of generating earthquakes that could affect the corridor include the northern, southern, and Concord segments of the fault zone (the Working Group On California Earthquake Probabilities (2003) identifies these three segments; Peterson et al. (1996) identifies only one segment – the Concord-Green Valley). According to the Working Group On California Earthquake Probabilities (2003), the probability of a Richter magnitude 6.7 or greater earthquake on the Greenville Fault Zone in the next 30 years is 4%. Specifically, the northern segment has a probability of 3.1%; the southern segment has a probability of 3.4%, and the Concord segment has a probability of 3.1%. According to Peterson et al. (1996), the estimated probability for an earthquake of moment magnitudes of 6.9 on the Greenville Fault Zone is 17.0%.

Liquefaction

The Capitol Expressway Corridor is located in an area susceptible to moderately high to very high seismic ground shaking based on underlying geologic materials (Association of Bay Area Governments 1999). Strong seismic ground shaking can result in liquefaction, lateral spreading, ground settlement, and ground collapse.

Liquefaction is the process by which soils and sediments lose shear strength and fail during episodes of intense, prolonged seismic ground shaking. The susceptibility of a given soil or sediment to liquefaction largely depends on local groundwater elevations and certain inherent soil and sediment properties such as texture and relative density. In general, poorly consolidated, water-saturated fine sands and silts located within 50 feet of the surface typically are considered the most susceptible to liquefaction (California Division of Mines and Geology 1997). Lateral spreading, ground settlement, and ground collapse caused by liquefaction can be substantial and can cause considerable damage to surface structures and underground utilities (California Division of Mines and Geology 1997).

The Capitol Expressway Corridor area is highly to very highly susceptible to liquefaction (Knudsen et al. 2000) (Figure 4.10-1). Examination of previously conducted test borings by Parikh Consultants (2002) (Appendix F) indicates the presence of poorly consolidated materials underlying denser clay layers and a liquefaction potential that varies but is generally classified as moderate to high.

The risks of lateral spreading, ground settlement, and ground collapse related to postliquefaction movement are also considered likely.

Regulatory Setting

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was signed into law on December 22, 1972, and went into effect March 7, 1973. The purpose of this act is to prohibit the construction of most structures for human occupancy across the traces of active faults and to thereby mitigate the hazard of fault rupture (PRC 2621.5). The proposed alternatives are subject to this act.

Uniform Building Code

The International Conference of Building Officials updates the Uniform Building Code periodically. The code is a standard reference used in California for earthquake and seismic design measures.

City of San Jose

The City's following Soils and Geologic Conditions goals and policies would be implemented by VTA as feasible.

- **Policy 6:** Development in areas subject to soils and geologic hazards should incorporate adequate mitigation measures.
- **Policy 8:** Development proposed within areas of potential geologic hazards should not be endangered by, nor contribute to, the hazardous conditions on the site or on adjoining properties.

The City's following Earthquakes goals and policies would be implemented by VTA as feasible.

- **Policy 1:** The City should require that all new buildings be designed and constructed to resist stresses produced by earthquakes.
- **Policy 4:** The location of public utilities and facilities in areas where seismic activity could produce liquefaction should only be allowed if adequate mitigation measures can be incorporated into the project.
- **Policy 5:** The City should continue to require geotechnical studies for development proposals; such studies should determine the actual extent of seismic hazards, optimum location for structures, the advisability of special structural requirements, and the feasibility and desirability of a proposed facility in a specified location.

- **Policy 6:** Vital public utilities as well as communication and transportation facilities should be located and constructed in a way that maximizes their potential to remain functional during and after an earthquake.

4.10.3 Environmental Consequences and Mitigation Measures

Approach and Methodology

The effects of the alternatives related to geology, soils, and seismicity were assessed based on a review of relevant publications, a reconnaissance-level survey, and the findings of the geotechnical report prepared by Parikh Consultants (2002) (Appendix F).

Thresholds of Significance

Based on the significance criteria used by VTA and professional practices, the proposed alternatives may result in adverse effects related to geology, soils, or seismicity if they would:

- expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death as a result of:
    - rupture of a known earthquake fault;
    - strong seismic ground shaking;
    - seismic-related ground failure, including liquefaction;
    - lateral spreading, subsidence, and collapse as a result of underlying unstable geologic units; or
    - expansive soil.

Environmental Consequences and Mitigation Measures of the No-Project Alternative

This analysis considers the effects of the No-Project Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

GEO-1: Risk to People or Structures Resulting in Loss, Injury, or Death Caused by Geologic or Seismic Hazards

As described in Chapter 3, the No-Project Alternative would keep in place the existing transit and roadway network within the Capitol Expressway Corridor. As a result, no new transportation improvements would occur and environmental conditions would not change. Therefore, there would not be any adverse effects resulting in a risk to people or structures resulting from a rupture of a known earthquake fault; strong seismic ground shaking; seismic related ground failure, including liquefaction; lateral spreading, subsidence, or collapse due to underlying unstable geologic units; or other hazards resulting from the presence of expansive soils under implementation of this alternative.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Baseline Alternative

Anticipated adverse effects associated with the projects included in the approved 1996 Measure B Improvement Program are independent of the proposed alternatives and are or will be reviewed in their respective environmental compliance documents. Additionally, the potential cumulative effects of these projects are considered in Chapter 5, *Other CEQA Considerations*, of this document. This analysis considers the effects of the bus service improvements that are included in the Baseline Alternative as outlined in Chapter 3, *Alternatives Considered*.

GEO-2: Risk to People or Structures Resulting in Loss, Injury, or Death Caused by Geologic or Seismic Hazards

As described above, the Baseline Alternative would primarily include bus service improvements within the Capitol Expressway Corridor. The proposed improvements include service frequency upgrades, enhanced limited-stop service and transit priority measures. These transportation improvements would not involve the construction of any large-scale structures or facilities. Therefore, there would not be any adverse effects resulting in a risk to people or structures resulting from a rupture of a known earthquake fault; strong seismic ground shaking; seismic related ground failure, including liquefaction; lateral spreading, subsidence, or collapse due to underlying unstable geologic units; or other hazards resulting from the presence of expansive soils under implementation of this alternative.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Light Rail Alternative

This analysis considers the effects of the Light Rail Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

GEO-3: Rupture of a Known Earthquake Fault

As described above, transportation improvements under the Light Rail Alternative would be located in the vicinity of the active Hayward fault. The risk of surface rupture in the corridor is greatest in the narrow strip of land immediately adjacent to an active fault. However, no portion of the light rail alignment actually traverses the fault. Therefore, no adverse effects related to rupture of a known active earthquake fault would result from implementation of this alternative.

Mitigation: No mitigation is required.

GEO-4: Risk to People or Structures Caused by Strong Seismic Ground Shaking

The possible locations of aerial structures along the light rail alignment include Story Road, the vicinity of the Eastridge Transit Center, and Aborn Road. These structures would be located in an area of strong seismic ground shaking. Strong seismic ground shaking could result in structural failures and could increase the risk of structural loss, injury, or death; however, implementation of the following mitigation measure would minimize this effect.

Mitigation Measure GEO-4: Incorporate Caltrans Seismic Design Criteria

During the design process, VTA shall design any and all proposed infrastructure in accordance with the appropriate Caltrans Seismic Design Criteria, as described in Appendix F. The criteria include, but are not limited to, designing infrastructure that can withstand an earthquake of magnitude 7.5 and a peak bedrock acceleration of 0.6 g with modifications. Other specific design criteria are described in Appendix F. With the implementation of these criteria into the design and ultimate construction of the light rail system structures, there would not be any adverse effects on people or structures resulting from strong seismic ground shaking under this alternative.

GEO-5: Risk to People or Structures Caused by Seismic-Related Ground Failure, Including Liquefaction

As noted in Chapter 3, *Alternatives Considered*, there are sections of the light rail alignment that could be grade separated. Specifically, the proposed tunnels and aerial structures are located in an area that is highly susceptible to liquefaction. In addition, portions of the alignment would be placed within retained fill. Soils and underlying geologic materials that are susceptible to liquefaction could increase the risk of structural loss, injury, or death. This potential risk would result in an adverse effect; however, implementation of the following mitigation measure would minimize this effect.

Mitigation Measure GEO-5: Incorporate Liquefaction Minimization Methods to Prevent Localized Liquefaction

VTA shall conduct geotechnical and geologic investigations during final design, including field excavation and laboratory testing, to provide site-specific geotechnical conclusions and recommendations for design and construction of the proposed facilities. If liquefiable soils or soils susceptible to seismically induced settlement are determined to be present at any location along the corridor, corrective actions shall be taken, including removal and replacement of soils, in-site densification, grouting, design of special foundations, or other similar measures, depending on the extent and depth of susceptible soils.

GEO-6: Risk to People or Structures from Lateral Spreading, Subsidence, and Collapse Caused by Underlying Unstable Geologic Units

As described above, the alignment of the Light Rail Alternative would be located in an area that may be susceptible to lateral spreading, subsidence, and collapse. Soils and underlying geologic materials that are susceptible to lateral spreading, subsidence, and collapse could increase the risk of structural loss, injury, or death. This potential risk would result in an adverse effect; however, implementation of the following mitigation measure would minimize this effect.

Mitigation Measure GEO-6: Implement Proper Construction Methods to Minimize Risk of Lateral Spreading, Subsidence, and Collapse Hazards

Prior to implementation of the proposed transit improvement activities the following construction methods shall be employed:

- construct edge containment structures such as berms, dikes, retaining structures, or compacted soil zones;
- remove or treat soils and geologic materials prone to lateral spreading and settling; and
- install drainage measures to lower the groundwater table below the level of settleable soils (California Division of Mines and Geology 1997).

GEO-7: Risk to People or Structures Caused by the Presence of Expansive Soil

As described above, transportation improvements proposed under the Light Rail Alternative would be located in an area that may have expansive soils. Expansive soils could cause structures to fail, presenting a risk of structural loss, injury, or death. This potential risk would result in an adverse effect; however, implementation of the following mitigation measure would minimize this effect.

Mitigation Measure GEO-7: Reinforce Foundations or Excavate Expansive Soil to Minimize Risk of Soil Expansivity

Special engineering techniques such as using reinforced steel in foundations, using drainage control devices, and/or over-excavating and backfilling with non-expansive soil shall be implemented during construction activities to minimize the risk of structural loss, injury, or death.

Proposed Options

As described in Chapter 3.0, *Alternatives Considered*, the Light Rail Alternative includes station, segment, park-and-ride, and light rail vehicle storage location options. The station options include at-grade, aerial, and depressed open-air station designs. Several platform configurations are also being explored, including side platforms, single center platforms, offset platforms, and a platform on the west side of the expressway. With the exception of the Eastridge Transit Center segment and the side-running option between Eastridge and Nieman Boulevard, the light rail alignment would remain within the median at grade, on an aerial structure above the corridor, or in a tunnel. These options could adversely affect geology, soils, and seismicity. The effects on geology, soils, and seismicity discussed above would result depending on the alignment options or station designs selected.

Section 4.11
Hazardous Materials

4.11.1 Introduction

This section describes the environmental setting and effects of the alternatives analyzed in this EIR with regard to hazardous materials. Specifically, this section discusses existing hazardous materials conditions within the Capitol Expressway Corridor and describes applicable regulations pertaining to the cleanup of soil and groundwater spills and leaks**.** The assessment of substantial adverse effects and mitigation measures of the alternatives related to hazardous materials are also described. A detailed hazardous materials analysis supporting the findings in this section can be found in the hazardous materials report (Parikh Consultants 2003), included as Appendix G to this document.

4.11.2 Existing Conditions

Environmental Setting

Background

The Capitol Expressway Corridor is a traffic-bearing road in Santa Clara County. Historical aerial photographs show that the corridor has supported vehicular traffic since the early 1950s. Because of this activity, the soils along the corridor are likely contaminated with lead from automobiles burning leaded gasoline. The lead levels in surface soils along highways can reach concentrations in excess of the state and federal hazardous waste thresholds, which requires disposal at either a Class I landfill or on-site stabilization.

There are numerous buildings and structures within the corridor. Because of the age of these structures, there is potential for the presence of asbestos-containing materials and lead-based paint. (As described in Appendix G, surveys for lead-based paint should be conducted before demolition of any structures within the right-of-way, and lead-based paint and asbestos-containing materials should be abated by using contractors certified to perform such work.)

Record Search

A review of federal and state regulatory records was conducted for the properties within the Capitol Expressway Corridor and immediate surrounding properties. The review included an evaluation of the use, generation, storage, treatment, or disposal of hazardous materials and chemicals or release incidents of such materials that could adversely affect the existing environmental conditions within the Capitol Expressway Corridor. The detailed results of this record search including identification of sites posing an environmental concern are depicted in the Environmental Data Resources (EDR) Environmental Atlas Report (2002) (Appendix G). The following databases were reviewed based on the designated American Standards of Testing and Materials search distances that are provided with the respective database.

Federal Databases

- National Priority List (NPL): 1 mile
- Proposed NPL: 1 mile
- Comprehensive Environmental Response Compensation, and Liability Information System (CERCLIS): 0.5 mile
- CERCLIS No Further Remedial Action Planned (CERCLIS: NFRAP): 0.25 mile
- Corrective Action Report (CORRACTS): 1 mile
- Resource Conservation and Recovery Information System treatment, storage disposal facility (RCRIS-TSD): 0.5 mile
- RCRIS large quantity generator: 0.25 mile
- RCRIS small quantity generator: 0.25 mile
- Emergency Response Notification System (ERNS): target property
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) (also known as Superfund) Consent Decrees (CONSENT): 1 mile
- ROD: 1 mile
- Delisted NPL: 1 mile
- Facility Index System/Facility Identification Initiative Program Summary Report (FINDS): target property
- Hazardous Material Reporting System (HMIRS): target property
- Material Licensing Tracking System (MLTS): target property
- Mines master index file (MINES): 0.25 mile
- Federal Superfund liens (NPL liens): target property

- Polychlorinated Biphenyl (PCB) Activity Database System (PADS): target property
- Resource Conservation and Recovery Act of 1976 (RCRA) Administration Action Tracking System: target property
- Toxic Chemical Release Inventory System (TRIS): target property
- Toxic Substance Control Act (TSCA): target property
- Section 7 Tracking System (SSTS): target property
- FIFRA/TSCA Tracking System (FTTS): target property

State, Regional, and County Databases

- Annual Workplan Sites (AWP): 1 mile
- Cal Sites Databases (CAL-SITES): 1 mile
- California Hazardous Material Incident Report System (CHMIRS): 1 mile
- "Cortese" Hazardous Waste and Substance Sites List (CORTESE): 1 mile
- Proposition 65 Records (NOTIFY 65): 1 mile
- Toxic Pits Cleanup Act Sites (TOXIC PITS): 1 mile
- State Landfill: 0.5 mile
- Waste Management Unit Database (WMUDS/SWAT): 0.5 mile
- Leaking Underground Storage Tank Information System (LUST): 0.5 mile
- Bond Expenditure Plan (CA BOND EXP. PLAN): 1 mile
- Active Underground Storage Tank Facilities (UST): 0.25 mile
- Facility Inventory Database (CA FID UST): 0.25 mile
- Hazardous Substance Storage Container Database (HIST UST): 0.25 mile
- Aboveground Petroleum Storage Tank Facilities (AST): target property
- Cleaner Facilities (CLEANERS): 0.25 mile
- Waste Discharge System (CA WDS): target property
- List of Deed Restrictions (DEED): target property
- Spills, Leaks, Investigation and Cleanup Cost Recovery Listing (CAL SLIC): 0.5 mile
- Hazardous Waste Information System (HAZNET): 0.25 mile

Field Survey and Results

Parikh Consultants also conducted reconnaissance-level field surveys within the corridor on December 20, 2002 and February 9, 2003, to confirm the locations and conditions of sites identified as a potential environmental concern. These sites are described below and listed by location. Any recommended onsite surveys or document review to further assess site conditions is noted.

Capitol Avenue to Story Road

Sparkle Cleaners; 303 South Capital Avenue

This dry-cleaning establishment is listed in the FINDS and CLEANERS directory as a small-quantity generator. Limited information was available about potential contamination at this site. However, because of the nature of this business, it is possible that the subsurface soils and groundwater may have been contaminated with perchloroethylene (PCE), which is typically used in dry-cleaning operations. Assessment of groundwater in the vicinity of this site is recommended.

Chevron 9-8247; 2710 Story Road

This site is listed in the LUST and Cortese databases for exhibiting adverse effects on groundwater. According to the EDR report, groundwater remediation is currently underway at this site; during the site visit, a groundwater remediation system was observed at the site. A review of site-specific documents is recommended to ensure that contaminated soil and groundwater are not encountered during work in this area.

SAVEK and Capitol Car Wash; 2701 Story Road

This site is listed in the LUST and Cortese databases for the presence of MTBE and gasoline in the groundwater. This site is under investigation and under the supervision of SCVWD and the San Francisco Bay Regional Water Quality Control Board (RWQCB). Site soil and groundwater data should be reviewed before initiating construction activities.

Southland Company/Shell; 2690 Story Road

This site is listed in the LUST and Cortese databases for the presence of petroleum hydrocarbons in the groundwater. The site is currently under investigation and undergoing remediation. During the site visit, groundwater monitoring wells were observed at this location and along Capitol Expressway.

Exxon Service Station 7-3297; 2710 Alum Rock Avenue

This site was listed for the presence of petroleum hydrocarbons discovered during closure of a UST in 1992. The site was under San Francisco Bay RWQCB review in 1997 and closed in 1998. The site does not pose a further environmental concern.

Story Road to Eastridge Transit Center

Airport Properties; 20502 John Montgomery Drive

This site is listed in the LUST and Cortese databases for the discovery of groundwater impacts in 1991; however, the site has since been closed. The site does not pose a further environmental concern.

Gee Bee Aero; 2660 John Montgomery Drive

This site is listed in the LUST database for the discovery of soil impacts during removal of a waste-oil UST. The site was closed in 1995. The site does not pose a further environmental concern.

Reid-Hillview Airport, 2500 Cunningham Avenue

This site is listed in the LUST database for the release of diesel to soil and groundwater; the case is closed. No further assessment is necessary.

Eastridge Transit Center to Aborn Road

ARCO 2187; 2375 Quimby Road

This site is listed in the LUST database for the release of petroleum hydrocarbons; the case was closed in 1995. During the site visit, two monitoring wells were observed on the western side of the site. The site does not pose a further environmental concern.

SpeeDee Oil Change and Tune-Up (Map ID 10-125); 1825 East Capitol Expressway

This site is listed in the HAZNET database. However, no records of violations or releases were found. Therefore, the site is not expected to pose an environmental concern.

Aborn Road to Coyote Creek

USA Petroleum (Map ID 15-159); 1091 Capitol Expressway

This site is listed in the LUST and Cortese databases for releases to soil and groundwater discovered during UST removal operations in 1991. The site is still active. During the site visit, an operating groundwater treatment system was observed onsite. Groundwater monitoring wells were observed on-site, and boring locations were observed on Capitol Expressway. Status reports from monitoring of this site should be reviewed before construction to determine whether the site would pose an environmental concern.

Rainbow Cleaners (Map ID 15-163); 1027 Capitol Expressway

This site is listed under the FINDS and CLEANERS lists as processing PCE for dry-cleaning operations. This site may potentially affect groundwater, which would pose an environmental risk within the corridor.

Coyote Creek to State Route 87

World Oil #79 (Map ID 14-181); 3148 Senter Road

This site is listed in the LUST and Cortese databases for presence of soil and groundwater contamination from USTs. The site is located directly adjacent to the alignment of the Light Rail Alternative and is currently in remediation under the supervision of SCVWD because of groundwater contamination due to MTBE. During the site visit, a groundwater treatment system was observed onsite. Remediation status reports of this site should be reviewed before construction to determine if it would pose an environmental concern.

ARCO #6044 (Map ID 14-181); 3147 Senter Road

This site is listed in the LUST and Cortese databases for the presence of soil and groundwater contamination from USTs. The site is currently being remediated under the supervision of SCVWD for groundwater contaminated due to MTBE. The site is located directly adjacent to the alignment of the Light Rail Alternative. Remediation status reports of this site should be reviewed before construction to determine if it would pose an environmental concern.

Chevron Station 97686 (Map ID 14-181); 3151 Senter Road

This site is listed in the LUST and Cortese databases for presence of soil and groundwater contamination from USTs. The site is currently being remediated under the supervision of SCVWD for groundwater contamination due to MTBE. During the site visit a groundwater treatment system was observed onsite. The site is located directly adjacent to the Light Rail alignment. Remediation status reports of this site should be reviewed before construction to determine if it would pose an environmental concern.

Shell Service Station (Map ID 19-235); 3939 Snell Avenue

This site is listed in the LUST database for release of hydrocarbons to the groundwater. The site is currently under remediation under the oversight of SCVWD. During the site visit, an operating remediation system was observed. Remediation status reports of this site should be reviewed before construction to determine if it would pose an environmental concern.

Mobil/BP Oil/Tosco Unocal; 3951 Snell Avenue

This site is listed in the LUST and Cortese databases for the release of petroleum hydrocarbons. The site is currently under remediation under the oversight of SCVWD. During the site visit, a remediation system was operating on-site. Remediation status reports of this site should be reviewed before construction to determine if it would pose an environmental concern.

Chevron #9-5921; 175 West Capitol Expressway
This site is listed in the LUST database for release of petroleum hydrocarbons to soil and groundwater; the case is closed. This site does not pose an environmental concern.

Regulatory Setting

Resource Conservation and Recovery Act of 1976

RCRA establishes a comprehensive program for identifying and managing hazardous waste, including reporting and record-keeping requirements for generators, a manifest system for transport of hazardous waste shipments, and standards for treatment and disposal facilities. Amendments in 1984 and 1986 established additional reporting requirements, restriction of landfill disposal, and a program regulating USTs. RCRA regulates active facilities and does not address abandoned or historical sites.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980

CERCLA provides a federal "Superfund" to clean up uncontrolled or abandoned sites contaminated by releases of hazardous substances, as well as accidents, spills, and other releases of pollutants and contaminants into the environment. CERCLA, as amended in 1986 by the Superfund Amendments and Reauthorization Act (SARA), authorizes EPA to order the parties responsible for a release to take action to remediate the contaminated site or to conduct remediation itself and recover the costs from responsible parties.

Title III of SARA also authorized the Emergency Planning and Community Right-to-Know Act, which requires facility operators to undertake emergency planning and report on hazardous chemical inventories and toxic releases, in order to make this information available to local communities. Both of these federal laws apply to the proposed alternatives.

4.11.3 Environmental Consequences and Mitigation Measures

Approach and Methodology

The assessment of adverse effects related to hazardous materials was based on the findings of the hazardous materials report prepared by Parikh Consultants (2003) (Appendix G). The assessment evaluates the potential for construction and operational activities under the proposed alternatives to adversely affect the environmental conditions within the Capitol Expressway Corridor with respect to hazardous materials. Where applicable, mitigation measures are provided to minimize anticipated adverse effects.

Thresholds of Significance

Based on significance criteria used by VTA and professional practice, the proposed alternatives may result in substantial adverse effects related to hazardous materials if they would:

- create a significant hazard to the public or the environment through reasonable foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within a quarter-mile of an existing or proposed school;
- be located on a site that is included on a list of hazardous materials sites and, as a result, create a significant hazard to the public or the environment; or
- create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Environmental Consequences and Mitigation Measures of the No-Project Alternative

This analysis considers the effects of the No-Project Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

HAZ-1: Hazard to the Public or Environment through Reasonable Foreseeable Upset and Accident Conditions Caused by the Release of Hazardous Materials

As described in Chapter 3, the No-Project Alternative would keep in place the existing transit and roadway network within the Capitol Expressway Corridor. There would not be large-scale construction of any structures or facilities associated with transit improvements under implementation of this alternative, and environmental conditions would not change. Therefore, there would not be any substantial adverse effects from a significant hazard to the public or the environment.

Mitigation: No mitigation is required.

HAZ-2: Hazardous Emissions or Handling of Hazardous or Acutely Hazardous Materials, Substances, or Waste within 0.25 Mile of an Existing or Proposed School

Several schools are located within or directly adjacent to the Capitol Expressway Corridor. As described above, implementation of the No-Project Alternative would not involve large-scale construction of any structures or facilities associated with transit improvements, and environmental conditions would not change. Therefore, there would not be any adverse effects from hazardous emissions or requiring the handling of hazardous materials within 0.25 mile of an existing or proposed school.

Mitigation: No mitigation is required.

HAZ-3: Hazard to the Public or Environment from a Federally or State-Listed Hazardous Materials Site

As described previously, there are several federally and/or state-listed hazardous materials sites located within the Capitol Expressway Corridor. Under implementation of the No-Project Alternative, these sites would undergo remediation or monitoring called for in existing plans. Furthermore, under this alternative, there would not be large-scale construction of any structures or facilities associated with transit improvements that could encroach on or disturb the existing sites and result in hazardous spills or releases. Therefore, there would not be any adverse effects from a significant hazard to the public or the environment from one of the listed hazardous materials sites.

Mitigation: No mitigation is required.

HAZ-4: Hazard to the Public or Environment through the Routine Transport, Use, or Disposal of Hazardous Materials

Implementation of the No-Project Alternative would not involve large-scale construction of any structures or facilities associated with transit improvement, and environmental conditions would not change. Therefore, there would not be any adverse effects from a significant hazard to the public or the environment through routine transport, use, or disposal of hazardous materials.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Baseline Alternative

Anticipated adverse effects associated with the projects included in the approved 1996 Measure B Improvement Program are independent of the proposed alternatives and are or will be reviewed in their respective environmental compliance documents. Additionally, the potential cumulative effects of these projects are considered in Chapter 5, *Other CEQA Considerations*, of this document. This analysis considers the effects of the bus service improvements that are included in the Baseline Alternative as outlined in Chapter 3, *Alternatives Considered*.

HAZ-5: Hazard to the Public or Environment through Reasonable Foreseeable Upset and Accident Conditions Caused by the Release of Hazardous Materials

Under the Baseline Alternative, there would be bus service improvements consisting of service frequency upgrades, a new line that would provide continuous limited-stop service along Capitol Expressway, and enhanced limited-stop service along various routes throughout the network. These improvements would operate using existing service structures, route network, and bus stop locations, and would not require the construction of any structures or otherwise disturb existing soil and groundwater conditions. Therefore, there would not be any adverse effects from a significant hazard to the public or environment.

Mitigation: No mitigation is required.

HAZ-6: Hazardous Emissions or Handling of Hazardous or Acutely Hazardous Materials, Substances, or Waste within 0.25 Mile of an Existing or Proposed School

As described above, proposed bus service improvements would include partial or full overlap of existing routes and the use of existing service structures and bus stop locations. As a result, the bus service improvements would not create additional structures, facilities, or depots for the temporary or long-term storage and maintenance of buses and associated mechanical parts and potentially hazardous chemicals. Several schools are located within the Capitol Expressway Corridor. However, buses would be used solely for transporting people and would not transport or handle any acutely hazardous materials. Therefore, there would not be any adverse effects to existing or proposed schools located within 0.25 mile of the Capitol Expressway Corridor from the handling or transport of hazardous materials under this alternative.

Mitigation: No mitigation is required.

HAZ-7: Hazard to the Public or Environment from a Federally or State-Listed Hazardous Material Site

The Baseline Alternative would enhance the existing route network, which serves major business corridors and residential neighborhoods throughout Santa Clara County. Hazardous materials sites of environmental concern along the Capitol Expressway Corridor, identified pursuant to federal and state listings disclosed in the EDR report, are discussed under *Environmental Setting*. The list includes physical addresses of the sites. Although these sites are located within the corridor, they would not intersect the bus routes or bus-related facilities under this alternative. Therefore, there would not be any adverse effects from a significant hazard to the public or the environment from the presence of these sites.

Mitigation: No mitigation is required.

HAZ-8: Hazard to the Public or Environment through the Routine Transport, Use, or Disposal of Hazardous Materials

Under the Baseline Alternative, bus service improvements would include partial or full overlap of existing routes and the use of the existing service structures and bus stop locations. Buses would be used solely for the purpose of transporting people and would not transport or handle any hazardous materials. Therefore, there would not be any adverse effects on the public or environment with respect to the routine transport, use, or disposal of hazardous materials.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Light Rail Alternative

This analysis considers the effects of the Light Rail Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

HAZ-9: Hazard to the Public or Environment through Reasonable Foreseeable Upset and Accident Conditions Caused by the Release of Hazardous Materials

Along the proposed 8.2-mile extension, the Light Rail Alternative would vary from at, above, and below the existing grade of the roadway. Construction of this alternative would involve subsurface drilling, which could lead to a finding of contaminated soil and/or groundwater. This would be considered an adverse effect, but implementation of the following mitigation measures would minimize this effect.

Mitigation Measure HAZ-9a: Conduct Subsurface Investigations in Areas of the Corridor That May Be Underlain by Contaminated Soil or Groundwater

VTA shall conduct Phase I (and if necessary Phase II) site investigations to determine whether any chemicals of concern are present. If necessary, a risk assessment shall be prepared and procedures established before construction to address the identification, excavation, handling, and disposal of hazardous materials. If contaminated soil or groundwater is encountered, VTA shall notify the appropriate local environmental management agencies and local fire departments. VTA shall ensure that any identified environmental site conditions that may represent a risk to public health and safety will be remediated in accordance with federal, state, and local environmental laws and regulations.

Before construction, a determination shall be made by a qualified environmental assessor (based on field sampling of media, laboratory analysis of samples, visual confirmation of environmental conditions, etc.) as to the nature of environmental risk associated with construction activities at the identified hazardous materials sites. A similar determination shall also be made for each of the proposed park-and-ride lot sites. All recommendations of the qualified environmental assessor (e.g., preparation of a health and safety plan [HSP] for the project, implementation of a soil management work plan [SMWP] for the project, remediation of affected soil and groundwater, etc.) shall be implemented by VTA and all its representatives, including contractors and earthwork construction workers, such that people are not exposed to an environmental condition on the project site as a result of an existing sources of contamination.

Before construction activities, soil samples shall be taken at park-and-ride lot facilities (only where grading is planned) to determine the presence or absence of banned pesticides. If soil samples indicate the presence of any contaminant in hazardous quantities, VTA shall contact the RWQCB and Department of Toxic Substances Control (DTSC) to determine the level of any necessary remediation efforts. These soils shall be remediated in compliance with applicable laws.

Mitigation Measure HAZ-9b: Control Contamination Resulting from Previously Unidentified Hazardous Waste Materials

In the event that previously unidentified waste or debris is discovered during construction/grading activities, and the waste or debris is believed to involve hazardous waste or materials, the contractor shall:

- immediately stop work in the vicinity of the suspected contaminant, and remove workers and the public from the area;
- notify the Resident Inspector;
- secure the area as directed by the Resident Inspector;
- notify the City of San Jose Hazardous Waste/Materials Coordinator and the San Jose Fire Department; and
- notify the City of San Jose Hazardous Waste/Materials Coordinator and the San Jose Fire Department.

HAZ-10: Hazardous Emissions or Handling of Hazardous or Acutely Hazardous Materials, Substances, or Waste within 0.25 Mile of an Existing or Proposed School

Several schools are located within the Capitol Expressway Corridor. This alternative would operate light rail trains using electricity delivered through an overhead catenary system; therefore, it would not result in increased emissions. This alternative may potentially decrease hazardous emissions because, with anticipated increases in ridership of the light rail lines, fewer automobiles would likely travel along the corridor. Light rail trains would also be used for the sole purpose of transporting people and would not transport or handle any acutely hazardous materials. Therefore, there would not be any adverse effects on existing or proposed schools located within 0.25 mile of the Capitol Expressway Corridor from the handling or transport of hazardous materials under this alternative.

Mitigation: No mitigation is required.

HAZ-11: Hazard to the Public or the Environment from a Federally or State-Listed Hazardous Material Site

Hazardous materials sites of environmental concern along the Capitol Expressway Corridor, identified pursuant to federal and state listings disclosed in the EDR report, are discussed under *Environmental Setting*. The list includes physical addresses of the sites. Although these sites occur along the corridor, they do not intersect the light rail alignment.

Mitigation: No mitigation is required.

HAZ-12: Hazard to the Public or the Environment through the Routine Transport, Use, or Disposal of Hazardous Materials

Under this alternative, light rail trains would be used for the sole purpose of transporting people and would not transport or handle any hazardous materials. Therefore, there would not be any adverse effects on the public or the environment with respect to the routine transport, use, or disposal of hazardous materials.

Mitigation: No mitigation is required.

Proposed Options

As described in Chapter 3.0, *Alternatives Considered*, the Light Rail Alternative includes station, segment, park-and-ride, and light rail vehicle storage location options. The station options include at-grade, aerial, and depressed open-air station designs. Several platform configurations are also being explored including side platforms, single center platforms, offset platforms, and a platform on the west side of the expressway. With the exception of the Eastridge Transit Center segment and the side-running option between Eastridge and Nieman Boulevard, the light rail alignment would remain within the median at grade, on an aerial structure above the corridor, or in a tunnel. These options would not affect the possibility of encountering environmental hazards identified on federally or state-listed hazardous materials sites within and adjacent to the corridor. The Light Rail Alternative with either the incorporation of base or alternate options would require subsurface drilling. Subsurface drilling in or near sites identified as an environmental concern could result in the accidental release of hazardous substances into the environment. This effect is considered adverse. However, implementation of the following mitigation measures as described above, would minimize this effect.

Mitigation Measure HAZ-9a: Conduct Subsurface Investigations in Areas of the Corridor That May Be Underlain by Contaminated Soil or Groundwater (see previous text)

Mitigation Measure HAZ-9b: Control Contamination Resulting from Previously Unidentified Hazardous Waste Materials (see previous text)

Section 4.12
Hydrology and Water Quality

4.12.1 Introduction

This section describes the environmental setting and effects of the alternatives analyzed in this EIR with regard to hydrology and water quality. Specifically, this section discusses existing hydrology and water quality conditions within the Capitol Expressway Corridor and describes applicable regulations pertaining to hydrology and water quality. The assessment of adverse effects and mitigation measures of the alternatives related to hydrology and water quality are also described.

4.12.2 Existing Conditions

Environmental Setting

Physiography

Santa Clara Valley is located along southern San Francisco Bay. It is bounded on the south and east by the Diablo Range, on the west by the Santa Cruz Mountains, and on the north by San Francisco Bay. The basin relief is approximately 1,158 meters (3,800 feet), with the highest point near Loma Prieta in the Santa Cruz Mountains and the lowest point below sea level near Alviso on San Francisco Bay. The basin is characterized by a perimeter of high, steep, natural slopes with a large, wide valley below. The major drainages, the Guadalupe River and Coyote Creek, flow north through the valley, which is heavily populated, toward San Francisco Bay.

The Capitol Expressway Corridor is located in two watersheds, the Coyote Creek watershed and Upper Guadalupe area of the Guadalupe River watershed (Figure 4.12-1). Three perennial drainages intersect the corridor: Coyote Creek; Silver Creek, a tributary to Coyote Creek; and Canoas Creek, a tributary to the Guadalupe River. Thompson Creek, also a perennial drainage, travels adjacent to Capitol Expressway.

Coyote Creek Watershed

The Coyote Creek watershed is the largest watershed in the Santa Clara basin, encompassing an area of over 320 square miles of eastern Santa Clara County. It drains most of the west-facing slope of the Diablo Range, where Coyote Creek originates, and flows northwest approximately 42 miles before entering south San Francisco Bay (Santa Clara Basin Watershed Management Initiative 2000). Coyote and Silver Creeks are the largest creeks traversing this watershed; the 29 remaining creeks in the watershed are tributaries to Coyote Creek.

Coyote Creek flows northward from Anderson Reservoir to south San Francisco Bay. Coyote Creek traverses Capitol Expressway between McLaughlin Avenue and Senter Road at the approximate midpoint of the Light Rail Alternative alignment. The Lower Silver Creek watershed is one of the subwatersheds within east San Jose, where the Capitol Expressway Corridor is located. Lower Silver Creek originates about 1,200 feet above sea level in the low foothills southeast of San Jose and drains 43.5 square miles (Santa Clara Basin Watershed Management Initiative 2000). Lower Silver Creek traverses Capitol Expressway between Capitol Avenue and Story Road and flows in an east–west direction into Lake Cunningham.

Thompson Creek originates in the San Felipe foothills and merges with Lower Silver Creek at Lake Cunningham. Thompson Creek does not traverse Capitol Expressway but travels adjacent to it in a northerly direction between Aborn Road and Cunningham Avenue. Thompson Creek was enlarged during the 1970s from Lower Silver Creek to Quimby Road, and setback levees were installed along Thompson Creek from Quimby Road upstream (Santa Clara Valley Water District 2001).

Guadalupe River Watershed

The Guadalupe River watershed is located in Santa Clara County at the south end of San Francisco Bay. The watershed covers an area of approximately 160 square miles above the river's confluence with Coyote Creek near San Francisco Bay. The watershed is bounded on the south by the Diablo Range, on the west by the Santa Cruz Mountains, on the east by Coyote Creek, and on the north by San Francisco Bay. Basin relief is approximately 3,800 feet, with the highest point near Loma Prieta in the Santa Cruz Mountains and the lowest point below sea level near Alviso on San Francisco Bay. The watershed is characterized by a perimeter of high, steep, natural slopes with a large, wide valley below.

The Guadalupe River originates at the confluence of Guadalupe and Alamitos Creeks at Almaden Lake on the southern side of San Jose. From its origin, the river drains north through heavily populated Santa Clara Valley toward San Francisco Bay. Major tributaries to the Guadalupe River are Ross, Canoas, and Los Gatos Creeks.

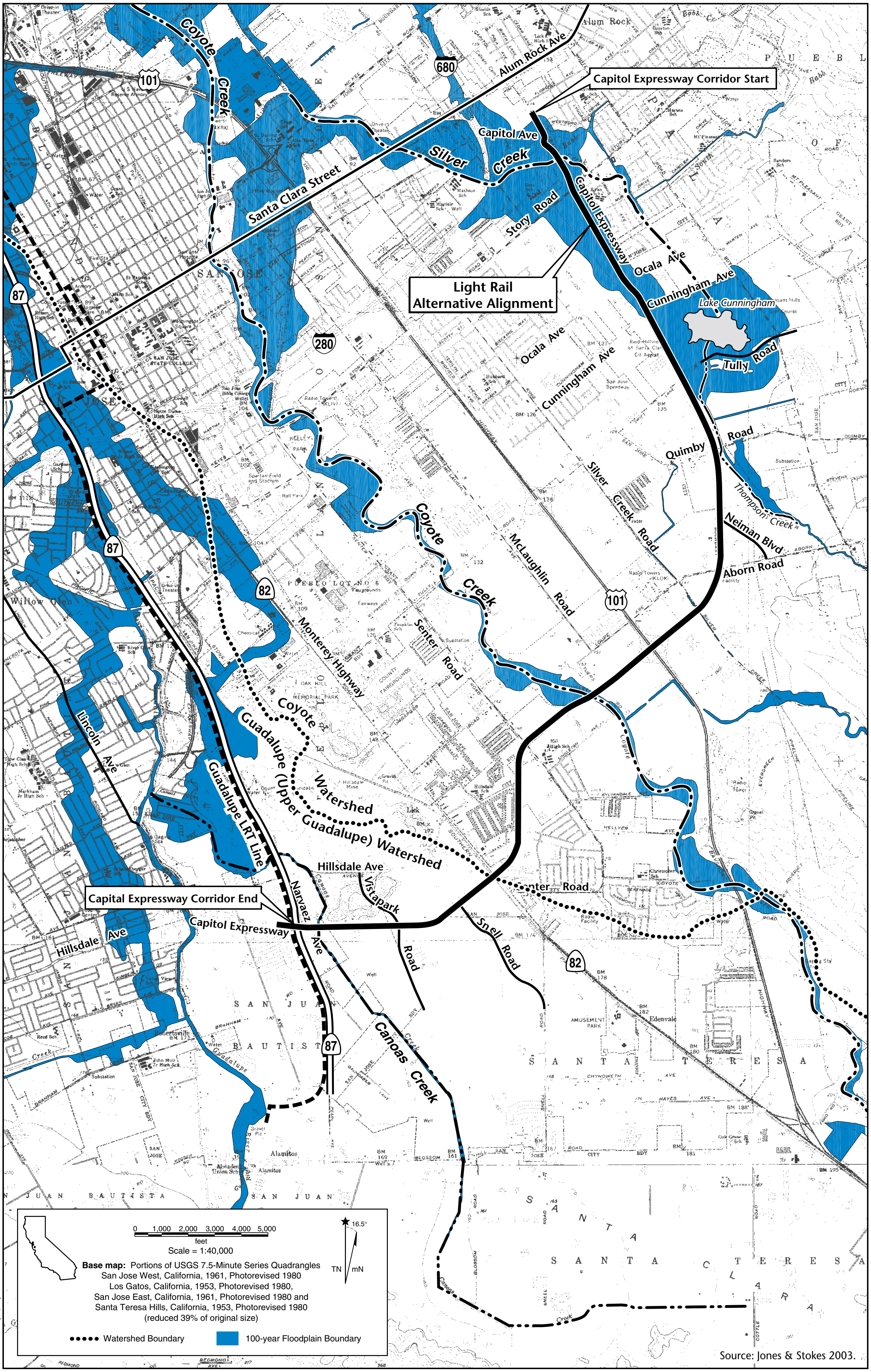

Figure 4.12-1
Watershed Areas and Flood Hazard Zones

As described above, part of the Capitol Expressway Corridor is located within the Upper Guadalupe area, which is located along Capitol Expressway just west of Snell Avenue and extends further west across SR 87 to the end of the Light Rail Alternative alignment (Figure 4.12-1).

Precipitation

The climate of Santa Clara Valley is characterized by warm, dry summers and mild, moderately wet winters. Summer weather is dominated by sea breezes caused by differential heating between the interior valleys and the coast, while winter weather is dominated by storms from the northern Pacific Ocean that produce almost all annual rainfall. Average annual precipitation varies from less than 35.6 centimeters (14 inches) near San Francisco Bay and 36.0 centimeters (14 inches) in San Jose to more than 112 centimeters (44 inches) near the crest of the Santa Cruz Mountains. Santa Clara Valley receives 90% of its rainfall in late fall and winter; January is usually the wettest month (U.S. Army Corps of Engineers 1991).

Several meteorological stations are located within the Coyote Creek watershed; one station is located within the Capitol Expressway Corridor at Thompson Creek at Quimby Road. Rainfall amounts within the watershed are similar to rainfall amounts described above for San Jose (Santa Clara Basin Watershed Management Initiative 2000). Similarly, precipitation data are available from numerous rain gage stations in the Upper Guadalupe/Guadalupe River watershed (U.S. Army Corps of Engineers 1991). The average annual precipitation within this watershed does not vary from that described above for San Jose.

Runoff, Drainage, and Flooding

Rivers, streams, and creeks within the Coyote Creek and Guadalupe River watersheds convey storm runoff from the Diablo Range and Santa Cruz Mountains to San Francisco Bay. Steady urbanization of Santa Clara Valley within the last 50 years and the associated increase in impervious surfaces in the form of residential, industrial, and commercial development have led to an increase in the rates and total quantities of runoff generated within the valley. Historically, all drainages in Santa Clara Valley have experienced significant flow fluctuations in response to the distinct wet and dry seasons. Nearly all surface runoff within the two watersheds occurs from December through April (U.S. Army Corps of Engineers 1991).

Santa Clara Valley is historically subject to frequent flooding events. Flooding was recorded as early as 1889, and major recent flood events occurred in 1982, 1995, and 1997. The Light Rail Alternative Alignment would cross the Federal Emergency Management Agency (FEMA) 100-year flood hazard zone of Silver Creek from approximately Tully Road north to the end of the alignment (Figure 4.12-1) (Federal Emergency Management Agency 1996). Additionally, flooding has occurred along portions of Coyote Creek in 1911, 1917, 1931, 1958, 1969, 1982, 1983, and 1998 (Santa Clara Basin Watershed Management Initiative 2000). However, because of flood hazard protection measures implemented by SCVWD, recent major flood events have not resulted in severe damage to people or structures within this area (Santa Clara Valley Water District 2003). Nevertheless, areas within the SCVWD that require protection from a 100-year flood event still exist.

Canoas Creek is also contained within a designated FEMA 100-year flood hazard zone within the Upper Guadalupe area, between Snell Avenue and Hillsdale Avenue, encompassing the southwestern end of the Light Rail Alternative alignment (Figure 4.12-1) (Santa Clara Valley Water District 2003). Damaging floods have occurred along the Upper Guadalupe River five times since 1982: 1982, 1983, 1986, 1995, and 1998. The January 1995 flood damaged 150 homes and shut down SR 87 and the Guadalupe LRT Line, both of which are major commute thoroughfares within Santa Clara County. In February 1998, SR 87 was flooded again by the Guadalupe River, resulting in similar damage to structures within the area (Santa Clara Valley Water District 2003).

Groundwater

The Capitol Expressway Corridor is located over a portion of the Santa Clara basin that does not restrict recharge, or rather, is over an unconfined aquifer. Groundwater levels are on average 90 feet below the ground surface (Reymers and Hemmeter 2001). Threats to groundwater quality include those described below under *Site-Specific Water Quality*. Other threats also include those that result from the disinfection of drinking water imported through the Delta and the intrusion of salt water from San Francisco Bay into nearby groundwater aquifers (Santa Clara County 1994). Groundwater quality in the Santa Clara basin, however, is generally high. Drinking water standards are met at public water supply wells without the use of treatment methods (Reymers and Hemmeter 2001).

Surface Water Quality

Water quality in a typical surface water body is influenced by processes and activities that take place upstream of the watershed. In an urban or developed system, such as is present within the Capitol Expressway Corridor, water quality is primarily affected by discharges from both point and nonpoint sources. Nonpoint source runoff originates from multiple, dispersed sources, including winter storms, overland flow, construction sites, exposed soil, roofs, parking lots, and streets.

A number of water bodies in Santa Clara County are included in the 2002 State of California 303(d) list of impaired water bodies. Coyote Creek is listed as impaired because of high levels of diazinon, but no other creeks that traverse Capitol Expressway Corridor are currently listed. South San Francisco Bay is listed as impaired because of high levels of chlordane, dichlorodiphenyltrichloroethane (DDT), diazinon, dieldrin, dioxins and furans, exotic species, mercury, PCBs, and selenium. Another major creek pollution problem is the accumulation of trash and debris. (State Water Resources Control Board 2003.)

With respect to the proposed alternatives, nonpoint source pollution generated by both construction activities and operation of transit facilities is of particular concern. Nonpoint source pollutants of concern that are typically found in the corridor are described in more detail below.

Suspended Solids and Biostimulatory Nutrients

Suspended solids are generated when dry soils are disturbed and discharged directly to a water body or carried to the receiving water in overland runoff. High concentrations of suspended solids in streams may cause many adverse consequences, including:

- increased turbidity,
- reduced light penetration;
- reduced ability of predators that rely on sight to capture prey;
- clogged gills of fish and aquatic invertebrates;
- reduced spawning;
- reduced survival of juvenile fish; and
- reduced angling success.

Other negative effects of excess suspended solids include smothering of the benthic community and changes in the composition of the bed substrate, especially when the solids are deposited into slow-moving receiving waters. In addition to dry soils, sediment is also an efficient carrier of toxic organic substances and trace metals. Once deposited, pollutants in these enriched sediments can be remobilized under suitable environmental conditions and pose a risk to benthic life (Gavin and Moore 1982). Data indicate that suspended sediment concentrations typically fluctuate seasonally, with higher levels during winter and much lower levels during summer low-flow conditions.

The hydrographs of local streams can be altered as a result of increases in impervious surfaces within their watersheds. As areas of impervious surface become more widespread as a result of development, the ability for precipitation to percolate into soils and groundwater is restricted. In addition, runoff is generally transported more quickly because of the relative smoothness of impervious areas versus soil and/or vegetated areas. This causes increased runoff into streams, and also generates higher and faster peak stream flows. Streams convey higher flows during wet weather more frequently than they would have before development, but flows are lower in summer because there is less water stored in the soil that can be released back into the streams. During wet weather, repeated high flows can erode streambeds and banks, transporting sediments downstream. Sediment accumulation in the stream reduces the stream's conveyance capacity, making the stream more prone to flooding. The accumulation of sediment and the erosion of streambanks has historically reduced the capacity of channels and impacted spawning areas in the corridor area watersheds (Santa Clara Valley Water District 2002). Nonpoint source pollution control measures are currently being implemented within multiple creeks in Santa Clara Valley by SCVWD through its Stream Maintenance Program (Santa Clara Valley Water District 2003).

Soil and sediment typically contain large amounts of nutrients, particularly phosphorus, that can stimulate the growth of plants and algae. Excessive growth of plants and algae can reduce the aesthetic appeal of the water for recreational users, clog the habitat used by aquatic organisms, and cause other nuisance conditions. Excessive levels of phosphorus and nitrogen in urban runoff can lead to undesirable algal blooms in downstream receiving waters, a process known as eutrophication. Phosphorus is generally the controlling nutrient in freshwater systems.

Nutrient export is commonly greatest from urban developed sites, such as those present within the Capitol Expressway Corridor, that have large areas of impervious surfaces; however, nutrient export can also be excessive from land uses that receive unusually high applications of fertilizers, such as golf courses, cemeteries, and other intensively managed areas.

Toxic Constituents

Several studies have been conducted locally and nationally to characterize toxic constituents in urban runoff. EPA defines priority pollutants as those suspected or known to represent risks to human health. In a national study, heavy metals were observed to be the most prevalent priority pollutants found in urban runoff, with concentrations far exceeding those of organic compounds (U.S. Environmental Protection Agency 1983). Heavy metal concentrations at National Urban Runoff Program sampling sites were often found to exceed EPA ambient water quality criteria and drinking water standards.

A majority of the trace metals measured in water samples are attached to sediment, which effectively reduces the level of trace metals immediately available for biological uptake and subsequent bioaccumulation. Metals associated with sediment rapidly settle out of the water column and accumulate in soils and aquatic sediments (Occoquan Watershed Monitoring Laboratory 1983; Gavin and Moore 1982).

Urban runoff may contain petroleum hydrocarbons from leakage of automotive oils and greases. Petroleum hydrocarbons are a concern because of their potential toxicity to aquatic organisms at low concentrations (Tanacredi and Stainken 1981; Stenstrom et al. 1984). Predictably, petroleum hydrocarbon levels are highest in runoff from parking lots, roads, and gasoline stations. Residential land uses export less hydrocarbon, although illegal disposal of waste oil into storm sewers can be a local problem.

Data regarding petroleum hydrocarbons in the rivers and streams of the corridor area were not available for this analysis. However, some generalizations can be made regarding the likely presence of these constituents in runoff from the highly urbanized areas in and surrounding San Jose. Numerous studies performed throughout the United States (Schuler 1986) have reported average hydrocarbon levels of 2–10 milligrams per liter during storms. Hydrocarbons are lighter than water and are initially found in the form of a rainbow-colored film on the water's surface; however, hydrocarbons have a strong affinity for sediment, and much of the hydrocarbon load eventually adsorbs to sediment particles and settles out of the water column. Hydrocarbons tend to accumulate rapidly in the bottom sediments of streams, bays, lakes, and estuaries (Wakeham 1977; Tanacredi and Stainken 1981), where they may persist for long periods and adversely affect benthic organisms (Whipple and Hunter 1979).

Temperature

Elevated water temperatures can have significant consequences for organisms adapted to a coldwater environment. A rise in water temperature of only a few degrees Celsius over ambient conditions can reduce the number of or eliminate sensitive insects such as stoneflies and mayflies and fish such as trout. Sustained summer water temperatures in excess of 21°C (70°F) are generally considered to be stressful, and perhaps lethal, to many coldwater organisms. Inputs of heat can be critical for many rivers that straddle the geographic and/or thermal borderline between cold and warm water conditions.

The water quality objective for temperature in the San Francisco Bay basin plan (June 21, 1995) specifies that the temperature of any cold or warm freshwater habitats "shall not be increased by more than 2.8°C (5°F) above natural receiving water temperatures." The plan also states that the natural receiving water temperature of inland surface waters "shall not be altered unless it can be demonstrated to the satisfaction of the [San Francisco Bay RWQCB] that such alteration in temperature does not adversely affect beneficial uses."

Several factors can increase summer water temperatures in urban creeks. Of these, three factors often act together to increase water temperatures:

- The urban landscape, as it heats up on warm summer days, tends to impart a great deal of heat to runoff passing over it.
- There are fewer trees on the urban riverbank to shade the river channel, adding to the warming effect.
- Runoff stored in puddles and other impoundments becomes warmer between storms, even during winter; this stored runoff can be suddenly released from the impoundments and flow rapidly to the river.

Stream width and depth also affect water temperature in periods of low to moderate flows during spring, summer, and fall. Water that flows in a deep, narrow river gains less heat from the sun than does water in a shallow, wide stream under similar conditions.

Dissolved Oxygen

The amount of oxygen that can be dissolved in water varies with temperature: cold water can contain more dissolved oxygen than warm water. The amount of dissolved oxygen that is present in relation to the amount that could be dissolved at a given temperature is referred to as the *saturation level*.

Decomposition of organic matter by microorganisms depletes levels of dissolved oxygen in slow-moving receiving waters, such as estuaries. The degree of potential dissolved-oxygen depletion is measured by the biochemical oxygen demand test, which measures the oxidizable matter present in urban runoff. Urban runoff can severely depress levels of dissolved oxygen after summer storms. Biochemical oxygen demand levels can exceed 10–20 milligrams per liter during storm pulses, and this condition can lead to very low levels of dissolved oxygen in shallow, slow-moving, or poorly flushed receiving water.

During particularly large storms or low temperatures, however, oxidizable matter can be flushed through the entire stream system before having a chance to adversely affect dissolved oxygen. Factors involved in increasing dissolved oxygen levels include physical mixing and agitation of the water (aeration), photosynthetic production of oxygen by aquatic algae and plants, and lower water temperatures.

While the streams within the project area have not been identified as possessing low levels of dissolved oxygen, excess oxidizable material mobilized by proposed construction activities could cause reduced dissolved oxygen levels within these streams, particularly in the vicinity of any discharges from the project.

Regulatory Setting

Federal Plans, Programs, and Policies

Clean Water Act

The permit program for placement of clean fill materials into the waters of the United States, regulated by CWA Section 404, is administered by the Corps. CWA Section 401 requires that an applicant pursuing a federal permit to conduct any activity that may result in a discharge of a pollutant obtain a water quality certification (WQC) or waiver. In California, WQCs are issued by one of nine RWQCBs with jurisdiction over the permitting area. Under the CWA, the RWQCB must issue a WQC or a waiver for the proposed activity to be permitted under Section 404. A WQC requires the evaluation of water quality considerations associated with dredging or placement of fill materials into waters of the United States. The Light Rail Alternative would require placement of minimal amounts of fill into Coyote Creek as described in Section 4.4, *Biological Resources.*

CWA Section 402 establishes the National Pollutant Discharge Elimination System (NPDES) permit program. The NPDES program is intended to control discharges of pollutants from both point and nonpoint sources, such as stormwater. EPA has delegated NPDES permitting authority to the State Water Resources Control Board (SWRCB), as described in more detail below.

Federal Flood Insurance Program

The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 were enacted to reduce the need for large publicly funded flood control structures and disaster relief through restriction of development within floodplain areas (Federal Emergency Management Agency 2002).

FEMA administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities that comply with FEMA regulations by limiting development within floodplains. FEMA issues Flood Insurance Rate Maps for communities participating in the NFIP. These maps delineate flood hazard zones in the community. Maps with an effective date of August 8, 1998, are available for the portions of San Jose that are within the Guadalupe River and Coyote Creek watersheds.

Executive Order 11988

Executive Order 11988 (Floodplain Management) addresses floodplain issues related to public safety, conservation, and economics. The order generally requires all federal agencies proposing to construct, permit, or fund development activities to:

- avoid incompatible floodplain development,
- be consistent with the standards and criteria of the NFIP, and
- restore and preserve the natural and beneficial floodplain values.

State Plans, Programs, and Policies

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1969 (PCWQCA) established SWRCB and divided the state into nine regional basins, each with an RWQCB. SWRCB is the primary state agency responsible for protecting the quality of the state's surface and groundwater supplies.

PCWQCA authorizes SWRCB to draft state policies regarding water quality. It also authorizes the SWRCB to issue waste discharge requirements for discharges to state waters. PCWQCA requires that SWRCB or an RWQCB adopt water quality control plans (basin plans) for the protection of water quality. A basin plan must:

- identify beneficial uses of water to be protected,
- establish water quality objectives for the reasonable protection of the beneficial uses, and
- establish a program of implementation for achieving the water quality objectives.

These plans also provide the technical basis for determining waste discharge requirements, taking enforcement actions, and evaluating clean water grant proposals. Basin plans are updated and reviewed every 3 years. The San Francisco Bay RWQCB has jurisdiction over the Santa Clara Valley watershed area in which the proposed alternatives are located.

NPDES permits issued to control pollution must implement requirements of the applicable regional basin plans. The San Francisco Bay RWQCB adopted the most recent basin plan for the proposed Capitol Expressway Corridor area in 1995.

San Francisco Bay Regional Water Quality Control Board Water Quality Control Plan

Water quality in streams and aquifers of the region is guided and regulated by the San Francisco Bay RWQCB. State policy for water quality control is directed at achieving the highest water quality consistent with the maximum benefit to the people of the state.

Beneficial uses of the surface water in the Capitol Expressway Corridor area include municipal and domestic supply; agricultural supply; industrial service supply; groundwater recharge; contact and non-contact recreation; preservation of rare and endangered species, warm freshwater habitat; cold freshwater habitat; wildlife habitat; migration of aquatic organisms; and spawning, reproduction, and or early development. Beneficial uses of groundwater include municipal and domestic supply, agricultural supply, and industrial service supply.

The basin plan has adopted various water quality objectives to protect water resources for beneficial uses. These objectives may apply to the proposed alternatives, and they include numerical and/or narrative standards regarding bioaccumulation, biostimulatory substances, color, dissolved oxygen, floating material, oil and grease, population and community ecology, pH, sediment, suspended and settleable material, tastes and odors, temperature, toxicity, and turbidity. Also included are objectives for specific chemical constituents.

National Pollution Discharge Elimination System Storm Water Discharge Permits

There are two types of NPDES permits that can be issued by an RWQCB for a proposed activity. A general industrial storm water discharge permit requires property owners to file an NOI to discharge stormwater runoff to waters of the United States from specified industrial activities, including transportation facilities. The permit requires dischargers to eliminate nonstormwater discharges to stormwater systems, develop and implement a storm water pollution prevention plan (SWPPP), perform inspections of stormwater pollution prevention measures, and monitor water quality. A general construction storm water discharge permit requires landowners to file an NOI to discharge stormwater runoff to waters of the United States from land disturbances greater than 1 acre. The permit generally requires dischargers to eliminate nonstormwater discharges to stormwater systems, develop and implement a SWPPP, and perform inspections of stormwater pollution prevention measures.

As mentioned above, coverage under a general permit requires the preparation of a SWPPP. A SWPPP includes pollution prevention measures (erosion and sediment control measures and measures to control nonstormwater discharges and hazardous spills), demonstration of compliance with all applicable local and regional erosion and sediment control standards, identification of responsible parties, a detailed construction timeline, and a BMP monitoring and maintenance schedule. VTA would be required to prepare a SWPPP before implementation of any transit development within the Capitol Expressway Corridor.

Streambed Alteration Agreements

As described in Section 4.4, *Biological Resources*, California Fish and Game Code Section 1600 regulates streambed alterations, including release of materials into streams. A streambed alteration agreement (SAA) will be required for any work within a creek or stream and its floodplain. SAAs may also impose conditions to protect water quality during construction. VTA would be required to obtain an SAA from CDFG before implementation of transit development within jurisdictional streams, such as Canoas, Coyote, and Silver Creeks.

Local Programs

Santa Clara Valley Urban Runoff Pollution Prevention Program

The Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP) is an association of Santa Clara County, the SCVWD, and the 13 cities and towns that discharge stormwater into San Francisco Bay. The SCVURPPP implements an NPDES permit (number CAS0299718, Regional Board Order No. 01-24) for stormwater discharges in the portion of Santa Clara County that discharges to the bay. The SCVURPPP addresses several elements that follow the NPDES permit. These include existing control measures, municipal facility operations and maintenance, stormwater treatment, elimination of illicit connection and illegal dumping activities, planning and regulation of new development, regulatory controls for improper waste disposal, and public information and participation.

City of San Jose Riparian Corridor Policy

In May 1994, the San Jose City Council adopted the riparian corridor policy study to guide the City's treatment of riparian corridors and protect biotic resource values when development occurs along creek systems. Riparian habitats are recognized as important natural resources because they support a great variety and abundance of aquatic and terrestrial species. Provisions of the adopted study have been incorporated into the San Jose 2020 General Plan. The policy guidelines in the general plan include provisions that require 50- to 100-foot setbacks from riparian corridors for new development, as well as other techniques to protect water quality and fish and wildlife habitat.

4.12.3 Environmental Consequences and Mitigation Measures

Approach and Methodology

This assessment evaluates the potential for construction and operational activities under the proposed alternatives to adversely affect the environmental conditions within the Capitol Expressway Corridor with respect hydrology and water quality. Where applicable, mitigation measures are provided to minimize anticipated adverse effects.

Thresholds of Significance

Based on significance criteria used by VTA and professional practice, the proposed alternatives may result in substantial adverse effects on hydrology or water quality if they would:

- violate any water quality standards or waste discharge requirements;
- substantially deplete water resources;
- create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially

increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site;

- place within a 100-year flood hazard area structures that would impede or redirect flood flows;
- expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted).

Environmental Consequences and Mitigation Measures of the No-Project Alternative

This analysis considers the effects of the No-Project Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

HYD-1: Violation of Water Quality Standards or Waste Discharge Requirements

The No-Project Alternative would not involve any large-scale construction activities that could result in increased levels of water quality pollutants or other polluted discharges. As a result, water quality conditions would remain unchanged. Therefore, there would not be any adverse effects resulting in a violation of water quality standards or waste discharge requirements.

Mitigation: No mitigation is required.

HYD-2: Creation or Contribution of Additional Runoff, Including Increasing Additional Sources of Polluted Runoff

Implementation of the No-Project Alternative would not require large-scale construction of any structures or facilities associated with transit development, and environmental conditions would not change. As a result, no new impervious areas would be created that would generate additional runoff or additional sources of polluted runoff. Therefore, no adverse effects resulting in the creation or contribution of additional runoff including increases in source of polluted runoff would result from implementation of this alternative.

Mitigation: No mitigation is required.

HYD-3: Alterations in Existing Drainage Patterns

As described above, no transit improvements would be made within the corridor under this alternative. As a result, there would be no changes or alterations to the existing drainage patterns within the Capitol Expressway Corridor. Therefore, no adverse effects resulting from alterations in the existing drainage patterns would result from implementation of this alternative.

Mitigation: No mitigation is required.

HYD-4: Exposure of People or Structures to Flood Hazards

No transit improvements would be made within the corridor under this alternative. No structures or housing would be placed within a flood hazard area, nor would people or structures be exposed to risks involving flooding in excess of existing conditions. Therefore, no adverse effects resulting in exposure of people or structures to flood hazards would result from implementation of this alternative.

Mitigation: No mitigation is required.

HYD-5: Depletion of Groundwater Supplies or Interference with Groundwater Recharge

No transit improvements would be made within the corridor under this alternative. No change in current water consumption patterns would occur, nor would any activities occur that could interfere with groundwater recharge. Therefore, no adverse effects resulting in the depletion of groundwater supplies or interference with groundwater recharge would result from implementation of this alternative.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Baseline Alternative

Anticipated adverse effects associated with the projects included in the approved 1996 Measure B Improvement Program are independent of the proposed alternatives and are or will be reviewed in their respective environmental compliance documents. Additionally, the potential cumulative effects of these projects are considered in Chapter 5, *Other CEQA Considerations*, of this document. This analysis considers the effects of the bus service improvements that are included in the Baseline Alternative as outlined in Chapter 3, *Alternatives Considered*.

HYD-6: Violation of Water Quality Standards or Waste Discharge Requirements

Implementation of the proposed bus service improvements under the Baseline Alternative would not involve any large-scale construction activities that could result in increased levels of water quality pollutants or other polluted discharges. As a result, water quality conditions would remain unchanged. Therefore, there would not be any adverse effects resulting in a violation of water quality standards or waste discharge requirements.

Mitigation: No mitigation is required.

HYD-7: Creation or Contribution of Additional Runoff, Including Increasing Additional Sources of Polluted Runoff

Under the Baseline Alternative, the proposed bus service improvements mainly include service frequency upgrades, increasing enhanced limited-stop services, and implementation of transit priority measures to minimize traffic congestion and improve bus circulation through the Capitol Expressway Corridor. The nature of transit improvements proposed under this alternative would not require construction of new impervious surfaces within the corridor. Therefore, there would not be any adverse effects resulting from the creation of new or additional runoff, including increased sources of polluted runoff under implementation of this alternative.

Mitigation: No mitigation is required.

HYD-8: Alterations in Existing Drainage Patterns

Under the Baseline Alternative, no permanent changes to existing drainage patterns are anticipated. The nature of transit improvements proposed under this alternative would not require construction of impervious surfaces or alteration of an existing stream or river within the Capitol Expressway Corridor. Therefore, no adverse effects resulting from alterations in the existing drainage patterns would occur under implementation of this alternative.

Mitigation: No mitigation is required.

HYD-9: Exposure of People or Structures to Flood Hazards

Several FEMA-identified flood hazard zones have been delineated in the Capitol Expressway Corridor area. As described above, the nature of the transit improvements proposed under this alternative would not require large-scale construction of any structures or facilities associated with transit development. As a result, there would not be any exposure of people or structures to flood hazards in excess of existing conditions. Therefore, no adverse effects would occur under implementation of this alternative.

Mitigation: No mitigation is required.

HYD-10: Depletion of Groundwater Supplies or Interference with Groundwater Recharge

The proposed bus service improvements under the Baseline Alternative involve service frequency upgrades and other non-ground disturbing program improvements. Implementation of the bus service improvements would not require construction of any new structures or facilities that could lead to a depletion of groundwater supplies or interference with ground water recharge. Therefore, no adverse effects would occur under this alternative.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Light Rail Alternative

This analysis considers the effects of the Light Rail Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations,* of this document.

HYD-11: Violation of Water Quality Standards or Waste Discharge Requirements

Implementation of the Light Rail Alternative could result in increased levels of water quality pollutants or other polluted discharges either during construction or during operation at the proposed park-and-ride lots and light rail stations. As a result there is potential for violation of existing water quality standards or water discharge requirements. This is considered an adverse effect. However, implementation of the following mitigation measure would minimize this effect and ensure that no violations would occur.

Mitigation Measure HYD-11: Comply with All Applicable Regulations and Subsequent Permit Programs Related to Water Quality Control
In implementing the project, VTA shall comply with the CWA, including all NPDES permit requirements. VTA shall require the construction contractor to develop and implement a SWPPP in accordance with SWRCB regulations. VTA shall obtain coverage under the State's General Construction Stormwater Permit, and shall comply with applicable requirements relative to land grading and erosion control.

HYD-12: Creation or Contribution of Additional Runoff, Including Increasing Additional Sources of Polluted Runoff

Under the Light Rail Alternative, facilities would be constructed that would increase the amount of impervious surface in the Capitol Expressway Corridor area. However, because the corridor is largely urbanized, the additional contribution to runoff under this alternative is considered minimal; therefore, the amount of new impervious surfaces would is not expected to exceed the capacity of existing or planned drainage systems. The increase in impervious surface could, however, generate new sources of contamination, including sediment, pesticides, oil and grease, metals, bacteria, and trash. This is considered an adverse effect. Implementation of the following mitigation measures would minimize this effect.

Mitigation Measure HYD (Construction)-1: Implement Water Quality Control Measures during Construction Activities
This mitigation measure is discussed in Section 4.19, *Construction Effects*.

Mitigation Measure HYD-11: Comply with All Applicable Regulations and Subsequent Permit Programs Related to Water Quality Control (see previous text)

Mitigation Measure HYD-12: Implement Measures to Maintain Operational Water Quality
VTA shall perform inspections and cleanings such that permit treatment requirements will be met, and shall ensure that outlet structures provide for

proper energy dissipation in accordance with standard specifications for storm drainage. VTA shall ensure that regular maintenance of parking facilities includes a program to clean curbside pavement areas of litter, fuel, and oils spills. Storm drain inlet traps shall be inspected at least annually and cleaned as required. In addition, VTA shall consider and design, where physical site constraints allow, stormwater filtering landscapes to where stormwater collected over impervious surfaces are passed over landscape features such as vegetated swales prior to discharge from the site into stormwater collection and conveyance facilities.

Pursuant to Provision C.3 of the SCVURPPP NPDES permit, BMPs for projects that result in the displacement of more than 43,560 square feet (1 acre) of impervious surface must implement treatment BMPs to the maximum extent practicable (MEP). Those BMPs whose primary mode of action to treat stormwater depends on volume capacity, such as detention/retention units or infiltration structures, shall be designed to treat stormwater runoff equal to either the maximized stormwater quality capture volume for the area, based on historical rainfall records (URQM, 1998); or equal to the volume of annual runoff required to achieve 80% or more capture (CASQA, 1993).

Treatment BMPs such as swales, sand filters, wetlands, and others whose primary mode of action depends on flow capacity shall be sized to treat 1) 10% of the 50-year peak flow; or 2) the flow of runoff produced by a rain event equal to at least two times the 85th-percentile hourly rainfall intensity for the applicable area, based on historical records of hourly rainfall depths; or 3) the flow of runoff resulting from a rain event equal to at least 0.2-inch-per-hour intensity.

HYD-13: Alterations in Existing Drainage Patterns

Under the Light Rail Alternative, no permanent changes to existing drainage patterns are anticipated. However, drainage patterns may be temporarily altered during construction activities. This temporary alteration could result in erosion, siltation, or flooding onsite or offsite, and is considered an adverse effect. Implementation of the following mitigation measure described above, would minimize this effect.

Mitigation Measure HYD (Construction)-1: Implement Water Quality Control Measures during Construction Activities

This mitigation measure is discussed in Section 4.19, *Construction Effects*.

HYD-14: Exposure of People or Structures to Flood Hazards

As described under *Environmental Setting*, there are FEMA-identified flood hazard zones within the Capitol Expressway Corridor area. Under the Light Rail Alternative, structures may be constructed in these FEMA-identified flood hazard areas, and these structures could impede or redirect flood flows and expose these and other buildings, as well as people using these structures to flood-related hazards. This is considered an adverse effect. However, implementation of the following mitigation measure is recommended to minimize this effect.

Mitigation Measure HYD-14: Construct Facilities to Minimize Flood Impacts

Where feasible, VTA shall locate all facilities outside of FEMA identified flood hazard areas. Facilities constructed within a flood hazard area shall be designed and engineered to withstand a 100-year flood event. For facilities with potential to impede or redirect flood flows, a floodplain investigation shall also be completed that identifies the change in flood elevations as a result of the project facilities, and VTA shall file a Letter of Map Revision with FEMA.

HYD-15: Depletion of Groundwater Supplies or Interference with Groundwater Recharge

Operation of light rail facilities proposed under the Light Rail Alternative would not generate substantial water demand, nor would it be anticipated to interfere substantially with groundwater recharge.

Mitigation: No mitigation is required.

Proposed Options

As described in Chapter 3.0, *Alternatives Considered*, the Light Rail Alternative includes station, segment, park-and-ride, and light rail vehicle storage location options. The station options include at-grade, aerial, and depressed open-air station designs. Several platform configurations are also being explored including side platforms, single center platforms, offset platforms, and a platform on the west side of the expressway. With the exception of the Eastridge Transit Center segment and the side-running option between Eastridge and Nieman Boulevard, the light rail alignment would remain within the median at grade, on an aerial structure above the corridor, or in a tunnel. These options could adversely affect hydrology and water quality. The effects on hydrology and water quality discussed above would result depending on the alignment options or station designs selected.

Section 4.13
Land Use

4.13.1 Introduction

This section describes the environmental setting and effects of the alternatives analyzed in this EIR with regard to land use. Specifically, this section discusses existing and proposed land uses within the Capitol Expressway Corridor and describes applicable plans and policies pertaining to land use. The assessment of adverse effects and mitigation measures of the alternatives related to land use are also described. Corresponding general plan land use and zoning designations are included in Appendix H of this document.

4.13.2 Existing Conditions

Environmental Setting

Existing Land Uses

Capitol Expressway is a six- to eight-lane arterial road with a median strip dividing traffic and directing left-turn lanes. Bike lanes extend along most of the corridor. Sidewalks are provided along the expressway but are not continuous. On-street parking is not allowed.

The primary land use along Capitol Expressway is residential. Residential land uses occur in various densities and are usually separated from the expressway by either a soundwall or frontage road. In addition, industrial, commercial, and public uses, as well as vacant lots, are scattered along the expressway. Generally, commercial uses are located at major intersections.

Land uses adjacent to the corridor are described below (Figure 4.13-1). These land uses have been divided into segments and are based on a visual assessment of the corridor. The general plan land use and zoning designations corresponding to these descriptions are identified in Table H-1 in Appendix H.

Capitol Avenue (Rose Avenue to Capitol Expressway)

From Rose Avenue to Capitol Expressway, land uses generally consist of commercial properties on the west side and single-family residences on the east side. The commercial properties include converted single-family residences and small strip malls. Currently, a family/senior three-story apartment complex is being constructed on the northwest corner of Wilbur Avenue.

Capitol Expressway (Capitol Avenue to Story Road)

Single-family residences line the west side of Capitol Expressway. The east side contains a mix of single-family residential, commercial, and public (two churches) land uses. Commercial land uses surrounding Story Road include gas stations and automobile supply stores.

Capitol Expressway (Story Road to Ocala Avenue)

Except for the small commercial area around the Capitol Expressway/Story Road intersection, this segment is entirely residential. West of Capitol Expressway, land uses comprise single-family residences and a two-story apartment complex. A vacant lot and an abandoned building are located just north of Foxdale Loop. An apartment complex lies south of the commercial lot at Story Road, just east of Capitol Expressway. The remaining properties in this portion of the corridor are single-family residences.

Capitol Expressway (Ocala Avenue to Tully Road)

Reid-Hillview Airport, which serves small, private planes, is located on the west side of this portion of the corridor. Within the airport property, a Little League field is located at Cunningham Avenue. On the east side, single-family residences continue until Cunningham Avenue. The regional Lake Cunningham Park makes up the majority of the remaining land use in this segment. Raging Waters water park is located in Lake Cunningham Park. Vacant lots lie on both sides of the expressway just north of Tully Road. Two large electrical towers are located in the median strip of Capitol Expressway along this segment of the corridor.

Capitol Expressway (Tully Road to Quimby Road)

Commercial and public land uses lie on the west side of Capitol Expressway. Eastridge Mall is located between Tully and Quimby Roads. A VTA bus transit center, two-story commercial building, and gas station are also located on this property. On the east side of the expressway, a new multistory commercial center is being constructed at Tully Road. A small dirt road separates this new

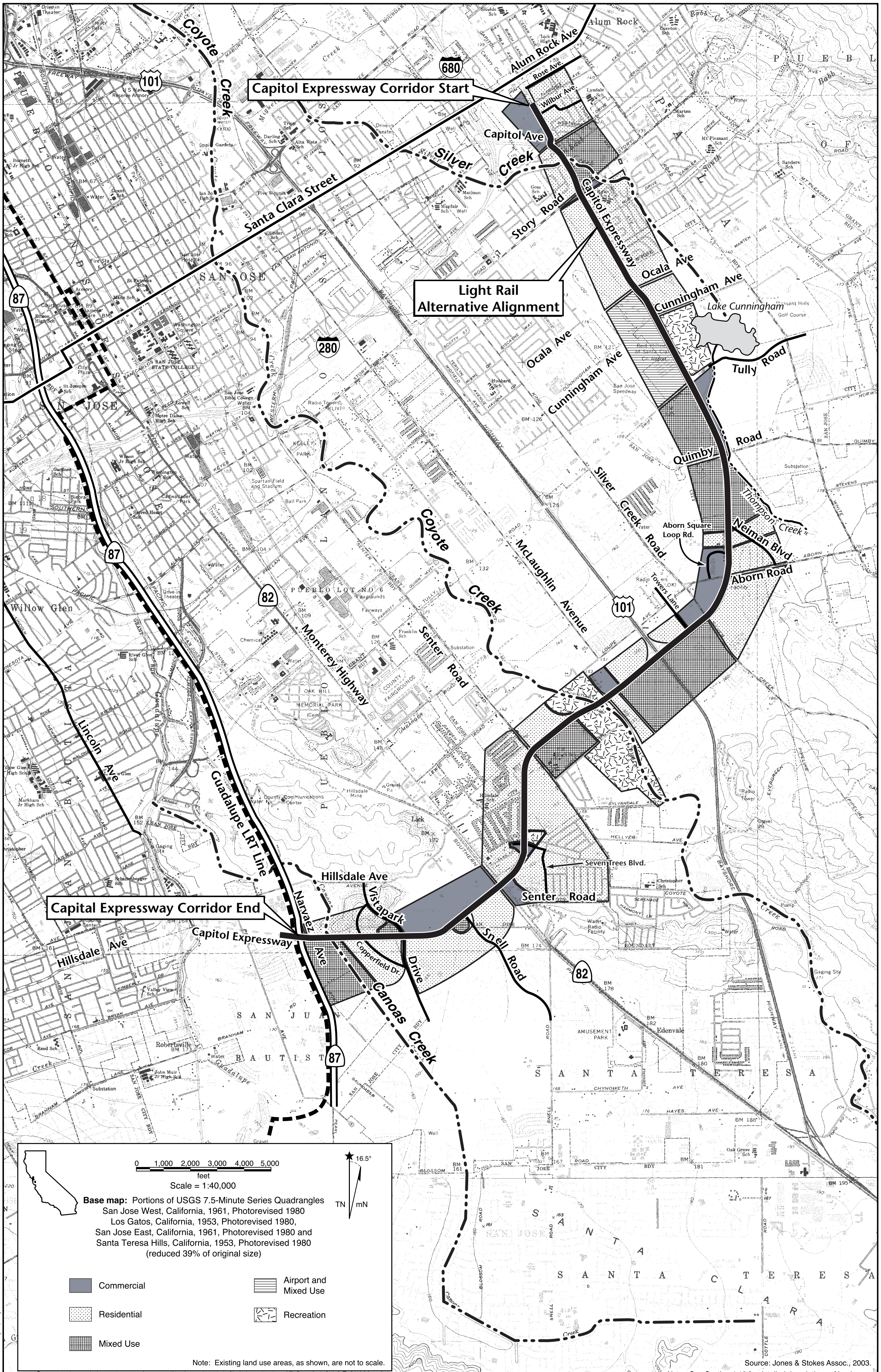

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Figure 4.13-1
Existing Land Uses in the Capitol Expressway Corridor

center from Thomson Creek, which parallels the expressway. This segment of the creek contains dense emergent vegetation.

Capitol Expressway (Quimby Road to Nieman Boulevard)

Land uses between Quimby Road and Nieman Boulevard include commercial, residential, and vacant properties. A public storage facility is located on the southwest corner of the Capitol Expressway/Quimby Road intersection. A mixed light industrial and commercial center, which includes a Vietnamese Cultural Center and School of Technology, lies south of the public storage facility. There is a large vacant lot to the south of this complex. A mobile home park continues to Nieman Avenue. On the east, Thomson Creek continues south of Quimby Road for a few hundred feet. The creek on this side is dry and lacks any evidence of protected plant species or communities. A mobile home park, followed by apartment buildings, complete this segment.

Capitol Expressway (Nieman Boulevard to McLaughlin Avenue)

Residential and commercial properties are the primary land uses found in this segment of the corridor. On the west side, a mobile home park is located between Nieman Boulevard and Square Loop Road. Commercial properties, including a large shopping center, line Capitol Expressway to Towers Lane. Woodbridge Mobile Home Park sits between Towers Lane and the U.S. 101 on-ramp. Capitol Expressway is elevated over U.S. 101, with access provided by four cloverleaf on-ramps. Single-family residences begin south of U.S. 101 and continue to McLaughlin Avenue. On the east side, multifamily residences continue from Nieman Boulevard to Square Loop Road. Duplexes are located just south of Square Loop Road to Aborn Road. A small commercial lot sits south of the intersection. Single-family residences extend to Silver Creek Road. A strip mall, condominiums, and a mobile home park conclude the segment.

Capitol Expressway (McLaughlin Avenue to Senter Road)

Commercial land uses run from McLaughlin Avenue to Tuers Road on the west side of Capitol Expressway. Currently, a golf driving range is being constructed at the northern boundary of Coyote Creek County Park. The park includes a pedestrian/bike path that parallels the creek, with access under Capitol Expressway. Coyote Creek supports mature riparian vegetation and vacant property. Single-family residences lie on the west side of the expressway between the park and just north of Senter Road, where a gas station sits at the intersection. On the east side, single-family residences extend from McLaughlin Avenue to the park boundary. The vegetation on this side is much narrower, leaving most of the park site a hilly, vacant parcel. An apartment complex and Andrew P. Hill High School are located on the east side of the expressway between the park and Senter Road. A wide strip of vacant land divides Capitol

Expressway from the high school's adjacent land uses, which include the school's athletic fields.

Capitol Expressway (Senter Road to Monterey Highway)

Commercial properties surround Senter Road on both sides of the expressway. To the west, single-family residential units line the expressway up to Seven Trees Boulevard, from which apartments continue to Monterey Highway. On the east side, multifamily residential units (apartments) are the predominant land use. Southeast of a strip mall at Senter Road, a church sits adjacent to a vacant lot. Between Cedro Street and Seven Trees Boulevard, a city park sits between the expressway and Los Arboles Elementary School. Commercial uses lie on either side of Seven Trees Boulevard.

Capitol Expressway (Monterey Highway to Vistapark Drive)

Land uses west of the expressway are almost entirely commercial and include a large movie theater/flea market lot, public storage facility, gas stations, and golf driving range. Multifamily residential uses dominate the east side. Just south of Snell Avenue, a gas station and storage facility separate apartment complexes.

Capitol Expressway (Vistapark Drive to Guadalupe Parkway)

High-density apartments sit at the southwest corner of Vistapark Drive, adjacent to a shopping center. To the south of the expressway, between Copperfield and Timberloop, there are additional apartments, followed by Home Depot. A preschool and VTA parking lot follow, terminating at SR 87. On the north side of the expressway, a small strip mall sits at Vistapark Drive, followed by single-family residences up to Narvaez Avenue. A VTA parking lot also lies on the north side at SR 87. Canoas Creek crosses under Capitol Expressway just east of Narvaez Avenue.

Planned Future Land Uses and Approved Projects Adjacent to Capitol Expressway

Most of the land along the Capitol Expressway Corridor is already developed. However, some vacant lots remain along the corridor, and properties may be redeveloped into different land uses in the future. Two methods were used to anticipate future land uses along the corridor: review of the existing general plan land use designations and review of approved projects.

Several projects have been approved by the City, are currently under construction, or are pending approval. Table 4.13-1 provides detailed information, including the location, land use designation, and project status regarding future development in the Capitol Expressway Corridor. These projects include residential developments (The Woods, Phase 5b and Bella Villagio) and commercial developments (Evergreen Commons, Albertson's Plaza, and Capitol Self Storage).

Table 4.13-1. Proposed Projects Adjacent to Capitol Expressway

Project Name	Location	Land Use and Zoning Designation	Size of Project	Status	Date Approved
The Woods, Phase 5b	Southeast corner of Capitol Expressway and Snell Avenue	Neighborhood/ Community Commercial Agriculture/Planned Development	475 multifamily units	Under construction	8/30/96
Albertsons Plaza	Southeast corner of Tully Road and Capitol Expressway	Neighborhood/ Community Commercial Commercial Pedestrian	83,000 square feet	Under construction	8/9/00
Bella Villagio	Northeast corner of Capitol Expressway and Vistapark Drive	Medium High Density Residential Agriculture/Planned Development	357 multifamily units	Under construction	4/5/02
Monte Vista Senior Apartments	West side of Capitol Avenue, just north of Capitol Expressway	Medium Density Residential	49 units	Under construction	9/24/01
Beshoff Motor Cars	Northeast corner of Capitol Expressway and Tully Road	Commercial	74,000 square feet	Under construction	9/25/02
Narvaez Housing	East side of Narvaez Avenue near Amanda Drive	Residential	Five single-family units	Construction pending	5/7/02
Tamara Homes	Northeast corner of Capitol Expressway and Carpentier Way	Residential	Three single-family units	Construction pending	8/28/01
Evergreen Commons	Northeast corner of Capitol Expressway and Tully Road	Neighborhood/ Community Commercial Commercial Pedestrian	60,000 square feet	Construction pending as of 11/01	4/25/01
Capitol Self Storage	Northwest corner of Capitol Expressway and Monterey Road	Combined Industrial/ Commercial Industrial Park/Planned Development	93,000 square feet	Construction pending as of 5/02	1/8/02

Source: City of San Jose 2003a.

In addition, several light rail stations are proposed to be located along the corridor in association with the Light Rail Alternative. The locations of these light rail stations are shown in Figure 3-4.

Regulatory Setting

Land use plans and policies applicable to the Capitol Expressway Corridor were reviewed to identify potential adverse effects of the proposed alternatives. The relevant plans and policies are described in Appendix H and are listed below.

- San Jose 2020 General Plan and Land Use/Transportation Map (City of San Jose 1994),
- City of San Jose Zoning Ordinance and Map (City of San Jose 2001, 2003b),
- Communications Hill Specific Plan (City of San Jose 1992),
- East Valley/680 and West Evergreen Community Improvement Plans,
- Valley Transportation Plan 2030 (Santa Clara Valley Transportation Authority 2000c), and
- Santa Clara County Airports Master Plan (Santa Clara County Airports Department 1982).
- Land Use Plan for Areas Surrounding Santa Clara County Airport
- Airport Land Use Planning Handbook
- Santa Clara County Countywide Trails Master Plan (Santa Clara County Trails Plan Advisory Committee, 1995).

Also, two HCPs that could affect future development in San Jose are being developed. One is a countywide multispecies HCP/NCCP being prepared by Santa Clara County, the City of San Jose, VTA, and SCVWD with an expected completion date of June 2006. The other is the Coyote Valley Specific Plan HCP, which was in the initial planning stages in August 2002.

The following urban design principles, adopted by VTA, also apply to the corridor.

- Transform the expressway from an auto-dominant corridor to a multimodal boulevard.
- Introduce landscaping as a major element to enhance the visual appearance and spatial definition of the corridor.
- Establish pedestrian and bicycle linkages along and across the corridor and between neighborhoods and activity centers.
- Design stations to facilitate safe and convenient pedestrian access and to convey the personality and identity of adjacent neighborhoods.

- Introduce special treatments along the edges of the boulevard to reduce visual and noise impacts and to create a more positive relationship with adjacent neighborhoods.
- Promote opportunities for transit-oriented development that will enhance ridership and the quality of life of the surrounding community.

4.13.3 Environmental Consequences and Mitigation Measures

Approach and Methodology

The analysis of effects related to land use was based on a qualitative assessment that included evaluation of land use compatibility and consistency of the proposed alternatives with applicable plans, programs, and policies pertaining to land use in the Capitol Expressway Corridor. The applicable land use plans and policies are described in Appendix H.

Thresholds of Significance

Based on significance criteria used by VTA and professional practice, the proposed alternatives may result in adverse effects related to land use if they would:

- physically divide an established community;
- be incompatible with existing adjacent land uses;
- result in substantial adverse effects to the efficiency or effectiveness of adjacent land uses;
- conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project, adopted for the purpose of avoiding or mitigating an environmental effect; or
- conflict with a habitat conservation plan (HCP) or natural community conservation plan (NCCP).

Environmental Consequences and Mitigation Measures of the No-Project Alternative

This analysis considers the effects of the No-Project Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5*, Other CEQA Considerations,* of this document.

LU-1: Physical Division of an Established Community

As described in Chapter 3, the No-Project Alternative would keep in place the existing transit and roadway network within the Capitol Expressway Corridor. There would not be any large-scale construction of transit structures or other facilities, and environmental conditions would not change. Therefore, there would not be any adverse effect resulting from the physical division of an established community.

Mitigation: No mitigation is required.

LU-2: Incompatible Uses and Reduction in Efficiency and Effectiveness of Land Uses Caused by Extensive Operational Adjustments

Implementation of the No-Project Alternative would not result in large-scale construction of any transit structures or other facilities that could result in incompatible uses within the Capitol Expressway Corridor. Therefore, there would not be any adverse effect that would result from a reduction of efficiency or effectiveness of land uses caused by extensive operational adjustments.

Mitigation: No mitigation is required.

LU-3: Conflicts with Any Applicable Land Use Plan, Policy, or Regulation of an Agency with Jurisdiction

Implementation of the No-Project Alternative would not bring mass transportation improvements and increased service to the Capitol Expressway Corridor. Inherently, this alternative would not be in compliance with the following land use plans and policies, which emphasize increased mass transportation service along Capitol Expressway and easy access to light rail stations: San Jose 2020 General Plan, Communications Hill Specific Plan, East Valley/I-680 and West Evergreen Community Improvement Plans, and VTP 2030.

The San Jose 2020 General Plan, which governs land use decisions in the Capitol Expressway Corridor area, is in support of TOD and the expansion and enhancement of existing transportation corridors. The No-Project Alternative would not be consistent with the plan because its implementation would not expand existing transportation corridors in the project area.

The transportation element of the Communications Hill Specific Plan outlines the goals and policies for the development of a new 500-acre urbanized residential neighborhood bordering Capitol Expressway. The transportation element encourages mass transit use by residents through easy access to LRT and Caltrain stations. Because implementation of the No-Project Alternative would not encourage mass transit or create easy access to LRT and Caltrain stations near the planned Communications Hill site, it would not be consistent with this plan.

The East Valley/I-680 and West Evergreen Community Improvement Plans are currently being developed as part of the City's Strong Neighborhoods Initiative (SNI). Both plans contain goals and action items for implementing quality-of-life improvements. Within the SNI, the city is divided into 21 planning areas. Two of these planning areas, East Valley/I-680 and West Evergreen, fall within the Capitol Expressway Corridor. In particular, the No-Project Alternative would not be in compliance with the objective of East Valley/I-680's Goal 2, which is to improve connections in the area so that community members can safely and easily travel to work, school, home, and leisure activity destinations. Both plans are currently in draft form.

VTP 2030 provides policies and programs for roadways, transit, intelligent transportation systems, bicycle and pedestrian facilities, and land use for Santa Clara County. It includes programs to coordinate with local governments regarding land use and transportation decisions. The land use and transportation integration section of VTP 2030 outlines goals and objectives for future transportation and development in Santa Clara County. Implementation of the No-Project Alternative would not provide better service to existing communities or reduce the need for automobile use between residential neighborhoods, shopping, and other business districts; therefore, it would not be consistent with VTP 2030.

The Santa Clara County Airports Master Plan is used as the basis for future development of the Palo Alto, Reid-Hillview, and South County Airports. Reid-Hillview Airport is located next to a portion of the Capitol Expressway Corridor. Implementation of the No-Project Alternative would not conflict with the provisions of the plan.

The Santa Clara County Countywide Trails Master Plan Update (November 1995) serves as a land use plan for implementing regional, sub-regional, and connector trail routes within Santa Clara County. Three trails are located in the vicinity of the Capitol Expressway Corridor: Coyote Creek Trail and the Silver Creek Loop Trail (two proposed alignments). Implementation of the No-Project Alternative would not conflict with the provisions of the Master Plan.

Overall, the No-Project Alternative would not be consistent with the San Jose 2020 General Plan, Communications Hill Specific Plan, East Valley/I-680 and West Evergreen Community Improvement Plans, and VTP 2030. The No-Project Alternative would not adversely affect the environment or resources in the Capitol Expressway Corridor area; however, its inherent nature would not be compatible with the TOD goals of many of the plans and policies in place for the area. Therefore, this alternative poses a substantial and unavoidable adverse effect that cannot be mitigated.

Mitigation: No mitigation is available.

LU-4: Conflicts with Existing or Future Habitat Conservation Plans or Natural Community Conservation Plans

Both HCPs discussed previously are at a stage in which conclusive information regarding land use policies that could affect the proposed alternatives is not known. However, each HCP will take into account existing and planned future development in Santa Clara Valley. As such, the proposed alternatives are expected to be included in the HCPs' lists of planned future developments in the Santa Clara Valley. The No-Project Alternative would not alter the existing Capitol Expressway Corridor and therefore would not conflict with the current HCP programs or their future provisions.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Baseline Alternative

Anticipated adverse effects associated with the projects included in the approved 1996 Measure B Improvement Program are independent of the proposed alternatives and are or will be reviewed in their respective environmental compliance documents. Additionally, the potential cumulative effects of these projects are considered in Chapter 5, *Other CEQA Considerations*, of this document. This analysis considers the effects of the bus service improvements that are included in the Baseline Alternative as outlined in Chapter 3, *Alternatives Considered.*

LU-5: Physical Division of an Established Community

Under the Baseline Alternative, there would be bus service improvements consisting of service frequency upgrades; a new route that would provide continuous, limited-stop service along Capitol Expressway; and ELS service along various routes throughout the route network. These improvements would operate using the service structures, route network, and bus stop locations currently in place and would not require the construction of any structures. Therefore, there would not be any adverse effect related to the alteration of the existing landscape or division of any established communities under this alternative.

Mitigation: No mitigation is required.

LU-6: Incompatible Uses and Reduction in Efficiency and Effectiveness of Land Uses Caused by Extensive Operational Adjustments

Under the Baseline Alternative, bus service improvements would include partial or full overlap of existing routes and the use of the existing service structures and bus stop locations. As a result, the bus service improvements would not alter existing land uses or adversely affect adjacent land uses such that extensive operational adjustments would be required. Therefore, there would not be any adverse effect related to incompatibility with or reduced efficiency and effectiveness of existing adjacent land uses under this alternative.

Mitigation: No mitigation is required.

LU-7: Conflicts with Any Applicable Land Use Plan, Policy, or Regulation of an Agency with Jurisdiction

The Baseline Alternative would use the existing route network, which serves major business corridors and residential neighborhoods throughout Santa Clara County. The San Jose 2020 General Plan, which governs land use decisions in the Capitol Expressway Corridor area, supports TOD and the expansion and enhancement of existing transportation corridors. The proposed enhancements to existing bus service would not involve low-intensity development or auto-related uses; therefore, this alternative would be consistent with the San Jose 2020 General Plan in relation to TOD policies.

The City of San Jose Zoning Ordinance and zoning maps do not designate permitted uses for the existing bus route network. Many of the existing lines serve major portions of the Capitol Expressway Corridor area, and proposed service increases under the Baseline Alternative would increase mass transit to areas of San Jose where future development is proposed. Therefore, the Baseline Alternative would be consistent with permitted land uses and the goals for both future development and redevelopment in these areas.

The Baseline Alternative would be consistent with the transportation element of the Communications Hill Specific Plan, which outlines the goals and policies for the development of a new 500-acre urbanized residential neighborhood bordering Capitol Expressway. The transportation element encourages mass transit use by residents through easy access to LRT and Caltrain stations. The Baseline Alternative would create a new bus route (Route 370), which would provide continuous limited-stop service along Capitol Expressway between the Alum Rock and Capitol (SR 87) light rail stations, linking the Capitol Avenue and Guadalupe LRT Lines.

The Baseline Alternative would be consistent with the East Valley/I-680 and West Evergreen Community Improvement Plans, which are currently being developed as part of the SNI. Both plans contain goals and action items for implementing quality-of-life improvements. In the SNI, the city is divided into 21 planning areas. Two of these planning areas, East Valley/I-680 and West Evergreen, fall within the Capitol Expressway Corridor. In particular, the Baseline Alternative would be in compliance with East Valley/I-680's Goal 2, which is to improve connections in the area so that community members can safely and easily travel to work, school, home, and leisure activity destinations. Both plans are currently in draft form but could be approved before implementation of the Baseline Alternative.

VTP 2030 provides policies and programs for roadways, transit, intelligent transportation systems, bicycle and pedestrian facilities, and land use for Santa Clara County. It includes programs to coordinate with local governments regarding land use and transportation decisions. The land use and transportation integration section of VTP 2030 outlines goals and objectives for future transportation and development in Santa Clara County. The bus service improvements proposed under the Baseline Alternative would be consistent with with several of these objectives. In particular, bus service improvements would protect Santa Clara County's natural resources by using existing service structures, bus stop locations, and the current route network. Furthermore, the improvements would better serve existing communities and reduce the need for automobile use between residential neighborhoods and shopping and other business districts.

The Santa Clara County Airports Master Plan is used as the basis for future development of the Palo Alto, Reid-Hillview, and South County Airports. Although Reid-Hillview Airport is adjacent to a portion of the Capitol Expressway Corridor, it would not be adversely affected by the bus service improvements proposed under the Baseline Alternative.

The Santa Clara County Countywide Trails Master Plan Update (November 1995) serves as a land use plan for implementing regional, sub-regional, and connector trail routes within Santa Clara County. Three trails are located in the vicinity of the Capitol Expressway Corridor: Coyote Creek Trail and the Silver Creek Loop Trail (two proposed alignments). While these trails are located along or across the corridor they would not be adversely affected by the bus service improvements under the Baseline Alternative.

Overall, the Baseline Alternative would be consistent with the applicable local plans, programs, and policies related to land use. There would be no adverse effect.

Mitigation: No mitigation is required.

LU-8: Conflicts with Existing or Future Habitat Conservation Plans or Natural Community Conservation Plans

The two related HCPs were discussed previously. Transit improvements associated with the Baseline Alternative would not conflict with the intentions of either HCP. Therefore, there would be no adverse effect.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Light Rail Alternative

This analysis considers the effects of the Light Rail Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations,* of this document.

LU-9: Physical Division of an Established Community

For the Light Rail Alternative, most of the proposed alignment would be located in the median of Capitol Expressway, beginning at the Capitol Light Rail Station on Capitol Avenue near I-680 and terminating at the Guadalupe LRT Line along SR 87, creating a loop of light rail service around the central portion of San Jose. Because the Light Rail Alternative would occupy the median of an already busy corridor and would operate in exclusive and semiexclusive rights-of-way, it would not divide established communities.

Mitigation: No mitigation is required.

LU-10: Incompatible Uses and Reduction in Efficiency and Effectiveness of Adjacent Land Uses Caused by Extensive Operational Adjustments

The Light Rail Alternative would operate in the median of Capitol Expressway, except for some short sections that would deviate from the median to the east or west to accommodate connections to Capitol Expressway and Eastridge Mall, Eastridge Transit Center, and associated parking. In general, the Light Rail Alternative would be consistent with adjacent land uses because it would not require a change in these uses. However, implementation of the Light Rail Alternative would result in the removal of existing HOV lanes between Capitol Avenue and U.S. 101 and a slight narrowing of the remaining lanes to provide the additional right-of-way required. The Light Rail Alternative would also involve redesigning the streetscape of Capitol Expressway as an urban parkway; features would include pedestrian-friendly improvements, trees planted along the roadway median and the curb edge of the roadway, and a 16-foot-wide multi-use linear path along a portion of Capitol Expressway. This would be considered a beneficial effect; there would be no adverse effect resulting from incompatible uses or inefficient or ineffective adjacent land uses under this alternative.

Mitigation: No mitigation is required.

LU-11: Conflicts with Any Applicable Land Use Plan, Policy, or Regulation of an Agency with Jurisdiction

The San Jose 2020 General Plan, which governs land use decisions within the Capitol Expressway Corridor, supports TOD and the expansion and enhancement of existing transportation corridors. The extension of light rail service from Capitol Avenue to SR 87 would be consistent with the TOD section of the general plan because it would enhance mass transit along an existing transportation corridor and would not involve low-intensity development or auto-related uses.

The San Jose Zoning Ordinance and zoning maps do not designate permitted uses for the Capitol Expressway median. The Light Rail Alternative would connect the Capitol and Guadalupe LRT Lines, and would consequently connect residential, industrial, and commercial zones throughout San Jose. Therefore, the Light Rail Alternative would be consistent with permitted land uses and goals for future development and redevelopment in these areas.

The Light Rail Alternative would be consistent with the transportation element of the Communications Hill Specific Plan, which outlines the goals and policies for the development of a new 500-acre urbanized residential neighborhood bordering Capitol Expressway. The transportation element encourages mass transit use by residents through easy access to LRT and Caltrain stations.

The Light Rail Alternative would be in compliance with the East Valley/I-680 and West Evergreen Community Improvement Plans, which are being developed as part of the SNI. The plans contain goals and action items for making quality-of-life improvements. In the SNI, the city is divided into 21 planning areas. Two of these planning areas, East Valley/I-680 and West Evergreen, fall within the Capitol Expressway Corridor. In particular, the Light Rail Alternative would be in compliance with East Valley Plan/I-680’s Goal 2, which is to improve connections in the area so that community members can safely and easily travel to work, school, home, and leisure activity destinations. Both of the improvement plans are currently in draft form but could be approved before completion of the Light Rail Alternative.

VTP 2030 provides policies and programs for roadways, transit, intelligent transportation systems, bicycle and pedestrian facilities, and land use for Santa Clara County. It includes programs to coordinate with local governments regarding land use and transportation decisions. The land use and transportation integration section of VTP 2030 outlines goals and objectives for future transportation and development in Santa Clara County. The Light Rail Alternative would be in compliance with several of these objectives. In particular, placing the light rail alignment within the Capitol Expressway median would protect Santa Clara County's natural resources by using existing rights-of-way, infrastructure, and paved areas. Furthermore, the Light Rail Alternative would better serve both existing and planned residential communities and reduce the need for automobile use between residential neighborhoods, shopping, and other business districts.

The Santa Clara County Airports Master Plan is used as the basis for future development of the Palo Alto, Reid-Hillview, and South County Airports. Reid-Hillview Airport is adjacent to a portion of the Capitol Expressway Corridor near Cunningham Avenue. The Light Rail Alternative does not appear to penetrate the airport airspace. However, implementation of the Light Rail Alternative would result in the relocation of airport transmission towers. This effect is described in more detail in Section 4.17, *Utilities*. Although the Light Rail Alternative would encroach on existing airport land, VTA and airport authorities would implement an agreement of use of the LRT line in this portion of the corridor that would ensure that there would not be any conflicts with the airport's exiting policies or programs and that the Light Rail Alternative would be in compliance with Federal Aviation Administration regulations. VTA would also work with the County to minimize any conflicts with the master plan update that is currently being prepared. As a result, there would not be any substantial adverse effects resulting in conflicts with applicable plans, policies, or programs related to land uses under this alternative.

The Santa Clara County Countywide Trails Master Plan Update (November 1995) serves as a land use plan for implementing regional, sub-regional, and connector trail routes within Santa Clara County. Three trails are located in the vicinity of the Capitol Expressway Corridor: Coyote Creek Trail and the Silver Creek Loop Trail (two proposed alignments). Although the Light Rail Alternative does not appear to encroach on these existing or planned trail routes, VTA would work with the County to minimize any conflicts with the 1995 Trails Master Plan Update.

Overall, the Light Rail Alternative would be in compliance with the applicable local plans, programs, and policies related to land use. There would be no adverse effect.

Mitigation: No mitigation is required.

LU-12: Conflicts with Existing or Future Habitat Conservation Plans or Natural Community Conservation Plans

The two related HCPs are discussed previously in LU-4 above. Transit improvements associated with the Light Rail Alternative would not conflict with the intentions of either HCP. There would be no adverse effect.

Mitigation: No mitigation is required.

Proposed Options

As described in Chapter 3.0, *Alternatives Considered*, the Light Rail Alternative includes station, segment, park-and-ride and light rail vehicle storage location options. The station options include at-grade, aerial and depressed open air station designs. Several platform configurations are also being explored including side platforms, single center platforms, offset platforms and a platform on the west side of the expressway. With the exception of the Capitol Avenue to Capitol Expressway transition, the Eastridge Transit Center segment, the side-running option between Eastridge and Nieman Boulevard, and the U.S. 101 crossing, the light rail alignment would remain within the median at-grade, on an aerial structure above the corridor, or in a tunnel. These options could adversely affect land use. The effects on land use discussed above could result depending upon the alignment options or station designs selected

Section 4.14
Noise and Vibration

4.14.1 Introduction

This section describes the environmental setting and effects of the alternatives analyzed in this EIR with regard to noise and vibration. Specifically, this section discusses existing noise and vibration conditions within the Capitol Expressway Corridor and describes applicable regulations pertaining to transit noise and vibration. The assessment of adverse effects and mitigation measures of the alternatives related to noise and vibration are also described. A detailed noise and vibration analysis supporting the findings of this section can be found in the noise and vibration report (Harris Miller Miller & Hanson 2003), included as Appendix I to this document.

Noise Terminology

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. *Noise* can be defined as unwanted sound. Sound is characterized by various parameters that include the rate of oscillation of sound waves (*frequency*), the speed of propagation, and the pressure level or energy content (*amplitude*). Sound pressure level (*amplitude*) is the most common descriptor used to characterize the loudness of ambient sound. The decibel (dB) scale is used to quantify sound intensity. Because sound pressure varies over an extremely large range, the dB scale is logarithmic, which keeps sound intensity numbers convenient and manageable. Because the human ear is not equally sensitive to all frequencies, noise measurements are also commonly weighted more heavily for frequencies of maximum human sensitivity in a process called *A-weighting*. These adjusted measurements are expressed in units called A-weighted decibels (dBA).

Several different types of descriptors are used to characterize the time-varying nature of sound. These descriptors include the equivalent sound level (L_{eq}), the day-night level (L_{dn}), and the community noise equivalent level (CNEL).

L_{eq} can be thought of as the steady-state sound level that represents the same sound energy contained in the actual varying sound levels over a specified time period (typically 1 hour or 24 hours). Because environmental noise fluctuates from moment to moment, it is common practice to condense all of this information into a single number, called the "equivalent" sound level (L_{eq}). Often the L_{eq} values over a 24-hour period are used to calculate cumulative noise exposure in terms of the day-night sound level (L_{dn}).

L_{dn} is the energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to sound levels occurring during the period from 10:00 p.m. to 7:00 a.m. Many surveys have shown that L_{dn} is well correlated with human annoyance; therefore, this descriptor is widely used for environmental noise impact assessment. Figure 4.14-1 provides examples of typical noise environments and criteria in terms of L_{dn}. While the extremes of L_{dn} are shown to range from 35 dBA in a wilderness environment to 85 dBA in noisy urban environments, L_{dn} is generally found to range between 55 and 75 dBA in most communities. As shown in Figure 4.14-1, this span ranges between an "ideal" residential environment and the threshold for an unacceptable residential environment according to the U.S. Department of Housing and Urban Development and EPA.

CNEL is the energy average of the A-weighted sound levels occurring during a 24-hour period, with approximately 4.8 dB added to the A-weighted sound levels during the period from 7:00 p.m. to 10:00 p.m. and 10 dB added to the A-weighted sound levels during the period from 10:00 p.m. to 7:00 a.m. L_{dn} and CNEL values rarely differ by more than 1 dB. As a matter of practice, L_{dn} and CNEL values are considered equivalent and are treated as such in this assessment. Appendix I provides a more detailed discussion of noise terminology.

Vibration Terminology

Groundborne vibration is the oscillatory motion of the ground about some equilibrium position and can be described in terms of displacement, velocity, or acceleration. Because sensitivity to vibration typically corresponds to the amplitude of vibration velocity within the low-frequency range of most concern for environmental vibration (roughly 5–100 Hz), velocity is the preferred measure for evaluating groundborne vibration from transit projects.

The most common measure used to quantify vibration amplitude is the peak particle velocity (PPV), defined as the maximum instantaneous peak of the vibratory motion. PPV is typically used in monitoring blasting and other types of construction-generated vibration because it is related to the stresses experienced by building components. Although PPV is appropriate for evaluating building damage, it is less suitable for evaluating human response. Human response is better related to the average vibration amplitude. Therefore, groundborne vibration from transit trains is usually characterized in terms of the "smoothed" root mean square (rms) vibration velocity level in decibels (VdB), with a reference quantity of 1 micro-inch per second. VdB is used in place of dB to avoid confusing vibration decibels with sound decibels.

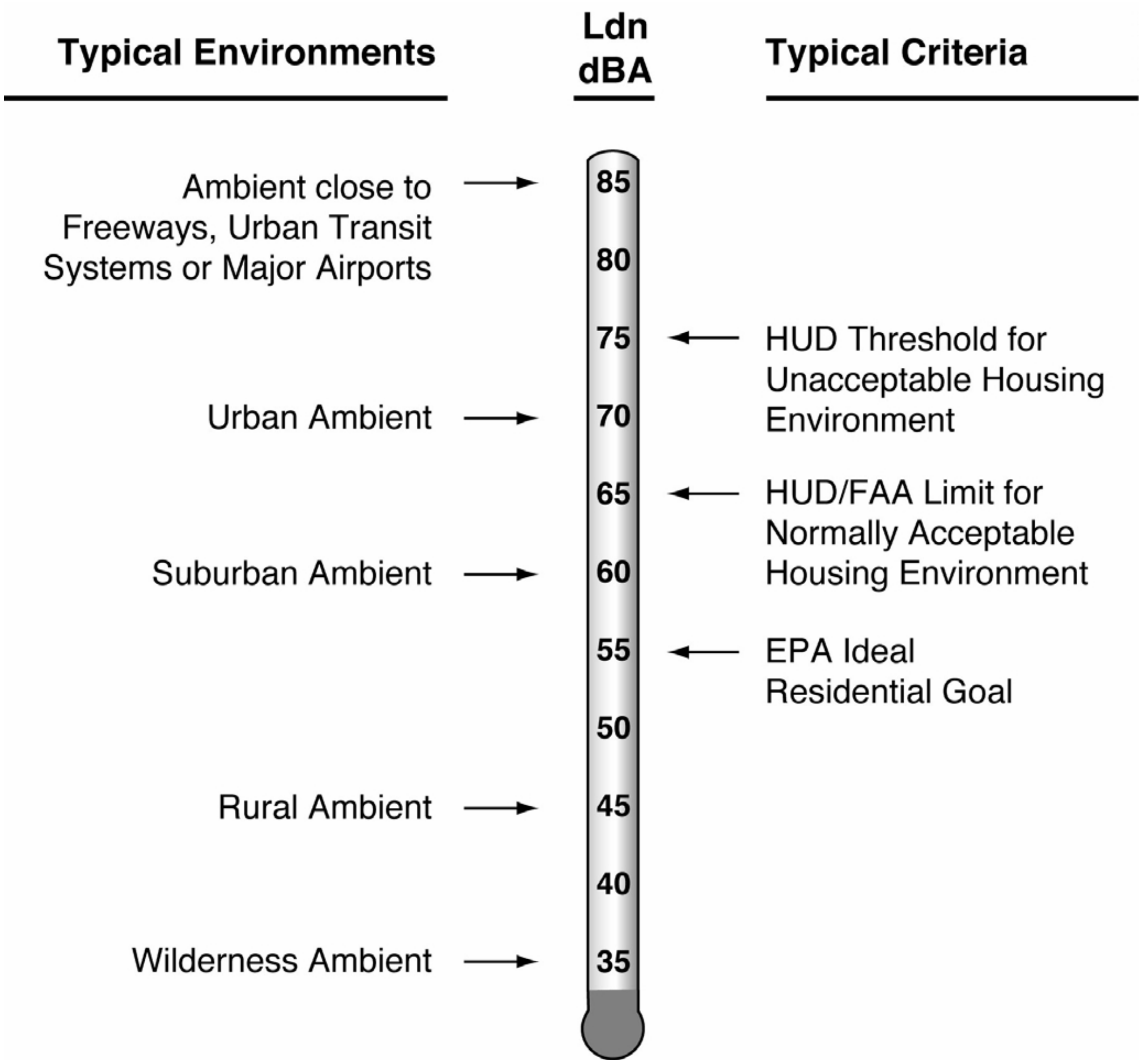

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Figure 4.14-1
Typical Ambient Noise Environments and Criteria

Figure 4.14-2 illustrates typical groundborne vibration levels for common sources and criteria for human and structural response to groundborne vibration. As shown, the range of interest is from approximately 50–100 VdB (imperceptible background vibration to the threshold of damage). Although the approximate threshold of human perception to vibration is 65 VdB, annoyance is usually not significant unless the vibration exceeds 70 VdB.

4.14.2 Existing Conditions

Environmental Setting

Sensitive Receptors

Areas adjacent to the Capitol Expressway Corridor include residential, nonresidential (commercial), and institutional (schools, churches, etc.) land uses. Land uses within 300 feet of Capitol Expressway were surveyed to identify noise-sensitive receptors; virtually all such receptors were single-family and multifamily homes. In addition to residential land uses, there are four churches, several parks, and a medical office located near the proposed alignment. Receptors were characterized based on their distance to the proposed tracks, acoustical shielding between the receptors and tracks, and their location relative to grade crossings.

Measurement Sites

Existing ambient noise levels were characterized through direct measurements at selected sites along Capitol Expressway. These sites were chosen because they are sensitive receptors (e.g., residential areas) or they are representative of other neighborhoods in the area with similar noise characteristics.

Noise measurements were conducted at 16 sites (N1–N16). Six noise measurement sites were located to the west of Capitol Expressway; 10 were located to the east. The locations of the sites are shown in Figure 4.14-3, and their addresses and existing noise levels are listed in Table 4.14-1. The sites are described in Appendix I.

Vibration measurements were conducted at four sites (V1–V4). One vibration measurement site was located to the west of Capitol Expressway; three were located to the east. The locations of the sites are shown in Figure 4.14-4. The sites are described in Appendix I.

Existing Noise and Vibration Measurements

Noise measurements were taken in October and November 2001 and are used to characterize the existing noise environment in terms of L_{dn} in terms of dBA.[1] Vibration measurements were taken at the same time to characterize vibration propagation characteristics of the ground along the corridor.

The noise impact criteria are based on existing noise exposure. Therefore, estimating existing noise exposure is an important step in the noise impact assessment. The dominant source of existing noise exposure throughout the Capitol Expressway Corridor is vehicular traffic on Capitol Expressway. Other noise sources include general aviation aircraft arriving and departing from Reid-Hillview Airport, commercial and general aviation aircraft arriving and departing from SJIA, and Caltrain and Amtrak trains on the tracks adjacent to Monterey Highway. In developing estimates of existing noise exposure, the results from a representative measurement site can be used to characterize an entire neighborhood.

At each site, the measurement microphone was positioned to characterize the exposure of the site to the dominant noise sources in the area (Capitol Expressway in most cases). For example, microphones were located at the approximate setback lines of the receptors from Capitol Expressway. Measurements were conducted in areas with existing noise barriers and in areas without barriers to characterize the noise for both cases. The results of the existing ambient noise measurements are summarized below in Table 4.14-1, and the measurements are described below.

The long-term measurement results in Table 4.14-1 indicate L_{dn} ranging from 59–73 dBA along the corridor. All of the measurement locations have high noise levels and exceed the EPA goal of 55 L_{dn}.

[1] L_{dn} is a measure of noise exposure over a 24-hour period, with an adjustment for nighttime noise to account for greater sensitivity of people to nighttime noise. For dBA, the sound pressure level is filtered to approximate human hearing.

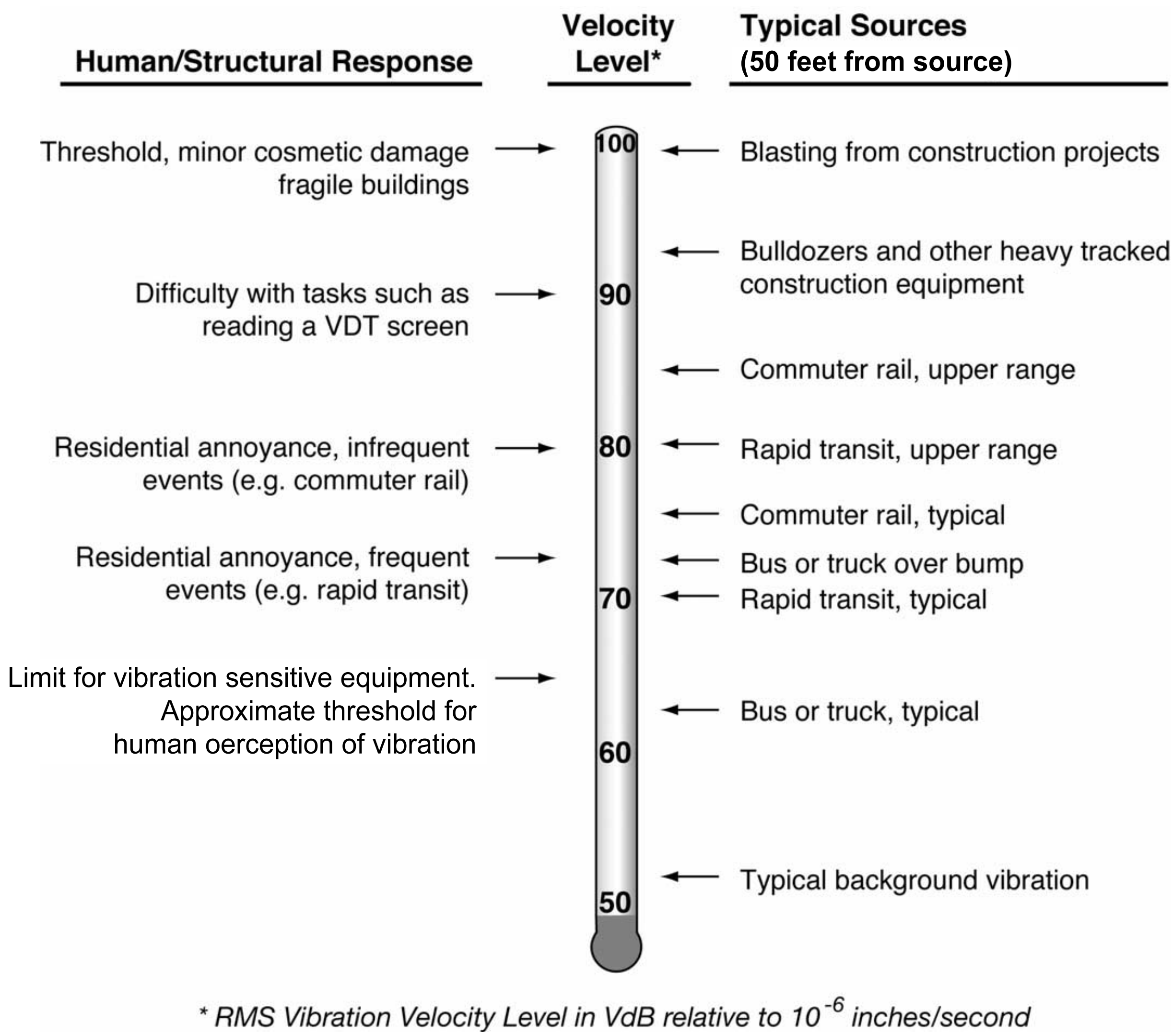

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Figure 4.14-2
Typical Groundbourne Vibration Sources and Response Criteria

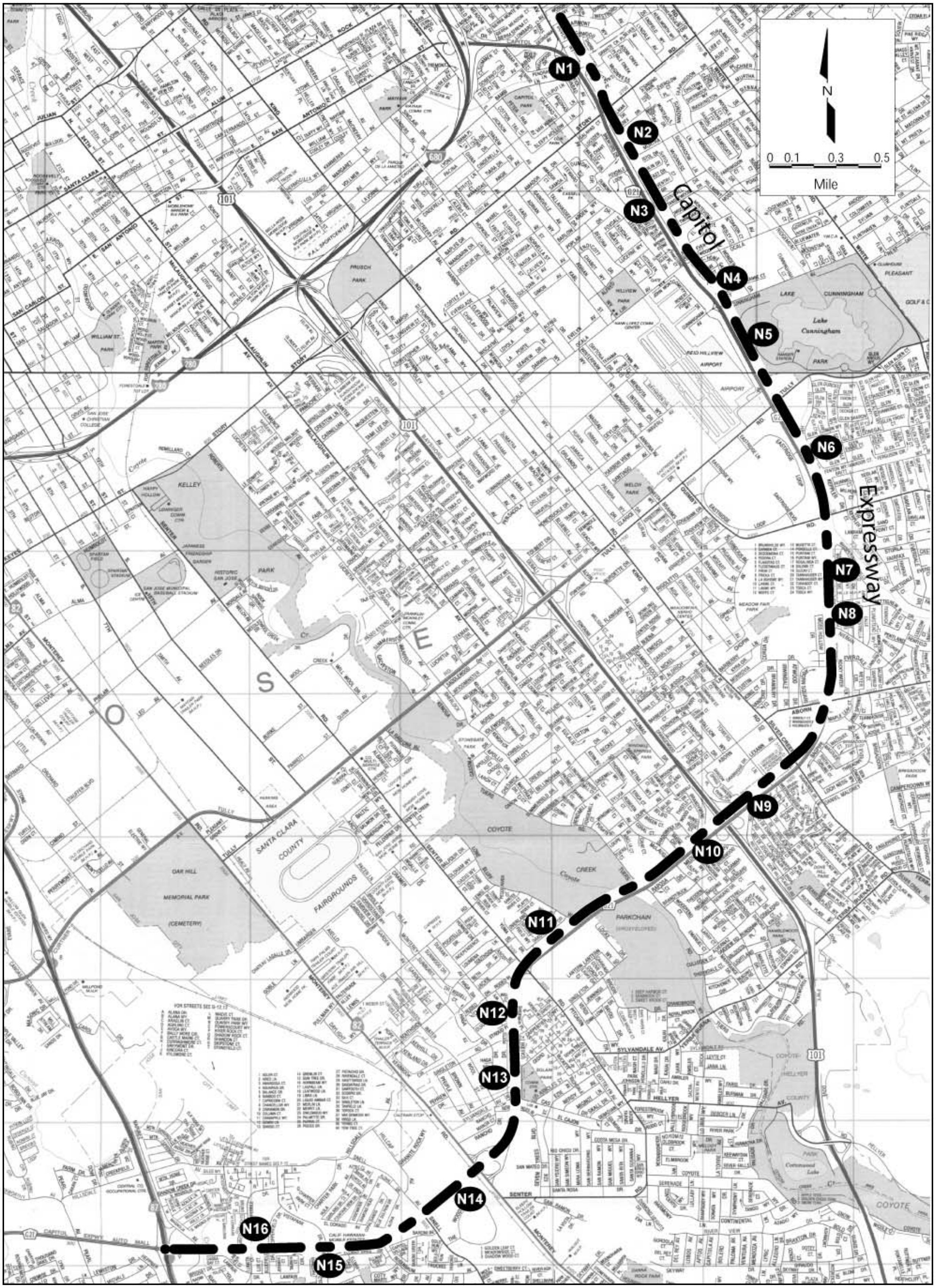

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Figure 4.14-3
Noise Measurement Sites
along Capitol Expressway

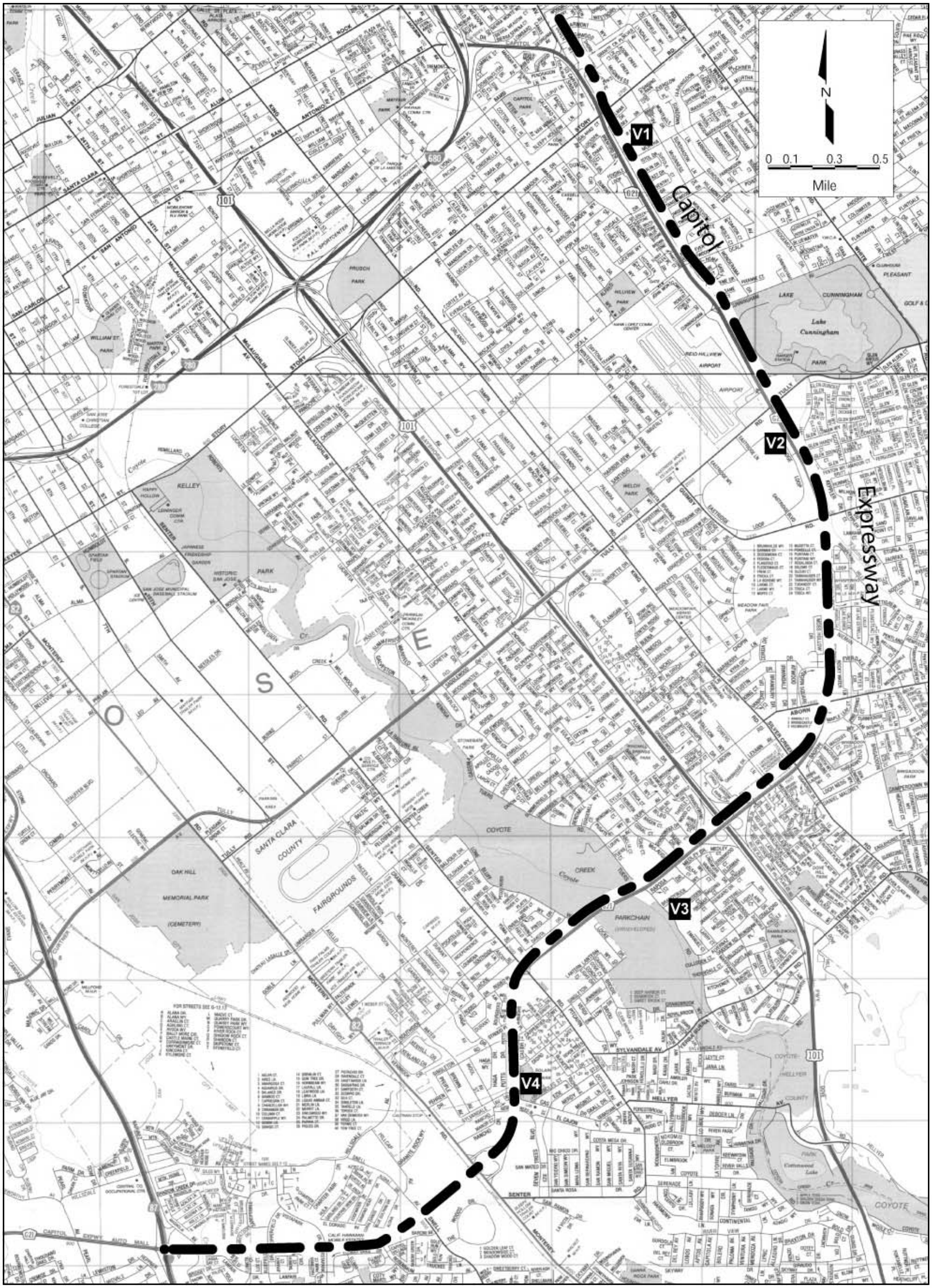

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Figure 4.14-4
Vibration Measurement Sites along Capitol Expressway

Table 4.14-1. Summary of Existing Ambient Noise Measurement Results

Site No.	Measurement Location and Description	Start of Measurement Date	Start of Measurement Time	Measurement Time (Hours)	Noise Exposure (Ldn, dBA)
N-1	4268 Bambi Lane	10/31/01	13:00	24	72
N-2	1276 Capitol Court	10/31/01	14:00	24	73
N-3	2540 Greenstone Circle	10/31/01	15:00	24	67
N-4	2015 Supreme Drive	10/31/01	14:00	24	65
N-5	San Jose Lake Cunningham Park	11/01/01	15:00	24	59
N-8	2655 Glen Hanleigh Drive	10/30/01	14:00	24	65
N-9	2561 Whispering Hills Drive	10/30/01	13:00	24	66
N-10	2219 Pettigrew Drive	11/01/01	15:00	24	67
N-11	5 Rio De Plata	11/01/01	15:00	24	69
N-12	1275 Medley Drive	10/30/01	12:00	24	64
N-13	3211/3205 Lone Bluff Way	10/29/01	13:00	24	73
N-14	3180 Welby Court	10/30/01	13:00	24	66
N-15	13184 Potts Drive	11/01/01	14:00	24	63
N-16	916 The Woods Drive	10/29/01	12:00	24	65

Note: The measurement locations are all single-family residences except Lake Cunningham Park.

Source: Harris, Miller, Miller and Hanson 2003.

Regulatory Setting

Federal Transit Administration Noise Impact Criteria

The noise analysis for this project is based on FTA's noise impact criteria, defined in its guidance manual, *Transit Noise and Vibration Impact Assessment* (Federal Transit Administration 1995). The FTA noise impact criteria are founded on well-documented research on community reaction to noise and are based on the change in noise exposure using a sliding scale. In addition, neither the state nor local governmental agencies have established guidelines that are directly applicable to transit projects. The FTA criteria group noise-sensitive land uses into the following categories.

- **Category 1:** Buildings or parks where quiet is an essential element of their purpose.
- **Category 2:** Residences and buildings where people normally sleep. This category includes residences, hospitals, and hotels where nighttime sensitivity is assumed to be of utmost importance.
- **Category 3:** Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, churches, active parks, and medical offices.

L_{dn} is used to characterize noise exposure for residential areas (Category 2). For other noise-sensitive land uses, such as outdoor amphitheaters and school buildings (Categories 1 and 3), the maximum 1-hour L_{eq} during the facility's operating period is used.

There are two levels of impact included in the criteria, which are described below.

- **Moderate Impact:** In this range of noise impact, other project-specific factors must be considered to determine the magnitude of the impact and the need for mitigation. These other factors can include the predicted increase over existing noise levels, the types and number of noise-sensitive land uses affected, existing outdoor-indoor sound insulation, and the cost effectiveness of mitigating noise to more acceptable levels.
- **Severe Impact:** Severe noise impacts are considered "significant" as this term is used in NEPA and implementing regulations. Noise mitigation will normally be specified for severe impact areas unless there is no practical method of mitigating the noise.

The noise impact criteria are summarized in Tables 4.14-2 and 4.14-3. Table 4.14-2 lists the existing noise exposure and additional noise exposure from the transit project that would cause either a moderate or severe impact. The future noise exposure would be the combination of the existing noise exposure and additional noise exposure caused by the transit project. Table 4.14-3 presents the information from Table 4.14–2 in terms of the allowable increase in cumulative noise exposure (noise from existing sources plus project noise) as a function of existing noise exposure.

In addition, the FTA guidance manual does not include any noise limits that are specifically applicable to stationary ancillary equipment such as TPSSs. Commonly applied limits for this type of noise in residential areas is 10 dBA more than the minimum hourly L_{90} (the sound level exceeded 90% of the time) or a maximum of 45 dBA at any residence, whichever is more stringent.

Federal Transit Administration Vibration Impact Criteria

The FTA groundborne vibration impact criteria are based on land use and train frequency, as shown in Table 4.14-4. There are some buildings, such as concert halls, recording studios, and theaters, that can be very sensitive to vibration but do not fit into any of the three categories listed in Table 4.14-4. Because of the sensitivity of these buildings, they usually warrant special attention during the environmental assessment of a transit project.

It should also be noted that Table 4.14-4 includes separate FTA criteria for groundborne noise, the "rumble" that can be radiated from the motion of room surfaces in buildings due to groundborne vibration. Although expressed in dBA, which emphasizes the more audible middle and high frequencies, the criteria are set significantly lower than for airborne noise to account for the annoying low-frequency character of groundborne noise. Because airborne noise often masks groundborne noise for aboveground (at-grade or elevated) rail systems,

Table 4.14-2. Federal Transit Administration Noise Impact Criteria

Existing Noise Exposure (L_{eq} or L_{dn})	Project Noise Exposure Impact Thresholds (L_{dn} or L_{eq} [dBA])			
	Category 1 or 2 Sites		Category 3 Sites	
	Impact	Severe Impact	Impact	Severe Impact
<43	Amb.+10	Amb.+15	Amb.+15	Amb.+20
43	52	59	57	64
44	52	59	57	64
45	52	59	57	64
46	53	60	58	65
47	53	60	58	65
48	53	60	58	65
49	54	60	59	65
50	54	60	59	65
51	54	61	59	66
52	55	61	60	66
53	55	61	60	66
54	55	62	60	67
55	56	62	61	67
56	56	63	61	68
57	57	63	62	68
58	57	63	62	68
59	58	64	63	69
60	58	64	63	69
61	59	65	64	70
62	59	65	64	70
63	60	66	65	71
64	61	66	66	71
65	61	67	66	72
66	62	68	67	73
67	63	68	68	73
68	63	69	68	74
69	64	70	69	75
70	65	70	70	75
71	66	71	71	76
72	66	72	71	77
73	66	72	71	77
74	66	73	71	78
75	66	74	71	79
76	66	75	71	80
77	66	75	71	80
>77	66	76	71	81

Note: L_{dn} is used for land uses where nighttime sensitivity is a factor; maximum 1-hour L_{eq} is used for land use involving only daytime activities.

Source: Federal Transit Administration and Harris Miller Miller & Hanson 2003.

Table 4.14-3. Cumulative Noise Level Increase Allowed by Federal Transit Administration Criteria

Existing Noise Exposure (L_{eq} or L_{dn})[a]	Impact Threshold for Increase in Cumulative Noise Exposure (dBA)			
	Category 1 or 2 Sites		Category 3 Sites	
	Impact[b]	Severe Impact[c]	Impact[b]	Severe Impact[c]
45	8	14	12	19
46	7	13	12	18
47	7	12	11	17
48	6	12	10	16
49	6	11	10	16
50	5	10	9	15
51	5	10	8	14
52	4	9	8	14
53	4	8	7	13
54	3	8	7	12
55	3	7	6	12
56	3	7	6	11
57	3	6	6	10
58	2	6	5	10
59–60	2	5	5	9
61	1.9	5	4	9
62	1.7	4	4	8
63	1.6	4	4	8
64	1.5	4	4	8
65	1.4	4	3	7
66	1.3	4	3	7
67	1.2	3	3	7
68–69	1.1	3	3	6
70–71	1.0	3	3	6
72	0.8	3	2	6
73	0.6	2	1.8	5
74	0.5	2	1.5	5
75	0.4	2	1.2	5

[a] Refers to outdoor noise levels. Maximum 1-hour L_{eq} is used for land use involving only daytime and evening activities (Categories 1 and 3); L_{dn} is used for land uses where nighttime sensitivity is a factor (Category 2).

[b] Increases less than this magnitude have no impact; increases equal to or greater than this magnitude have an impact, but the impact is less than significant.

[c] Increases of this magnitude or greater are significant.

Source: Federal Transit Administration and Harris Miller Miller & Hanson 2003.

groundborne noise criteria are primarily applied to tunnel operations where airborne noise is not a factor.

Table 4.14-4. Groundborne Vibration and Noise Impact Criteria

Land Use Category	Description of Land Use Category	Groundborne Vibration Impact Levels (VdB re 1 micro-inch per second [µin/sec])		Groundborne Noise Impact Levels (dB re 20 micro Pascals)	
		Frequent Events[a]	Infrequent Events[b]	Frequent Events[a]	Infrequent Events[b]
1	Buildings where low ambient vibration is essential to the operations within the building.	65 VdB[c]	65 VdB[c]	—[d]	—[d]
2	Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels.	72 VdB	80 VdB	35 dBA	43 dBA
3	Institutional land uses such as schools, libraries, and churches with primarily daytime use.	75 VdB	83 VdB	40 dBA	48 dBA

[a] A *frequent event* is defined as more than 70 vibration events per day. Most transit projects fall into this category.

[b] An *infrequent event* is defined as fewer than 70 vibration events per day. This category includes most commuter-rail systems.

[c] This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.

[d] Vibration-sensitive equipment is not sensitive to groundborne noise.

Source: Federal Transit Administration and Harris Miller Miller & Hanson 2003.

4.14.3 Environmental Consequences and Mitigation Measures

Approach and Methodology

Noise Impact Assessment Methodology

The primary component of noise from LRT train operations is wheel/rail noise that results from steel wheels rolling on steel rails. Secondary sources, such as vehicle air conditioning and other ancillary equipment, will sometimes be audible but are not expected to be significant factors. The projection of noise from LRT train operations was based on the anticipated Light Rail Alternative operating plan and the prediction model specified in the FTA guidance manual. Significant factors are summarized below.

- Based on the FTA guidance manual and VTA vehicle dimensions, the predictions assume that a single 90-foot-long vehicle operating at 40 mph on ballast and tie track with continuous welded rail generates a maximum noise level of 79 dBA at a distance of 50 feet from the track centerline.
- The operating period of the Light Rail Alternative was assumed to be between 4:30 a.m. and 1:30 a.m. The LRT was assumed to operate with headways of 10 minutes between 6:00 a.m. and 7:30 p.m., 15 minutes between 7:30 p.m. and 11:30 p.m., and 30 minutes between 11:30 p.m. and 1:30 a.m. and between 4:30 a.m. and 6:00 a.m.
- Two-car train consists are assumed to run during peak hours from 6:00 a.m. to 9:00 a.m. and from 3:30 p.m. to 7:30 p.m. A single consist is assumed to run during base hours from 9:00 a.m. to 3:30 p.m. and during the evening and early/late periods from 7:30 p.m. to 1:30 a.m. and from 4:30 a.m. to 6:00 a.m.
- Vehicle operating speeds are based on maximum speeds along the Light Rail Alternative alignment, taking into account station locations. The speed limits range from 35–55 mph along the corridor.
- The projections near grade crossings include noise from train horns. The noise levels are based on typical LRT system audible warning signal equipment and practices.
- Wheel impacts at crossovers and other special trackwork typically cause a noise increase of about 6 dBA near such locations.
- The effects of existing noise walls along the corridor were included in the noise projections.

Because many of the inputs into the noise model, such as the operating periods, headways, and detailed speed projections, were not fully developed, several assumptions were made regarding these inputs. When more detailed information is available during preliminary engineering and if there are significant differences from the assumed parameters discussed above, the noise projections may need to be further refined.

Vibration Impact Assessment Methodology

The potential vibration impact from LRT operation was assessed on an absolute basis using the FTA criteria. The same representative noise-sensitive receptors identified in Table 4.14-5 were considered for the vibration impact assessment. The following factors were used in determining potential vibration impacts along the Light Rail Alternative alignment.

Table 4.14-5. Noise Impacts of the Light Rail Alternative, Land Use Category 2 (Residences)

						Light Rail Alternative Noise Impact[a]			Cumulative Noise Impact		
Segment	Civil Station	Side of Track	Distance to Near Track (feet)	Speed (mph)	Existing Noise Level	Predicted Noise Level[b]	Noise Impact	Number of Severe Impacts	Predicted Noise Level	Noise Level Increase	Number of Severe Impacts
Northern Terminus to Story Road	21	east	45	45	73	69	72	0	75	1.4	0
	15	west	50	38	72	67	71	0	73	1.1	0
Story Road to Ocala Avenue	50	east	120	45	73	63	72	0	74	0.3	0
	49	west	80	45	67	65	68	0	69	2.2	0
Ocala Avenue to Cunningham Avenue	94	east	110	35	65	54	66	0	66	0.3	0
	—[c]	west	—	—	—	—	—	—	—	—	—
Quimby Road to Aborn Road	189	east	65	35	67	61	67	0	68	0.9	0
	187	west	100	35	67	52	67	0	67	0.2	0
Aborn Road to Silver Creek Road	208	east	80	50	75	66	72	0	75	0.6	0
	—	west	—	—	—	—	—	—	—	—	—
Silver Creek Road to U.S. 101	225	east	90	20	75	57	72	0	75	0.1	0
	224	west	95	20	75	57	72	0	75	0.1	0
U.S. 101 to Tuers Road	246	east	105	55	72	56	71	0	72	0.1	0
	246	west	100	55	72	56	71	0	72	0.1	0
Tuers Road to Senter Road	279	east	110	55	72	61	71	0	72	0.3	0
	283	west	125	48	72	59	71	0	72	0.2	0
Senter Road to SR 82	318	east	130	55	72	60	71	0	72	0.2	0
	336	west	150	40	72	58	71	0	72	0.2	0
SR 82 to Snell Avenue	366	east	155	35	72	57	71	0	72	0.1	0
	—	west	—	—	—	—	—	—	—	—	—
Snell Avenue to Vista Park Drive	382	east	120	53	72	61	71	0	72	0.3	0
	393	west	70	20	72	55	71	0	72	0.1	0
Vista Park Drive to Narvez Avenue	410	east	160	39	72	59	71	0	72	0.2	0
	415	west	100	49	72	61	71	0	72	0.3	0
Narvez Avenue to Southern Terminus	438	east	190	20	72	54	71	0	72	0.1	0
	—	west	—	—	—	—	—	—	—	—	—
Total								**0**			**0**

[a] Noise levels are based on L_{dn} and are measured in dBA.

[b] Predicted levels include a 5-dBA penalty applied to audible signal noise, where applicable.

[c] Dashes indicate that no noise-sensitive receivers were located in this segment of the corridor or that the LRT tracks are in a tunnel.

Source: Harris Miller Miller & Hanson 2003.

- Vibration source levels for the VTA vehicles were based on direct measurements conducted by Harris Miller Miller & Hanson and Wilson Ihrig and Associates.
- Vibration propagation tests were conducted at four sites along the corridor near sensitive receptors. These tests measured the response of the ground to an input force. The results of these tests were combined with the vibration source levels to provide projections of vibration levels from vehicles operating on the Light Rail Alternative alignment.
- Light rail vehicle operating speeds are based on the vehicle acceleration rate and the operating speed limits for the light rail alignment. The speed limits range from 35–55 mph.
- Wheel impacts at crossovers and other special trackwork typically cause a vibration increase of about 10 VdB near such locations.
- Shredded tire underlays were considered a project design feature at all locations where vibration impacts were identified. The vibration reduction effects of the shredded tires are included in the analysis and impact reporting.

Thresholds of Significance

Based on the significance criteria used by VTA and FTA's noise and vibration impact criteria, the proposed alternatives may result in adverse effects related to noise and vibration if:

- transit-system operational noise contributes to a cumulative increase in noise levels that would be considered as a severe impact by Federal Transit Administration (FTA) criteria,
- ancillary equipment noise levels exceed 45 dBA at the nearest indoor noise sensitive receptor, or
- operation of the transit system would result in vibration levels in buildings that exceed FTA criteria.

The FTA criteria referenced in these thresholds (noise impact criteria and vibration impact criteria) are described above.

Environmental Consequences and Mitigation Measures of the No-Project Alternative

This analysis considers the effects of the No-Project Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document. The No-Project Alternative is not expected to result in any noise or vibration impacts.

Environmental Consequences and Mitigation Measures of the Baseline Alternative

Anticipated adverse effects associated with the projects included in the approved 1996 Measure B Improvement Program are independent of the proposed alternatives and are or will be reviewed in their respective environmental compliance documents. Additionally, the potential cumulative effects of these projects are considered in Chapter 5, *Other CEQA Considerations*, of this document. This analysis considers the effects of the bus service improvements that are included in the Baseline Alternative as outlined in Chapter 3, *Alternatives Considered*. Because only minor transportation improvements in the Capitol Expressway Corridor are proposed with the Baseline Alternative, adverse noise or vibration effects are not expected.

Environmental Consequences and Mitigation Measures of the Light Rail Alternative

This analysis considers the effects of the Light Rail Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

NV-1: Noise Levels from Transit Operations That Would Be Considered a Severe Impact by Federal Transit Administration Criteria

For the Light Rail Alternative, detailed comparisons of the existing and future noise levels are presented in Table 4.14-5. Table 4.14-5 includes the results for the Category 2 receptors along the alignment with both daytime and nighttime sensitivity to noise (e.g., residences, hotels, and hospitals). In addition to the civil station, distance to the near track, and LRT speed, each table includes the existing noise level, projected noise level from LRT operations, and impact criteria for each receptor or receptor group. Based on a comparison of the predicted project and cumulative noise level with the impact criteria, Table 4.14-5 indicates that no severe project noise impacts would occur with the Light Rail Alternative.

Institutional land use near the corridor includes three churches, two parks, a medical office, and high-school athletic fields. Table 4.14-6 summarizes the noise impact projections at these locations. The distances indicated in the table refer to either the location of the closest building or the closest point of activity for sites with outdoor land use. The analysis for the institutional receptors was identical to that for the residential receptors, except that the impact thresholds for noise increase are based on the energy-average L_{eq} measured at representative

Table 4.14-6. Noise Impacts of the Light Rail Alternative, Land Use Category 3 (Institutional)

Location	Civil Station	Side of Track	Distance to Near Track (feet)	Speed (mph)	Existing Noise Level[a]	Light Rail Alternative Noise Impact[a]			Cumulative Noise Level		
						Predicted Noise Level[b]	Severe Impact Criteria[b]	Number of Severe Impacts	Predicted Noise Level[b]	Noise Level Increase	Number of Severe Impacts
Templo Juan	34	east	130	41	67	62	73	0	68	1.2	0
Crossroad Calvary Chapel	36	east	130	28	67	59	73	0	68	0.6	0
Eastridge Little League Fields	99	west	150	42	55	56	66	0	59	4.0	0
Medical Office	199	east	215	37	65	53	71	0	65	0.3	0
Andrew P. Hill High School Fields	292	east	120	20	70	51	74	0	70	0.1	0
Apostolic Lighthouse Church	305	east	100	44	70	60	74	0	70	0.4	0
Monterey Park	326	east	120	55	70	60	74	0	70	0.5	0
Total								**0**			**0**

[a] Noise levels are based on L_{eq} and are measured in dBA.

[b] Predicted levels include a 5-dBA penalty applied to audible signal noise, where applicable.

Source: Harris Miller Miller & Hanson 2003.

nearby sites during the proposed hours or peak transit service. There are no severe noise impacts projected at any Category 3 (institutional) receptors.

NV-2: Noise Levels from Station and/or Park-and-Ride Transit Operations That Would Be Considered a Severe Impact by Federal Transit Administration Criteria

The primary sources of noise at stations with park-and-ride lots are buses entering and exiting the station, bus idling, and associated traffic. The only park-and-ride lots with transit centers serving the Light Rail Alternative are the existing Alum Rock, Eastridge Transit Center, and Capitol Stations. The Eastridge Transit Center is the only facility being expanded with additional parking. The Eastridge Transit Center is adjacent to Eastridge Mall and not near any noise-sensitive land uses. Therefore, the Light Rail Alternative stations with park-and-ride facilities would not result in substantial vehicle-related noise impacts.

Audible warning devices would be used at stations and at grade crossings. VTA requires operators to sound a “low bell” while entering and leaving a station. The low bell noise level would range from 60–65 dBA at 100 feet (assuming no intervening barriers to the noise path). Noise levels of 60–65 dBA are roughly equivalent to normal conversation at 3 feet. Therefore, the audible warnings would not result in noise impacts at station locations.

High bells (louder bells) and horns are used at the operator’s discretion when deemed necessary to ensure safety, such as when trespassers are in the track area or other hazardous situations. The loud horn is the loudest warning available to the operator and must generate noise levels in accordance with state safety requirements. A loud horn might be used at an intersection to warn a pedestrian or vehicle that a light rail vehicle is approaching. VTA has policies prohibiting the unnecessary use of bells or horns.

NV-3: Noise Levels from Ancillary Equipment That Would Be Considered a Severe Impact by Federal Transit Administration Criteria

TPSSs are the only ancillary Light Rail Alternative equipment that has the potential to cause substantial noise impacts. There are five TPSSs located within 250 feet of residences. However, there is no TPSS projected to have noise levels that would exceed the 45 dBA noise level threshold. Information on the criteria, modeling method, and results of the noise analysis for substations can be found in Appendix I.

For substations that would be located near noise-sensitive uses, VTA will incorporate into construction contracts design specifications that will limit maximum noise levels to 45 dBA at the nearest residence.

NV-4: Vibration Levels in Buildings from Transit Operations That Exceed Federal Transit Administration Criteria

Table 4.14-7 summarizes the results of the vibration analysis in terms of anticipated exceedances of the FTA criteria for "frequent events" (defined as more than 70 events per day). Vibration-sensitive locations along the alignment are listed in Table 4.14-7 for Category 2 land uses. The table lists the locations, civil station, distance to the near track, and projected LRT speed at each location. In addition, the predicted project vibration level (with the inclusion of shredded tires as a project design feature where the unmitigated vibration levels were projected to be above the impact criterion), impact criterion level, and number of impacts projected for each receptor or receptor group are indicated (after inclusion of shredded tires as a project design feature). The results project groundborne vibration impact at 51 residences for the Light Rail Alternative. These locations are shown in Figure 4.14-5. Each affected Category 2 land use area is discussed below:

- **Northern Terminus to Story Road (East):** There are no residences at this location projected to have vibration impact with the inclusion of shredded tires as a design feature.
- **Northern Terminus to Story Road (West):** There is one residence at this location projected to have vibration impact with the inclusion of shredded tires as a design feature. The vibration impact is due to the proximity of the tracks (40 feet) to the residences.
- **Story Road to Ocala Avenue (West):** There are no residences at this location projected to have vibration impact with the inclusion of shredded tires as a design feature.
- **Quimby Road to Aborn Road (East):** There are 33 residences at this location projected to have vibration impact with the inclusion of shredded tires as a design feature. The vibration impacts are due to the proximity of the tracks (65 feet) to the residences and the speed of the LRT vehicles (50 mph).
- **Quimby Road to Aborn Road (West):** There are no residences at this location projected to have vibration impact with the inclusion of shredded tires as a design feature.
- **Aborn Road to Silver Creek Road (East):** There are no residences at this location projected to have vibration impact with the inclusion of shredded tires as a design feature.
- **Silver Creek Road to U.S. 101 (East):** There are no residences at this location projected to have vibration impact with the inclusion of shredded tires as a design feature.
- **Silver Creek Road to U.S. 101 (West):** There are no residences at this location projected to have vibration impact with the inclusion of shredded tires as a design feature.

Table 4.14-7. Vibration Impacts of the Light Rail Alternative, Land Use Category 2 (Residences)

					Groundborne Vibration (VdB re 1 µin/sec)		
Location	Civil Station	Side of Track	Distance to Near Track (feet)	Speed (mph)	Project Level[a]	Impact Criterion	Number of Impacts
Northern Terminus to Story Road	10	east	55	35	70*	72	0
	13	west	40	35	73*	72	1
Story Road to Ocala Avenue	44	east	95	20	53	72	0
	52	west	75	45	69*	72	0
Ocala Avenue to Cunningham Avenue	94	east	110	35	66	72	0
	—[b]	west	—	—	—	72	—
Quimby Road to Aborn Road	189	east	65	55	74*	72	33
	188	west	110	35	68*	72	0
Aborn Road to Silver Creek Road	204	east	90	45	71*	72	0
	—	west	—	—	—	72	—
Silver Creek Road to U.S. 101	228	east	70	28	69*	72	0
	227	west	120	25	70	72	0
U.S. 101 to Tuers Road	246	east	105	55	69*	72	0
	250	west	75	28	67*	72	0
Tuers Road to Senter Road	279	east	110	55	71*	72	0
	283	west	125	48	70	72	0
Senter Road to SR 82	311	east	75	51	73*	72	12
	315	west	60	55	75*	72	6
SR 82 to Snell Avenue	366	east	155	35	66	72	0
	—	west	—	—	—	72	—
Snell Avenue to Vistapark Drive	382	east	120	53	71	72	0
	393	west	70	20	69	72	0
Vistapark Drive to Narvez Avenue	404	east	100	35	70	72	0
	415	west	100	49	70*	72	0
Narvez Avenue to Southern Terminus	438	east	190	20	59	72	0
	—	west	—	—	—	72	—
Total							**52**

Note: Groundborne noise is not addressed in this table because it is only assessed for tunnel sections of the alignment.

[a] The vibration projections assume that shredded tires are a project feature where the vibration levels are above the impact criterion. The reported vibration levels in this table with an asterisk include the projected reduction due to the inclusion of shredded tires.

[b] Dashes indicate that no vibration-sensitive receivers were located in this segment of the corridor.

Source: Harris Miller Miller & Hanson 2003.

Figure 4.14-5a
Locations of Noise and Vibration Impacts and Existing Community Walls for the Light Rail Alternative

Figure 4.14-5b
Locations of Noise and Vibration Impacts and
Existing Community Walls for the Light Rail Alternative

Figure 4.14-5c
Locations of Noise and Vibration Impacts and Existing Community Walls for the Light Rail Alternative

Figure 4.14-5d
Locations of Noise and Vibration Impacts and Existing Community Walls for the Light Rail Alternative

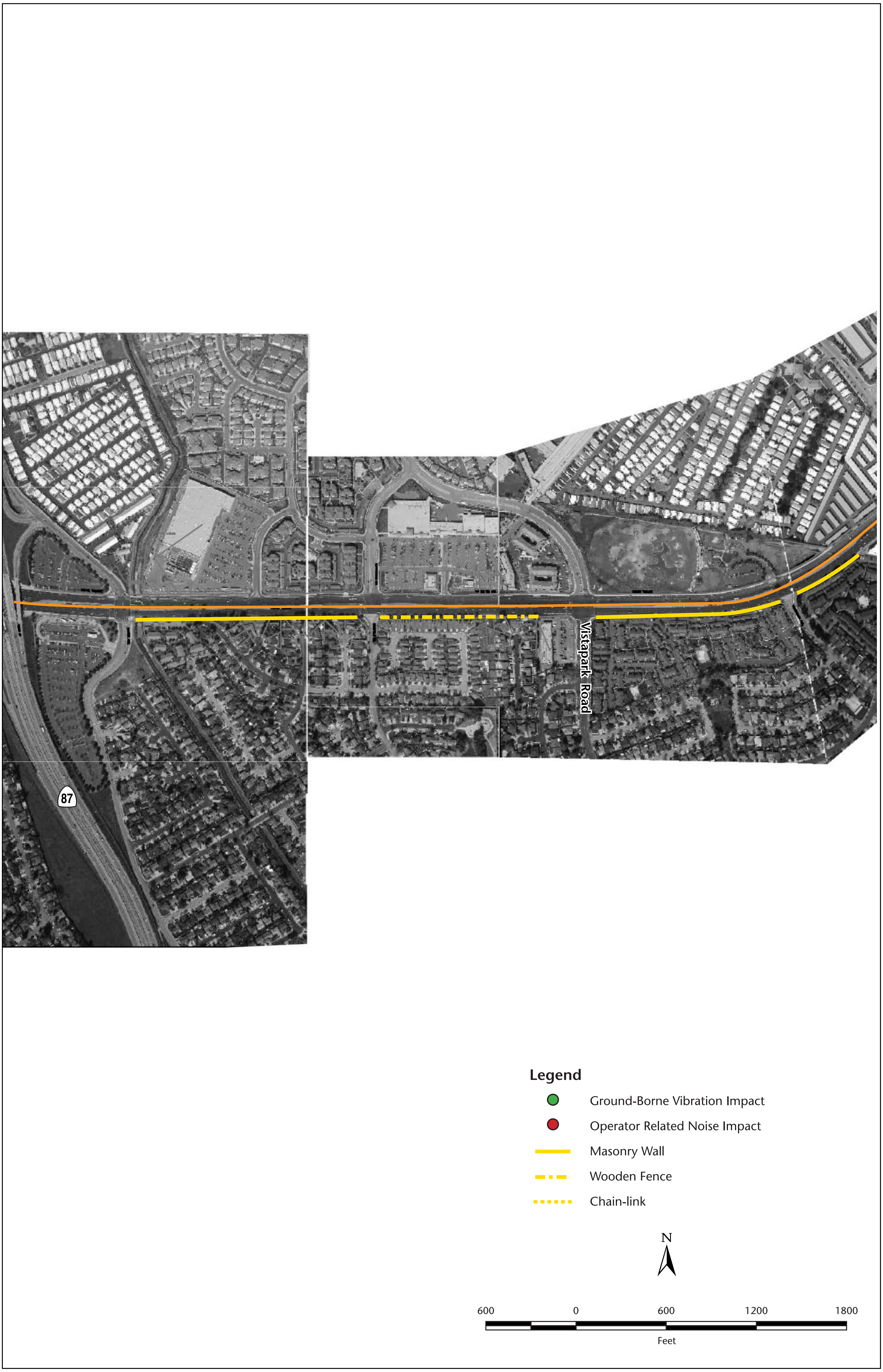

Figure 4.14-5e
Locations of Noise and Vibration Impacts and Existing Community Walls for the Light Rail Alternative

- **U.S. 101 to Senter Road (East):** There are no residences at this location projected to have vibration impact with the inclusion of shredded tires as a design feature.
- **U.S. 101 to Senter Road (East):** There are no residences at this location projected to have vibration impact with the inclusion of shredded tires as a design feature.
- **Senter Road to SR 82 (East):** There are 12 residences in three multifamily buildings at this location projected to have vibration impact with the inclusion of shredded tires as a design feature. The vibration impacts are due to the proximity of the tracks (70 feet) to the residences and the speed of the LRT vehicles (50 mph).
- **Senter Road to SR 82 (West):** There are 6 single-family residences at this location projected to have vibration impact with the inclusion of shredded tires as a design feature. The vibration impacts are due to the proximity of the tracks (60 feet) to the residences and the speed of the LRT vehicles (50 mph).
- **Vistapark Drive to Narvez Avenue (West):** There are no residences at this location projected to have vibration impact with the inclusion of shredded tires as a design feature.

Vibration-sensitive institutional land uses near the corridor include three churches and a medical office. Table 4.14-8 summarizes the vibration impact projections at these locations. Vibration impact is only assessed for indoor usage; parks are not included in the vibration assessment. The analysis for the institutional receptors was identical to that for the residential receptors except that the impact thresholds for vibration are higher than those for residential receptors.

There are no vibration impacts at institutional receptors along the Light Rail Alternative alignment. Therefore, there are no adverse effects to institutional receptors resulting from vibration from LRT operations.

Table 4.14-8. Vibration Impacts of the Light Rail Alternative, Land Use Category 3 (Institutional)

					Groundborne Vibration (VdB referenced to 1 µin/sec)		
Location	Civil Station	Side of Track	Distance to Near Track (feet)	Speed (mph)	Project Level	Impact Criterion	Number of Impacts
Templo Juan	34	east	130	41	55	75	0
Crossroad Calvary Chapel	36	east	130	28	52	75	0
Medical Office	199	east	215	37	69	75	0
Apostolic Lighthouse Church	305	east	100	44	72	75	0
Total							**0**

Note: Groundborne noise is not addressed in this table because it is only assessed for tunnel sections of the alignment.

Source: Harris Miller Miller & Hanson 2003.

Vibration impacts that exceed FTA criteria are considered substantial and adverse, and warrant mitigation if it is reasonable and feasible. Table 4.14-9 indicates the civil stations along the corridor where mitigation is proposed to reduce the vibration levels. Shredded tire underlays are assumed to be a project design feature for the areas indicated in Table 4.14-9. Areas that may require additional or alternative types of vibration mitigation are noted in the table. Typical vibration mitigation measures include, but are not limited to, the following:

- **Ballast Mats**: A ballast mat consists of a pad made of rubber or rubber-like material placed on an asphalt or concrete base with the normal ballast, ties, and rail on top. The reduction in groundborne vibration provided by a ballast mat depends strongly on the frequency content of the vibration and design and support of the mat, and can typically range from 3–5 VdB.
- **Special Trackwork at Crossovers**: Because the impacts of LRT wheels over rail gaps at track crossover locations increases LRT vibration by about 10 VdB, crossovers are a major source of vibration impact when they are located in vibration-sensitive areas. If crossovers cannot be relocated away from vibration-sensitive areas, another approach is to use spring rail or moveable point frogs in place of standard rigid frogs at turnouts. These devices allow the flangeway gap to remain closed in the main traffic direction for revenue service trains. Special trackwork at crossovers will remove the 10 VdB penalty associated with crossovers.
- **Tire Shred or Recycled Rubber Chip Underlay:** A 12-inch-thick resilient layer of recycled rubber chips placed beneath the sub-ballast layer of standard open ballast and tie track could be incorporated into the track design. This mitigation method would provide results similar to ballast mats, providing a 3–5 VdB reduction.
- **Floating Slabs:** Floating slabs consist of thick concrete slabs supported by resilient pads on a concrete foundation; the tracks are mounted atop the floating slab. Most successful floating slab installations are in tunnels; their use for at-grade track is less common. Although floating slabs are designed to provide vibration reduction at lower frequencies than ballast mats, they are extremely expensive. Floating slabs can typically provide 5–13 VdB of reduction, depending on the thickness.

Mitigation Measure NV-4a: Conduct Follow-Up Vibration Mitigation Assessments

Because of the high number of groundborne vibration and groundborne noise impacts along the Light Rail Alternative alignment, additional vibration testing is warranted during preliminary engineering. Additional testing shall be performed at additional locations on the existing system to further define the source level. In addition, vibration propagation tests shall be performed along the corridor to help refine the vibration projections. As part of these follow-up assessments, site-specific factors such as soil/rock conditions and foundation/building construction will be assessed. With additional vehicles, and more vibration propagation tests, it is possible that the number and magnitude of the vibration impacts could be reduced, resulting in the need for less vibration mitigation. If the follow-up assessments conclude that vibration levels would not exceed FTA's thresholds, no further action would be required. If the follow-up assessment confirms projected exceedences of the FTA threshold, VTA shall implement the following mitigation measure to reduce the severity of the impacts to a less than significant level.

Mitigation Measure NV-4b: Use Vibration-Dampening Track Construction Materials

VTA shall use vibration-dampening track construction materials at the impacted locations identified in Table 4.14-9. The areas identified in Table 4.14-9 will have shredded tires as a project design feature to mitigate vibration. Areas that may require additional or alternative types of vibration mitigation are noted in the table. The use of ballast mats, special trackwork at crossovers, tire shred or recycled rubber chip underlay, floating slabs, or other measures will be incorporated into the final design to reduce vibration impacts to below the FTA criteria.

Table 4.14-9. Locations of Vibration Mitigation for the Light Rail Alternative

Segment	Civil Station	Length (feet)	Vibration Impacts[a]	Amount of Additional Vibration Reduction Required (VdB)[b]
Northern terminus to Story Road	8+50 to 14+50	600	1	—[c]
Story Road to Ocala Avenue	49+00 to 54+00	500	0	—
	66+00 to 77+50	1,150	0	—
Quimby Road to Aborn Road	158+50 to 179+50	2,100	33	0.4–1.9
	183+50 to 196+00	1,250	0	—
Aborn Road to Silver Creek Road	200+50 to 206+00	550	0	—
Silver Creek Road to U.S. 101	226+00 to 233+00	700	0	—
U.S. 101 to Senter Road	244+00 to 252+00	800	0	—
	276+00 to 281+00	500	0	—
Senter Road to SR 82	302+00 to 332+00	3,000	18	0.1–3.4
Vistapark Drive to Narvez Avenue	413+00 to 419+00	600	0	—
Total		**10,450**	**52**	

Note: Groundborne noise is not addressed in this table because it is only assessed for tunnel sections of the alignment.

[a] Impacts assuming shredded tires are included as a project design feature.

[b] Additional vibration mitigation required in addition to the benefits provided by the shredded tire design feature.

[c] Dashes indicate that no vibration-sensitive receivers were located in this segment of the corridor.

Source: Harris Miller Miller & Hanson 2003.

Proposed Options

As described in Chapter 3.0, *Alternatives Considered*, the Light Rail Alternative includes station, segment, park-and-ride, and light rail vehicle storage location options. The station options include at-grade, aerial, and depressed open air station designs. Several platform configurations are also being explored, including side platforms, single center platforms, offset platforms, and a platform on the west side of the expressway. With the exception of Capitol Avenue to Capitol Expressway transition, the Eastridge Transit Center segment, the side-running option between Eastridge and Nieman Boulevard, and the U.S. 101 crossing, the light rail alignment would remain within the median at-grade, on an aerial structure above the corridor, or in a tunnel. These options could adversely affect noise and vibration. The effects on noise and vibration discussed above would result depending on the alignment options or station designs selected.

NV-5: Noise Levels from Light Rail Alternative Proposed Options That Would Be Considered a Severe Impact by Federal Transit Administration Criteria

Severe noise impacts are projected at four Category 2 (residential) land uses on the west side of the alignment in the Eastridge Transit Center to Aborn Road segment between Quimby Road and Aborn Road under the South of Eastridge Transit Center Side-Running/At-Grade/Aerial Option. The noise impacts are due to the proximity of the LRT tracks (40 feet) and the presence of the elevated structure. Because of the elevated structure, the existing ground-level noise barriers at this location would be ineffective at shielding the noise from LRT operations.

There would be no severe noise impact at any other Category 2 (residential) receptors or any Category 3 (institutional) receptors due to the proposed options. More detailed data on the noise impacts of the proposed options can be found in Appendix I.

The following mitigation measures would address Category 2 severe noise impacts from LRT operations under the proposed options. Typical noise mitigation measures that could be implemented under the measure include, but are not limited to, the following:

- **Noise Barriers:** The primary requirements for an effective noise barrier are that (1) the barrier must be high enough and long enough to break the line-of-sight between the sound source and the receiver, (2) the barrier must be of an impervious material with a minimum surface density of 4 pounds per square foot and (3) the barrier must not have any gaps or holes between the panels or at the bottom. Because numerous materials meet these requirements, the selection of materials for noise barriers is usually dictated by aesthetics, durability, cost, and maintenance considerations. Depending on the proximity of the barrier to the tracks and on the track elevation, transit system noise barriers typically range in height from between 4 and 8 feet, and can be at ground level or on a structure depending on the sound level reduction required. For second- and third-floor noise impacts, a site-specific analysis during preliminary engineering would be conducted. The analysis would include additional data regarding the noise-attenuating properties of each affected building, and the refined vertical and horizontal track profiles that would be developing during preliminary engineering and final design. Projected noise levels would be recalculated and mitigation options evaluated based on the new information. Noise barriers typically provide 8–10 dBA of noise reduction.

- **Building Sound Insulation:** VTA shall provide noise insulation for residences located along the proposed light rail alignment where FTA severe noise impact thresholds are exceeded. Where noise barriers are not feasible or desirable, insulation may be applicable. Modifications such as retrofitting windows or doors; sealing and gasketing doors, windows, or other openings; or installing transparent noise screens on balconies could be considered. If necessary, a forced ventilation system and air conditioning could be installed to allow windows to remain closed during warm weather. All such measures would be discussed with the affected property owner(s) and require their concurrence. Insulation can provide 10–20 dBA of noise reduction, depending on the existing condition of the structure and the extent of treatments.
- **Special Trackwork at Crossovers:** Because the impacts of LRT wheels over rail gaps at track crossover locations increases LRT noise by about 6 dBA, crossovers are a major source of noise impact when they are located in sensitive areas. If crossovers cannot be relocated away from sensitive areas, another approach is to use spring rail or moveable point frogs in place of standard rigid frogs at turnouts. These devices allow the flangeway gap to remain closed in the main traffic direction for revenue service trains. Special trackwork at crossovers will remove the 6-dBA penalty associated with crossovers.

Mitigation Measure NV-5: Provide Noise Barriers or Other Mitigation between Quimby Road and Aborn Road

VTA shall provide noise barriers or other mitigation treatments for residences located along the light rail alignment where FTA noise impact thresholds are exceeded. Based on the results of the noise assessment, under the South of Eastridge Transit Center Side-Running At-Grade/Aerial Option, noise barriers or other mitigation treatments are proposed within a 500-foot segment between Quimby and Aborn Roads (Civil Station 175+50 to 180+50), in which a total of four exceedances of the FTA severe noise impact threshold would occur.

NV-6: Vibration Levels in Buildings from Light Rail Alternative Proposed Options That Exceed Federal Transit Administration Criteria

As shown in Table 4.14-10, severe vibration impacts will occur with the proposed options at the following Category 2 (residential) land uses. Although shredded tires to mitigate vibration impacts are included as a component of the Light Rail Alternative design, these impacts would still result.

- **South of Eastridge Transit Center Aerial Crossing Option (only with Eastridge Aerial Station Option), East Side:** There are eight residences at this location projected to have groundborne vibration impact with the inclusion of shredded tires as a design feature. The vibration impacts are due to the proximity of the tracks to the residences (90 feet) and the speed of the LRT vehicles (55 mph).
- **South of Eastridge Transit Center Side-Running/Tunnel at Nieman Boulevard Option, East Side:** There are four residences at this location projected to have groundborne vibration impact and no residences projected to have groundborne noise impact with the inclusion of shredded tires as a design feature. The impacts are due to the proximity of the tracks to the residences (75 feet) and the speed of the light rail vehicles (50 mph).
- **South of Eastridge Transit Center Side-Running/Tunnel at Nieman Boulevard Option, West Side):** There are 20 residences at this location projected to have groundborne vibration impact and 25 residences projected to have groundborne noise impact with the inclusion of shredded tires as a design feature. The impacts are due to the proximity of the tracks to the residences (60 feet) and the speed of the LRT vehicles (53 mph).
- **South of Eastridge Transit Center Side-Running At Grade/Aerial Option, West Side:** There are 22 residences at this location projected to have groundborne vibration impact and 24 residences project to have groundborne noise impact with the inclusion of shredded tires as a design feature. The impacts are due to the speed of the light rail vehicles (53 mph).
- **South of Eastridge Transit Center Side-Running/ At-Grade/Aerial Option, East Side:** There are four residences at this location projected to have groundborne vibration impact and 36 residences projected to have groundborne noise impact with the inclusion of shredded tires as a design

Table 4.14-10. Vibration Impacts for the Light Rail Alternative Options, Land Use Category 2 (Residences)

Location	Civil Station	Side of Track	Distance to Near Track (Feet)	Speed (mph)	Groundborne Vibration (VdB re 1 µin/sec)			Groundborne Noise (dBA)[a]		
					Project Level[b]	Impact Criteria	Number of Impacts	Project Level[b]	Impact Criteria	Number of Impacts
Eastridge Transit Center to Aborn Road										
South of Eastridge Transit Center Aerial Crossing Option (only with Eastridge Aerial Station Option)	161	East	90	55	73*	72	8	—[c]	—	—
South of Eastridge Transit Center Side Running/Tunnel at Nieman Boulevard Option	189	East	75	50	74*	72	4	34*	35	0
	178	West	60	53	75*	72	20	40*	35	25
South of Eastridge Transit Center Side-Running At-Grade/Aerial Option	178	West	75	53	74*	72	22	40*	35	**24**
	189	East	75	50	74*	72	4	34*	35	**36**
Coyote Creek to SR 87										
At-grade, median-running between Coyote Creek and State Route 87 (With under Highway 87 Station Option	422	East	150	45	76*	72	4	—	—	—
Total							**62**			**85**

[a] Groundborne noise is only assessed for tunnel sections of the alignment.

[b] The vibration projections assume that shredded tires are a project feature where the vibration levels are above the impact criterion. The reported vibration and groundborne noise levels in this table with an asterisk include the projected reduction due to the inclusion of shredded tires.

[c] Dashes indicate that no vibration-sensitive receivers were located in this segment of the corridor.

Source: Harris Miller Miller & Hanson 2003.

Table 4.14-11. Locations for Vibration Mitigation with the Light Rail Alternative Options

Segment	Civil Station	Length (feet)	Vibration Impacts[a]	Amount of Additional Vibration Reduction Required (VdB)[b]	Groundborne Noise Impacts[a]	Amount of Additional Groundborne Noise Reduction Required (dBA)[b]
Eastridge Transit Center to Aborn Road						
South of Eastridge Transit Center Side Running/Tunnel at Nieman Boulevard Option	170+50 to 192+50	2,200	24	0.5–3.4	25	0.2–7.5
Tunnel Structure through Aborn Option						
South of Eastridge Transit Center Side-Running/Depressed/At-Grade Aerial Option	175+50 to 205+50	3,000	26	0.1–2.0	60[c]	0.2–5.2
Eastridge Station Aerial Option						
Eastridge Station Area	158+00 to 164+50	650	8	1.2	—	—
Coyote Creek to SR 87						
At-grade, median-running between Coyote Creek and State Route 87 (With under Highway 87 Station Option)			4 (impacts due to crossover)	0 (with relocation of crossover)	—	—
Total			**58**		**85**	

[a] Impacts assuming shredded tires are already included as a project design feature.

[b] Additional mitigation required in addition to the benefits provided by the shredded tire design feature.

[c] Total includes one institutional receptor (medical office).

Source: Harris Miller Miller & Hanson 2003.

feature. The vibration impacts are due to the speed of the LRT vehicles (50 mph).

- **At Grade, Median-Running between Coyote Creek and State Route 87 (with Under State Route 87 Station Option), East Side:** There are four residences in two duplexes at this location projected to have groundborne vibration impact. The vibration impacts are due to the proximity of the crossover at Civil Station 423. The crossover should be moved to the south of Narvez Avenue to mitigate the impacts.

For land use Category 3 (Institutional) locations, vibration impact is only assessed for indoor usage; parks are not included in the vibration assessment. There are no vibration impacts at institutional receptors for any of the proposed options.

Implementation of the following mitigation measures would reduce groundborne vibration impacts from LRT operations under the proposed options.

Mitigation Measure NV-4a: Conduct Follow-Up Vibration Mitigation Assessments (see previous text)

Mitigation Measure NV-6: Use Vibration-Dampening Track Construction Materials

VTA shall use vibration-dampening track construction materials at the impacted locations identified in Table 4.14-11. The areas identified in Table 4.14-11 will have shredded tires as a project design feature to mitigate vibration. Areas that may require additional or alternative types of vibration mitigation are noted in the table. The use of ballast mats, special trackwork at crossovers, tire shred or recycled rubber chip underlay, floating slabs, or other measures will be incorporated into the final design to reduce vibration impacts to below the FTA criteria.

Section 4.15
Safety and Security

4.15.1 Introduction

This section describes the environmental setting and effects of the alternatives analyzed in this EIR with regard to safety and security. Specifically, this section discusses existing safety and security conditions within the Capitol Expressway Corridor and describes applicable regulations pertaining to safety and security. The assessment of adverse effects and mitigation measures of the alternatives related to safety and security are also described.

4.15.2 Existing Conditions

Environmental Setting

Police Services

Security throughout the VTA system is provided by Protective Services, part of the Administrative Unit of the Operations Division. The unit provides security for VTA facilities and bus and light rail service. Protective Services coordinates law enforcement activities with the contracted Santa Clara County Sheriff's Department unit and a private security contractor. Protective Services is also responsible for revenue collection and protection, VTA's lost-and-found program, the vandalism abatement program, employee security systems, and fare inspection on light rail. Protective Services also provides the Route Stabilization Team, which is staffed with three sheriff's deputies to provide increased security. This plain-clothes undercover unit operates on VTA bus routes and light rail to ensure a safe environment for operations and passengers. Also, uniformed patrol officers ride on buses and trains and provide surveillance at public transit facilities, in the Downtown Transit Mall, and at heavily used light rail stations and bus transfer centers. The SJPD and Santa Clara County Sheriff's Department provide general law enforcement and public safety oversight within VTA's service area.

Fire Protection Services

Fire protection services for public transit facilities are provided by the city fire department and the community fire districts in which the transit facilities are located. In the Capitol Expressway Corridor, service is provided by SJFD.

Regulatory Setting

49 Code of Federal Regulations 659, State Safety Oversight Rule

FTA created a state-managed oversight program for rail transit safety and security. The program is applicable to all states that have, within their boundaries, a fixed guideway rail system not regulated by the Federal Railroad Administration. The rule requires that transit agencies address the personal security of their passengers and employees by preparing a system safety program plan conforming to CPUC's system safety program standard (in California, CPUC is granted authority over transit agencies).

California Public Utilities Commission

CPUC has regulatory and safety oversight over railroads and rail transit systems in the state. The responsibility is divided among three programs within the Consumer Protections and Safety Division. Railroad Safety; Highway-Rail Crossing Safety; and Rail Transit Safety, which covers light rail, rapid rail, and cable cars. The primary regulation governing light rail transit systems is CPUC's General Order No. 143-B (California Public Utilities Commission 1991). The purpose of the Rail Transit Safety program and its implementing regulations is to establish safety requirements governing the design, construction, operation, and maintenance of light rail transit systems in California. The safety of patrons, employees, and the public is of primary importance in the application of these regulations.

Santa Clara Valley Transportation Authority Light Rail Operating Rules

VTA light rail operations are governed by the *Light Rail Operating Rule Book and Historic Streetcar Rules and Programs, February 1, 2001* (Santa Clara Valley Transportation Authority 2001c). These operating procedures have been adopted by VTA to ensure safe operations for passengers and the general public. Bells and horn signals are available to the operator of light rail vehicles to warn people or vehicles on or near the trackway.

4.15.3 Environmental Consequences and Mitigation Measures

Approach and Methodology

The analysis of effects related to safety and security was based on a qualitative assessment of whether the police and fire protection coverage necessary for the build alternatives would be sufficient to comply with federal, state, and local safety regulations pertaining to system operations and passenger security. An evaluation of whether these conditions would be restricted by particular facilities, features, or aspects of service is also provided. Mitigation measures are provided to minimize those effects identified as adverse effects.

Thresholds of Significance

Based on significance criteria used by VTA and professional practice, the proposed alternatives may result in adverse effects related to safety and security if they would:

- not include signals and gated crossings in specific locations where pedestrian and/or bicycle safety is determined to be at risk;
- deviate from CPUC standards pertaining to safety, such as clearances for boarding platforms, emergency walkways, public street crossings, and rail crossings and installation of barriers, curbs, and fences;
- contain park-and-ride lots designed with features that would result in inadequate lighting or visual obstruction, such as tall vegetation in outlying areas.

Environmental Consequences and Mitigation Measures of the No-Project Alternative

This analysis considers the effects of the No-Project Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

SS-1: Deviation from California Public Utilities Commission Standards Pertaining to Safety

As described in Chapter 3, the No-Project Alternative would keep in place the existing transit and roadway network in the Capitol Expressway Corridor. As a result, no new transportation improvements would occur and environmental conditions would not change. Therefore, there would be no adverse effects associated with deviation from CPUC safety standards under this alternative.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Baseline Alternative

Anticipated adverse effects associated with the projects included in the approved 1996 Measure B Improvement Program are independent of the proposed alternatives and are or will be reviewed in their respective environmental compliance documents. Additionally, the potential cumulative effects of these projects are considered in Chapter 5, *Other CEQA Considerations*, of this document. This analysis considers the effects of the bus service improvements that are included in the Baseline Alternative as outlined in Chapter 3, *Alternatives Considered*.

SS-2: Inadequate Lighting or Visual Obstructions at Park-and-Ride Lots

The Baseline Alternative would primarily include bus service improvements within the Capitol Expressway Corridor. The proposed improvements include service frequency upgrades, enhanced limited-stop service, and transit priority measures. These transportation improvements would not involve the construction of any large-scale structures or facilities. Therefore, there would be no adverse effects associated with facility features that would result in inadequate lighting or visual obstructions at park-and-ride lots.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Light Rail Alternative

This analysis considers the effects of the Light Rail Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

SS-3: Pedestrian and/or Bicycle Safety Risks at Gated Crossings

Under the Light Rail Alternative, the streetscape of Capitol Expressway would be redesigned to create an urban parkway. The design would incorporate trees along the light rail median and along the curb edge of the roadway. A multiuse linear path along part of Capitol Expressway is also proposed. The path would be approximately 16 feet wide and would include a 10-foot-wide pedestrian/ bicycle pathway, with landscaping, soundwalls, benches, and trash receptacles. Curb lanes on both sides of Capitol Expressway would be 17–18 feet wide for the entire length to allow bicyclists to use the shoulders of the expressway.

Light rail trains would operate along Capitol Expressway and would make at least 14 at-grade crossings of local streets in the corridor under the base alignment option. (There would be fewer crossings under the various grade separation options.) Although they are uncommon, accidents can occur when other vehicles (i.e., autos, buses, trucks, motorcycles, bicycles) or people crossing the light rail tracks are struck by moving light rail trains.

The types of accidents that occur under existing light rail operations may occur with the same frequency under the proposed Light Rail Alternative. Other than the normal precautions taken to prevent these accidents (use of crossing gates, warning bells, flashing signs, pavement markings at crossings, blowing of the light rail horn, fencing, posting of no-trespassing signs, etc.), it is unlikely that these accidents could be entirely prevented or avoided. This effect is considered adverse; however, implementation of the following mitigation measure would minimize this effect.

Mitigation Measure SS-3: Minimize Accident Risks by Incorporating Pedestrian-Friendly Features

VTA will design and operate the Light Rail Alternative in accordance with applicable CPUC regulations to minimize the frequency and severity of accidents. Pedestrian signal-activation push buttons will be added to the median for all at-grade station access points. Pedestrian crosswalks along Capitol Expressway will be designed to provide suitable places of refuge for pedestrians where they cross the light rail track.

SS-4: Inadequate Lighting or Visual Obstructions at Park-and-Ride Lots

The nine new rail stations along the Light Rail Alternative alignment would create activity centers with increased pedestrian activity, auto and bus drop-offs and loadings, and park-and-ride traffic at possibly five locations. Similar to other public facilities, transit facilities such as trains, buses, stations, or park-and-ride lots may be potential targets for crime. The most common type of crime at such facilities is vandalism, including the defacement of property with graffiti. Automobile vandalism and theft from vehicles left in park-and-ride lots also occasionally occurs. Finally, more serious crimes, such as robbery and assault, are rarely committed at such facilities. This effect is considered adverse; however, implementation of the following mitigation measures would minimize this effect.

Mitigation Measure SS-4a: Implement Safety and Security Measures to Deter Crime
VTA shall solicit public participation regarding station design during the final design phase to address safety and security concerns. Design features will include adequate lighting, minimal landscaping in outlying or secluded areas, and the avoidance of poorly lit, visually obscured public waiting areas. VTA will design and operate the Light Rail Alternative in accordance with applicable CPUC regulations to minimize the frequency and severity of criminal activities.

Mitigation Measure SS-4b: Use Lighting, Cameras, and Security Patrols to Enhance Safety
VTA will design and locate station platforms so they are visible from adjacent roadways. All platforms and park-and-ride lots will be lighted during the evening and at night to enhance security. Close-circuit television (CCTV) cameras may be employed at specific locations to enhance security. VTA will extend coverage provided by its Protective Services unit to any new light rail transit operations. The additional police protection service needs associated with new light rail service will be supported by the Santa Clara County Sheriff's Department and SJPD. VTA security personnel will patrol all facilities on a regular basis to maintain passenger security.

Mitigation Measure SS-4c: Define Fire and Life Safety Procedures and Develop Evacuation Plans
VTA will work with the local fire and police departments during preliminary engineering and final design of the Light Rail Alternative to ensure that fire and life safety issues are adequately addressed. VTA will also coordinate development of evacuation plans for the tunnel and aerial options of the Light Rail Alternative, if selected, to ensure the safety of light rail patrons and operators.

Proposed Options

As described in Chapter 3.0, *Alternatives Considered*, the Light Rail Alternative includes station, segment, park-and-ride, and light rail vehicle storage location options. The station options include at-grade, aerial, and depressed open-air station designs. Several platform configurations are also being explored including side platforms, single center platforms, offset platforms, and a platform on the west side of the expressway. With the exception of the Eastridge Transit Center segment and the side-running option between Eastridge and Nieman Boulevard, the light rail alignment would remain within the median at-grade, on an aerial structure above the corridor, or in a tunnel. These options could adversely affect safety and security. The effects on safety and security discussed above for the Light Rail Alternative would be similar for the alignment and or station design options.

Section 4.16
Socioeconomics

4.16.1 Introduction

This section describes the environmental setting and effects of the alternatives analyzed in this EIR with regard to socioeconomics. Specifically, this section discusses existing demographic conditions within the Capitol Expressway Corridor, and describes applicable regulations pertaining to socioeconomics. The assessment of substantial adverse effects and mitigation measures of the alternatives related to socioeconomics is also described.

4.16.2 Existing Conditions

Environmental Setting

Neighborhoods and Planning Areas

The study area as defined in this section includes the census tracts located adjacent to the Capitol Expressway Corridor (Figure 4.16-1). There are a large number of residential areas within the corridor. The Capitol Expressway Corridor is located adjacent to 29 of the neighborhoods indicated on the City's Neighborhood Boundaries map.[1] These neighborhoods are shown on Figure 4.16-2.

Demographic Characteristics

2000 U.S. Census data are used to describe the existing demographic characteristics of the study area (2000 Census). The City's population

[1] As part of its Neighborhood Revitalization Strategy, the City of San Jose Planning Services Division prepared a Neighborhood Boundaries map to assess and assign neighborhood service need. The boundaries were selected to define neighborhoods where their identities are generally known, or to define neighborhoods based on particular connectors for residents of an area, such as street systems, focal schools, or parks. The neighborhoods indicated may differ from what residents perceive as their "neighborhood." The boundaries and names were not intended to represent real neighborhood social units and they are amenable to change.

projections are used to describe expected growth in the area (City of San Jose, 2003).

Table 4.16-1 lists population, housing, and employment characteristics of the study area and San Jose as a whole. Data for the city are provided to compare the study area to the larger urbanized area of which it is a part. The study area has housing vacancy rates (2%) that are equal to the city as a whole.

The study area and the city as a whole are expected to substantially gain population and employment over the next 20 years. By 2025, it is predicted that the City will have a total population of 1,230,664 people; an increase of 38% from 2000. The study area is expected to grow slower, with an increase of 21% over the same time period. The projected increase in employment is similar in both the City and the study area; the City is expected to increase its employment by 31% by 2025, while study area employment is expected to grow by 29%. (City of San Jose 2003.)

Table 4.16-2 characterizes the study area, individual census tracts, and city as a whole in terms of transit dependency. Transit dependency is characterized by

- the population unlikely to drive (those under 18 and over 65 years of age),
- the number of workers using public transportation, and
- the number of persons below the poverty line.

People under the age of 18 and over 65 are unlikely to drive their own vehicles and are therefore more likely to be transit dependent. The percentages of people under 18 and over 65 are similar in the study area (29% and 7%, respectively) and the city (26% and 8%, respectively), although the study area does have a slightly higher percentage of persons under 18 and a slightly lower percentage of persons over 65. Most of the individual Census tracts exhibit roughly the same percentages. (Census 2000.)

The study area and city have the same percentage of workers that use public transportation (4%). The individual census tracts have varying percentages of workers that use public transportation, varying from 1–9%. (Census 2000.)

Incomes below the poverty line is also indicative of transit dependency. The city has a slightly lower proportion of persons living below the poverty line (9%) than the study area (10%). For individual census tracts, the percentage of people with incomes below the poverty line varies from 4–17%. Overall, study area residents are as likely to be transit dependent as residents of the city as a whole. (Census 2000.)

Table 4.16-1. Population, Housing, and Employment Characteristics

Location/Census Tract	Population	Employment	Housing							
			Units	Percent Occupancy	Percent Vacancy	Percent Single-Family	Percent Multifamily	Percent Other	Percent Owner-Occupied	Percent Renter-Occupied
City of San Jose	894,943	427,984	281,841	98.1	1.9	68.5	29.3	3.9	60.7	37.5
Study Area	147,929	64,902	38,485	98.5	1.5	65.1	26.2	8.7	61.8	38.2
5031.08	6,187	2,782	2,073	97.3	2.7	41.6	58.5	2.6	37.4	59.9
5031.15	2,404	1,115	1,181	92.2	7.8	10.7	6.1	86.4	87.0	5.2
5031.16	3,604	2,138	1,683	07.2	2.8	28.7	26.5	45.0	68.4	28.8
5032.04	7,810	3,284	1,973	98.1	1.9	66.3	32.8	3.86	63.7	34.4
5032.07	4,349	1,925	1,028	99.4	0.6	99.9	0.7	0.0	80.0	19.5
5032.10	4,564	1,877	932	99.7	0.3	98.1	2.3	0.0	69.2	30.5
5032.12	4,224	1,849	961	98.9	1.1	99.3	0.7	0.0	80.7	18.1
5032.13	4,794	1,727	1,232	97.9	2.1	52.3	11.7	37.3	65.3	32.6
5032.17	5,250	1,799	1,047	98.9	1.1	83.2	17.9	0.0	69.5	29.4
5032.18	4,479	1,794	1,109	98.5	1.5	50.8	50.2	0.5	37.2	61.3
5033.04	7,258	2,968	1,728	98.3	1.7	61.1	31.8	8.7	53.7	44.6
5033.05	7,254	3,144	1,479	99.5	0.5	77.4	16.0	7.1	64.8	34.7
5033.06	4,411	1,639	872	99.3	0.7	71.7	0.8	28.0	79.0	20.3
5033.15	7,711	3,717	1,971	98.2	1.8	68.7	22.7	10.2	65.6	32.6
5033.17	7,560	3,456	1,802	99.0	1.0	84.0	2.0	14.9	78.0	21.0
5033.21	4,851	2,447	1,035	99.3	0.7	99.8	0.9	0.0	93.4	5.9
5035.06	6,551	2,113	1,246	98.6	1.4	79.2	21.7	0.5	60.2	38.4
5035.10	6,388	2,604	1,336	98.6	1.4	80.4	20.0	1.0	66.2	32.3
5035.11	3,876	1,592	820	99.8	0.2	98.4	0.7	0.4	81.0	18.8
5037.06	7,354	2,740	2,171	98.8	1.2	20.3	80.8	0.0	22.5	76.3
5039.00	8,080	3,634	2,223	98.2	1.8	78.8	22.6	0.4	58.4	39.8
5040.01	6,026	2,491	1,443	99.0	1.0	74.4	26.7	0.0	58.3	40.7
5040.02	5,560	2,380	1,074	99.2	0.8	79.6	21.2	0.0	63.9	35.3
5120.05	6,871	3,783	2,199	99.1	0.9	93.7	7.2	0.0	78.8	20.4
5120.19	4,796	2,530	1,554	99.3	0.7	74.8	25.9	0.0	60.3	39.0
5120.20	5,717	3,374	2,313	99.1	0.9	28.4	72.6	0.0	21.7	77.4

Note: Employment includes workers over 16 years old.

Sources: U.S. Census Bureau 2000; Myra L. Frank & Associates 2003.

Table 4.16-2. Transit Dependency Characteristics

Location/Census Tract	Persons under 18		Persons over 65		Workers Using Public Transportation		Persons below the Poverty Line	
	Total	Percent	Total	Percent	Total	Percent	Total	Percent
City of San Jose	236,124	26	73,860	8	17,482	4	77,893	9
Study Area	42,598	29	10,815	7	2,703	4	15,306	10
5031.08	1,872	30	414	7	127	5	734	12
5031.15	366	15	616	26	27	2	188	8
5031.16	615	17	428	12	49	2	127	4
5032.04	2,372	30	449	6	254	8	1,338	17
5032.07	1,086	25	300	7	27	1	255	6
5032.10	1,389	30	290	6	82	4	522	12
5032.12	1,186	28	251	6	36	2	275	7
5032.13	1,334	28	314	7	166	10	709	15
5032.17	1,924	37	201	4	115	6	718	14
5032.18	1,416	32	236	5	169	9	329	7
5033.04	2,249	31	620	9	274	9	982	14
5033.05	2,153	30	559	8	135	4	718	10
5033.06	1,256	28	311	7	66	4	546	13
5033.15	2,194	28	426	6	47	1	592	8
5033.17	2,290	30	423	6	47	1	456	6
5033.21	1,363	28	396	8	42	2	171	4
5035.06	2,211	34	424	6	109	5	945	15
5035.10	2,023	32	415	6	95	4	980	15
5035.11	1,137	29	290	7	35	2	190	5
5037.06	1,990	27	1033	14	178	6	1,068	15
5039.00	2,323	29	802	10	128	4	1,001	12
5040.01	1,904	32	365	6	187	8	630	11
5040.02	1,722	31	371	7	32	1	615	11
5120.05	1,819	26	388	5	128	3	337	5
5120.19	1,236	26	278	6	56	2	360	8
5120.20	1,168	20	215	4	92	3	520	9

Sources: U.S. Census Bureau 2000; Myra L. Frank & Associates 2003.

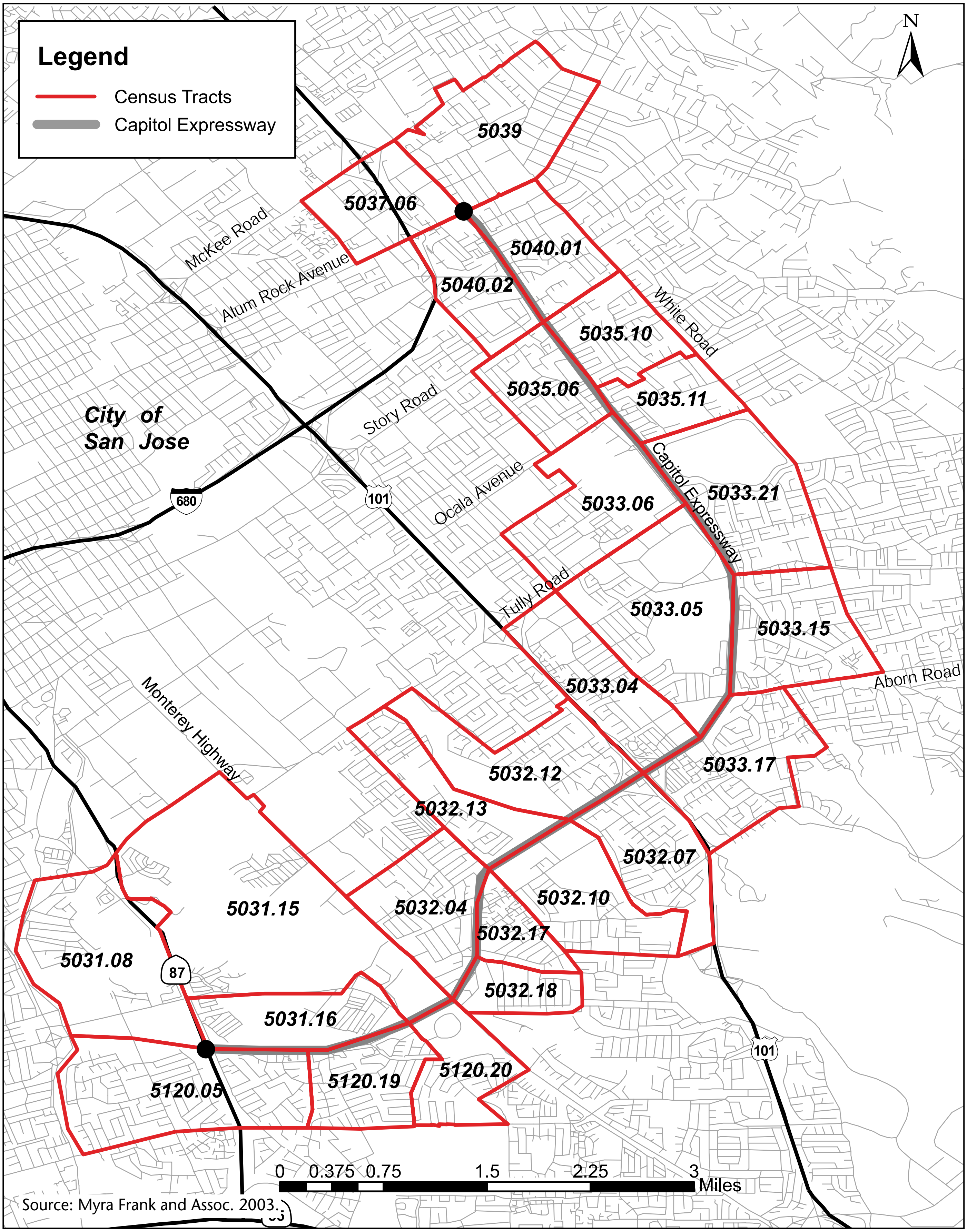

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Figure 4.16-1
Census Tracts along the Capitol Expressway Corridor

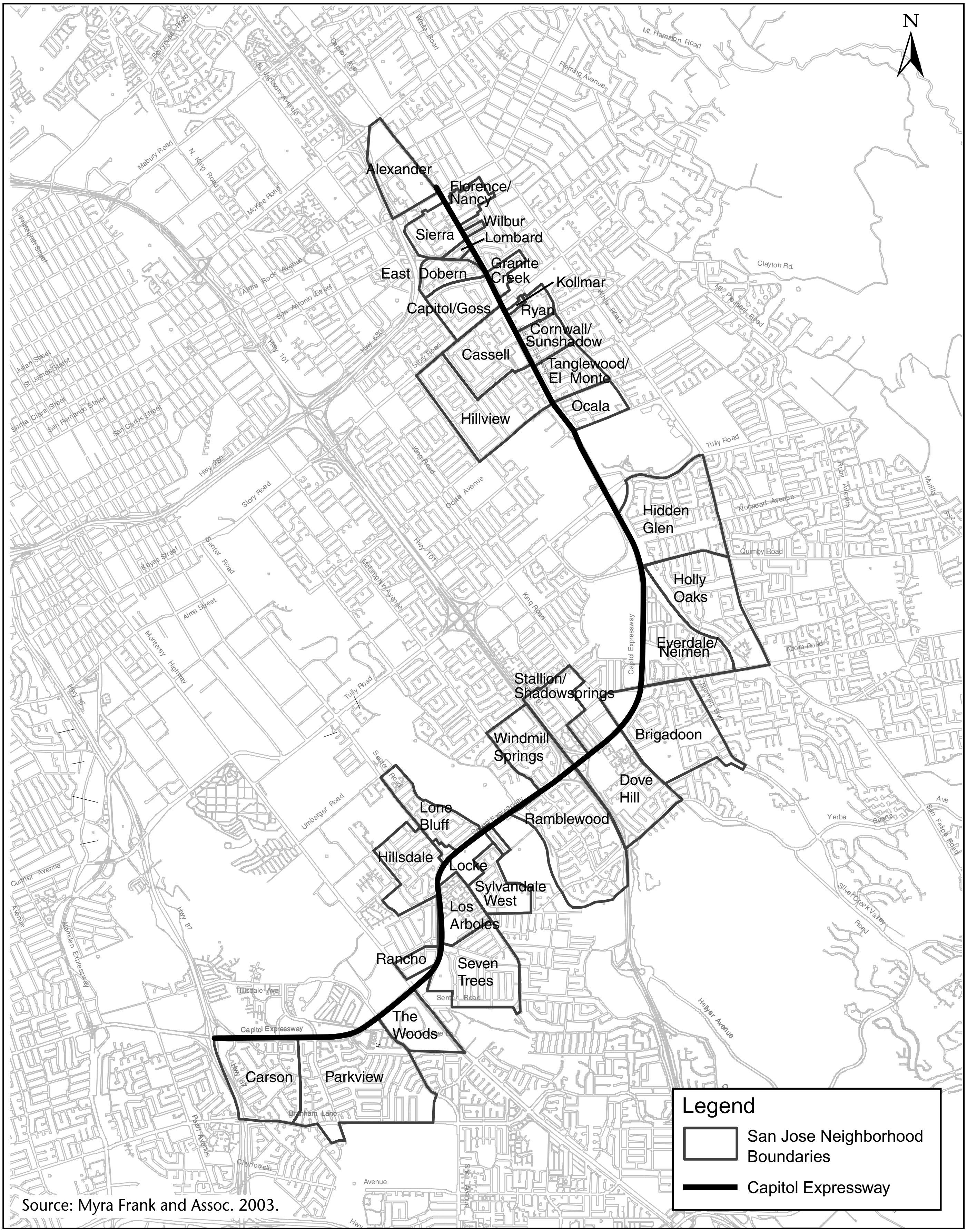

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Figure 4.16-2
Neighborhood Boundaries Map

Regulatory Setting

Federal

The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended mandates, that certain relocation services and payments be made available to eligible residents, businesses, and nonprofit organizations displaced by construction and operation of transit-related projects. The act establishes uniform and equitable procedures for land acquisition, and provides for uniform and equitable treatment of persons displaced from their homes, businesses, or farms by federal and federally assisted programs.

State

The California Government Code requires that relocation assistance be provided to any person, business, or farm operation displaced because of the acquisition of real property by a public entity for public use (Chapter 16, Section 7260 et seq.). In addition, comparable replacement properties must be available or provided for each displaced person within a reasonable period of time prior to displacement.

Local

The *San Jose 2020 General Plan* (City of San Jose 1994) includes the following housing policy goals:

- Increase the supply of affordable housing, preserve the housing stock, and reduce the cost of developing affordable housing.
- Utilize available resources to address priority needs for housing.

The general plan also contains the following policies that are relevant to the proposed alternatives.

- Higher residential densities should be distributed throughout the community. Locations near commercial and financial centers, employment centers, the light rail transit stations and along bus transit routes are preferable for higher density housing.
- New commercial development should be located near existing centers of employment or population or in close proximity to transit facilities.
- The City should encourage the upgrading, beautifying, and revitalization of existing strip commercial areas and shopping centers.
- Create more job opportunities for existing residents, particularly those who suffer from chronic unemployment, to improve the balance between jobs and resident workers.

Santa Clara Valley Transportation Authority

VTA has established a relocation policy based on the Uniform Relocation Assistance and Real Property Acquisition Policies Act. All properties that are acquired as a result of a VTA project will be appraised and VTA will pay fair market price for the property and title fees associated with the closing of the sale. If partial acquisition is required, VTA will pay for that portion of the property as well as any loss in value to the remaining property.

Occupants who are displaced from their businesses or residences as a result of a VTA project will receive at least 90 days written notice of the date by which they are required to move. Relocation advisory services will be provided by VTA. Replacement housing payments are determined by length of occupancy at the residence being acquired. Replacement housing must be decent, safe, and sanitary, meeting all of the minimum federal regulations and applicable housing and occupancy codes. Relocated business owners may also be entitled to payments for business reestablishment costs and moving costs.

4.16.3 Environmental Consequences and Mitigation Measures

Approach and Methodology

The evaluation of adverse effects on socioeconomics with respect to the proposed alternatives was based on a qualitative assessment that includes an evaluation of socioeconomic compatibility and consistency of the proposed alternatives with applicable plans, programs, and policies pertaining to demographics in the Capitol Expressway Corridor. Potential displacements resulting from implementation of the proposed alternatives were estimated based on existing right-of-way drawings prepared by Korve Engineering (2002b).

Thresholds of Significance

Based on standards of significance used by VTA and professional practice, the proposed alternatives may result in adverse effects related to socioeconomics if they would:

- disrupt or divide the physical arrangement of an established community such that the social interaction within the community is severely hampered;
- substantially affect the population, household, or community characteristics of the study area in a negative way, or impede or detract from efforts to economically revitalize the study area;

- induce substantial growth in an area either directly (e.g., by proposing new homes or buildings) or indirectly (e.g., through extension of roads or infrastructure) not in accordance with existing community or city plans;
- displace existing businesses or housing, especially affordable housing;
- create a demand for additional housing, that cannot be accommodated by existing housing stock; or
- conflict with applicable regional plans and policies.

Consistency with applicable regional plans and policies is discussed in detail in Section 4.13, *Land Use*. As such, there is no corresponding discussion in this section.

Environmental Consequences and Mitigation Measures of the No-Project Alternative

This analysis considers the effects of the No-Project Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations,* of this document.

SOC-1: Disruption or Division of the Physical Arrangement of an Established Community Such That Social Interaction within the Community Is Severely Hampered

As described in Chapter 3, the No-Project Alternative would keep in place the existing transit network and would not include the HOV lanes on Capitol Expressway. There would be no construction of new facilities or provision of additional services. Therefore, there would be no adverse effects resulting from the physical division of an established community under this alternative.

Mitigation: No mitigation is required.

SOC-2: Detraction from Efforts to Economically Revitalize the Study Area

The Capitol Expressway Corridor is characterized by few employment centers and a concentration of low-income residents. As described above, implementation of the No-Project Alternative would not result in large-scale construction of any transit structures or other facilities. In the *San Jose 2020 General Plan,* the Capitol Avenue/Expressway corridor has been designated an "Intensification Corridor," in which higher residential densities, mixed uses, and nonresidential uses would be centered along an existing or planned light rail line and/or major bus routes. Further, the general plan notes that Intensification Corridors are key to achieving general-plan objectives, including vigorous economic growth. With no transportation improvements in the corridor, the City's objective would not be obtained. Therefore, the No-Project Alternative would not be consistent with the *San Jose 2020 General Plan* and could impede efforts to economically revitalize the corridor. This would be considered a substantially adverse effect for which there is no feasible mitigation.

Mitigation: There is no feasible mitigation for this effect.

SOC-3: Direct or Indirect Inducement of Substantial Growth in the Study Area That Is Not in Accordance with Existing Community or City Plans

Implementation of the No-Project Alternative does not include elements that would induce substantial population growth beyond planned growth levels. The alternative would serve existing populations and forecasted population levels reflected in the *San Jose 2020 General Plan*. In the general plan, the Capitol Avenue/Expressway corridor has been designated as an "Intensification Corridor," where higher residential densities, mixed uses, and nonresidential uses would be centered along an existing or planned light rail line. Planned growth is therefore accommodated in the City's plans, and there would be no inducement of any unplanned growth along the corridor. There would be no adverse effect.

Mitigation: No mitigation is required.

SOC-4: Displacement of Existing Businesses or Housing, Especially Affordable Housing

Implementation of the No-Project Alternative would not result in large-scale construction of any transit structures or other facilities. Therefore, it would not result in the displacement of existing businesses or housing. There would be no adverse effect.

Mitigation: No mitigation is required.

SOC-5: Creation of Demand for Additional Housing That Cannot Be Accommodated by Existing Housing Stock

Implementation of the No-Project Alternative would not result in large-scale construction of any transit structures or other facilities, or provision of substantial improvements in transit services. Therefore, it would not create demand for additional housing in the study area beyond planned growth levels. There would be no adverse effect.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Baseline Alternative

Anticipated adverse effects associated with the projects included in the approved 1996 Measure B Improvement Program are independent of the proposed alternatives and are or will be reviewed in their respective environmental compliance documents. Additionally, the potential cumulative effects of these projects are considered in Chapter 5, *Other CEQA Considerations*, of this document. This analysis considers the effects of the bus service improvements that are included in the Baseline Alternative as outlined in Chapter 3, *Alternatives Considered*.

SOC-7: Disruption or Division of the Physical Arrangement of an Established Community Such That Social Interaction within the Community is Severely Hampered

Under the Baseline Alternative, there would be bus service improvements consisting of service frequency upgrades; a new route that would provide continuous, limited-stop service along Capitol Expressway; and enhanced limited-stop service along various routes throughout the bus transit network. These improvements would operate using the service structures, route network, and bus stop locations currently in place and would not require the construction of any structures. Therefore, there would be no adverse effect related to physical division of any established communities under this alternative.

Mitigation: No mitigation is required.

SOC-8: Detractions of Efforts to Economically Revitalize the Study Area

Under the Baseline Alternative, bus service improvements would include partial or full overlap of existing routes and the use of the existing service structures and bus stop locations, and would not involve the construction of any new infrastructure or streetscape improvements. The proposed transit improvements could add, to some degree, to efforts to economically revitalize the study area. However, implementation of the Baseline Alternative would not be consistent with the *San Jose 2020 General Plan* and the goal of achieving vigorous economic growth. This would impede efforts to economically revitalize the corridor and would be considered a substantially adverse effect for which there is no feasible mitigation.

Mitigation: There is no feasible mitigation for this effect.

SOC-9: Direct or Indirect Inducement of Substantial Growth in the Study Area That Is Not In Accordance with Existing Community or City Plans

Implementation of the Baseline Alternative would not implement any infrastructure improvements in the Capitol Expressway Corridor. The Baseline Alternative would likely result in a modest increase in transit use. However, the amount of incremental additional transit service would not likely be sufficient to induce substantial growth along the corridor that is not in accordance with existing plans. There would be no adverse effect.

Mitigation: No mitigation is required.

SOC-10: Displacement of Existing Businesses or Housing, Especially Affordable Housing

Implementation of the Baseline Alternative would not result in large-scale construction of any transit structures or other facilities. Therefore, it would not result in the displacement of existing businesses or housing, including affordable housing. There would be no adverse effect.

Mitigation: No mitigation is required.

SOC-11: Creation of Demand for Additional Housing That Cannot Be Accommodated by Existing Housing Stock

Implementation of the Baseline Alternative would not implement any infrastructure improvements in the Capitol Expressway Corridor. The Baseline Alternative would likely result in a modest increase in transit use. However, the amount of incremental additional transit service would not likely be sufficient to induce demand for additional housing in the study area beyond planned growth levels. There would be no adverse effect.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Light Rail Alternative

This analysis considers the effects of the Light Rail Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

SOC-13: Disruption or Division of the Physical Arrangement of an Established Community such that Social Interaction within the Community is Severely Hampered

The Light Rail Alternative would be placed within the median of an existing regional transportation facility, where well-established communities have developed with this physical feature in place. Because the alignment would occupy the median and would operate in exclusive and semi-exclusive rights-of-way, it would not divide any established communities. Therefore, there would be no adverse effect related to division of an established community under this alternative.

Mitigation: No mitigation is required.

SOC-14: Detraction from Efforts to Economically Revitalize the Study Area

As noted previously, in the *San Jose 2020 General Plan*, the Capitol Avenue/Expressway corridor has been designated as an "Intensification Corridor," where higher residential densities, mixed uses, and nonresidential uses would be centered along an existing or planned light rail line. Further, the general plan notes that Intensification Corridors are key to achieving general-plan objectives, including vigorous economic growth. The implementation of the Light Rail Alternative would result in minimal new employment opportunities within the corridor. Although project-related employment would constitute a small percentage of the city's employment growth, the new employment opportunities would be consistent with *San Jose 2020 General Plan* policies to create more job opportunities for existing residents to improve the balance between jobs and resident workers. As a result, the implementation of the Light Rail Alternative would likely help to renovate the corridor and would not detract from efforts to economically revitalize the study area. This would be a beneficial effect. There would be no adverse effect.

Mitigation: No mitigation is required.

SOC-15: Direct or Indirect Inducement of Substantial Growth in the Study Area That Is Not in Accordance with Existing Community or City Plans

The Light Rail Alternative would improve public transit service along the Capitol Expressway Corridor. Implementation of this alternative is also not anticipated to result in an unanticipated gain or loss of population in the study area; therefore, there would be no direct or indirect inducement of unplanned growth. (Chapter 5 discusses the potential for growth inducement associated with the Light Rail Alternative in detail.) There would be no adverse effect.

Mitigation: No mitigation is required.

SOC-16: Displacement of Existing Businesses or Housing, Especially Affordable Housing

Although most of the proposed light rail alignment would be placed within the median of an existing regional transportation facility, development of this alternative would require the full acquisition of seven residential properties and three commercial properties located adjacent to the Capitol Expressway. An additional two commercial properties may be required depending on the selected location of the park-and-ride at Monterey Highway Station. The displacements associated with these options are discussed more fully below. (See Table 4.16-3 for a summary of right-of-way requirements by option and Table 4.16-4 for a complete listing of potential acquisitions.)

Two types of potential acquisitions would occur in order to implement the Light Rail Alternative: full parcel acquisitions and partial acquisitions. Full parcel acquisitions would occur for parcels on which there would be physical encroachment on existing residential or business structures, or removal of a substantial portion of the available customer or employee parking such that business operations would be substantially affected. In addition, full acquisitions would occur when most of a vacant parcel would be acquired, leaving the remaining property uneconomical. Acquisitions involving a substantial portion of a property may result in the displacement of businesses or residences. Partial acquisitions would not result in displacements, however, such as where only part of a site is needed and the building occupying the site would not be affected, or where the remaining area of the parcel is sufficient for the residence or business to continue. A discussion of acquisitions for each alignment segment, station, park-and-ride facility and substation is provided below.

Alignment

Alum Rock Avenue to Story Road

Under the Light Rail Alternative, four residential properties near the Alum Rock Station (one at Lombard Avenue and three just south of Highwood Drive) would

Table 4.16-3. Summary of Right-of-Way Requirements for the Light Rail Alternative

Alignment Segment	Full Residential Acquisition	Partial Residential Acquisition	Full Commercial Acquisition	Partial Commercial Acquisition	Total Full Acquisitions	Total Partial Acquisitions	Total Acquisitions	Approx.Size (Sq. Ft.)
Alum Rock Avenue to Story Road								
Capitol Avenue/Capitol Expressway and Story Road Aerial Alignment	4	4	2	11	6	15	21	61,205
Capitol Avenue/Capitol Expressway Tunnel/Story Road Aerial Option	2	4	2	11	4	15	19	51,590
Capitol Avenue/Capitol Expressway/Story Road Tunnel Option	3	6	1	6	4	12	16	49,280
Story Road to Eastridge Transit Center								
North of Eastridge Transit Center Tunnel with At-Grade Station Alignment (includes Ocala Avenue Double Southbound Left Turn Station)	3	15	0	5	3	20	23	86,870
North of Eastridge Transit Center Tunnel with At-Grade Station Option (includes Between Ocala and Cunningham Station Option)	1	14	0	5	1	19	20	45,640
North of Eastridge Transit Center Tunnel with At-Grade Station Option (includes Cunningham Avenue Station Option)	4	24	0	7	4	31	35	62,925
North of Eastridge Transit Center Aerial Crossing with Aerial Station Option (includes Ocala Avenue Double Southbound Left Turn Station)	3	15	0	9	3	24	27	98,045

Alignment Segment	Full Residential Acquisition	Partial Residential Acquisition	Full Commercial Acquisition	Partial Commercial Acquisition	Total Full Acquisitions	Total Partial Acquisitions	Total Acquisitions	Approx.Size (Sq. Ft.)
Eastridge Transit Center to Aborn Road								
South of Eastridge Transit Center Tunnel Alignment (includes Nieman Median Station)	0	11	0	9	0	20	20	91,270
South of Eastridge Transit Center Aerial Crossing Option (includes Nieman Median Station)	0	11	0	9	0	20	20	46,500
South of Eastridge Transit Center Side-Running At-Grade/Tunnel at Nieman Boulevard Option (includes Nieman West Side Station)	0	2	0	10	0	12	12	147,401
South of Eastridge Transit Center Side-Running/Trench and Tunnel Option (includes Nieman West Side Station)	0	2	0	10	0	12	12	147,401
South of Eastridge Transit Center Side-Running Depressed/At-Grade/Aerial Option (includes Nieman West Side Station)	0	2	0	9	0	11	11	147,910
Aborn Road to Silver Creek Road								
At-grade Median Crossing at Aborn Road Alignment	0	9	0	11	0	20	20	12,865
Aerial Crossing at Aborn Road Option	0	9	0	8	0	17	17	8,435
Aerial Crossing at Aborn Road Option (Only with Side-Running Options)	0	9	0	5	0	14	14	7,175

Alignment Segment	Full Residential Acquisition	Partial Residential Acquisition	Full Commercial Acquisition	Partial Commercial Acquisition	Total Full Acquisitions	Total Partial Acquisitions	Total Acquisitions	Approx.Size (Sq. Ft.)
Silver Creek Road to Coyote Creek								
At-Grade Crossing of Capitol Expressway Overpass of U.S. Highway 101 Alignment (includes McLaughlin At-Grade Station)	0	15	0	8	0	23	23	51,210
Aerial Crossing of Highway 101 Option (includes McLaughlin Aerial Station)	0	20	0	9	0	29	29	52,341
Coyote Creek to Highway 87								
At-grade, median-running between Coyote Creek and State Route 87 Alignment (with West Side of Highway 87 Station Option)	0	17	0	27	0	44	44	59,405
At-grade, median-running between Coyote Creek and State Route 87 Alignment (with Under Highway 87 Station Option)	0	9	0	22	0	31	31	56,850
Ocala Avenue Park-and-Ride								
Ocala Avenue Station Park-and-Ride	0	0	0	2	0	2	2	32,900
Eastridge Park-and-Ride								
Eastridge Transit Center Park-and-Ride	0	0	2	2	2	2	4	188,400
Monterey Highway Park-and-Ride								
Monterey Highway Cloverleaf Option				1	0	1	1	107,000

Alignment Segment	Full Residential Acquisition	Partial Residential Acquisition	Full Commercial Acquisition	Partial Commercial Acquisition	Total Full Acquisitions	Total Partial Acquisitions	Total Acquisitions	Approx.Size (Sq. Ft.)
Northwest of Monterey Highway Station Option	0	0	0	1	0	1	1	70,000
Northeast of Monterey Highway Station Option	0	0	2	0	2	0	2	72,860
Vehicle Storage Facilities								
Southwest corner of Capitol Expressway and Ocala Avenue Option	0	0	2	1	2	1	3	81,240
North Park-and-Ride at Capitol Expressway and SR 87 Option	0	0	0	0	0	0	0	None
Southwest Corner of Capitol Expressway and Quimby Road Option	0	0	1	1	1	1	2	97,240
Substations								
Southwest corner of Capitol Expressway and Ocala Avenue	0	0	0	1	0	1	1	1,500
North of Quimby Road, on the west side of Capitol Expressway	0	0	0	1	0	1	1	1,300
Southwest corner of Capitol Expressway and Silver Creek Road	0	0	0	1	0	1	1	1,500
North of Senter Road on the west side of Capitol Expressway	0	0	0	0	0	0	0	0
Monterey Highway ramps	0	0	0	0	0	0	0	0

Table 4.16-3. Continued

Alignment Segment	Full Residential Acquisition	Partial Residential Acquisition	Full Commercial Acquisition	Partial Commercial Acquisition	Total Full Acquisitions	Total Partial Acquisitions	Total Acquisitions	Approx.Size (Sq. Ft.)
Between Vistapark and Bluefield Drive on the south side of Capitol Expressway	0	1	0	0	0	1	1	6,420
South of Capitol Expressway and west of SR 87	0	0	0	0	0	0	0	0

Source: Santa Clara Valley Transportation Authority and Korve Engineering 2003.

Segment	APN	Address	Use	Impact	Size (Sq. Ft.)
Alum Rock Avenue to Story Road					
	Capitol Avenue/Capitol Expressway and Story Road Aerial Option				
	484-44-057	—	Commercial	Partial	940
	484-45-001	2693 Lombard Ave, San Jose	Residential	Full	6400
	484-45-060	2686 Lombard Ave, San Jose	Residential	Partial	575
	484-45-061	353 S. Capitol Ave, San Jose	Residential	Partial	425
	484-45-062	455 S. Capitol Ave, San Jose	Residential	Partial	240
	484-45-116	459-461 S. Capitol Ave, San Jose	Commercial	Partial	60
	484-29-009	620 S. Capitol Ave, Alum Rock	Residential	Full	5400
	484-29-008	640 S. Capitol Ave, Alum Rock	Residential	Full	5400
	484-29-007	660 S. Capitol Ave, Alum Rock	Residential	Full	5040
	484-33-111	—	Residential	Partial	355
	484-33-043	888 S. Capitol Ave, San Jose	Commercial	Partial	1365
	484-33-112	920 S. Capitol Ave, San Jose	Commercial	Partial	1105
	484-33-037	—	Commercial	Partial	265
	484-33-137	—	Commercial	Partial	660
	484-33-107	2701 Story Rd, San Jose	Commercial	Partial	130
	484-33-108	—	Commercial	Partial	1765
	484-34-131	1091-1093 S. Capitol Ave, San Jose	Commercial	Full	4465
	484-34-019	2695 Story Rd, San Jose	Commercial	Partial	2630
	488-01-041	2710 Story Rd, San Jose	Commercial	Full	20375
	488-01-002	1148 S. Capitol Ave, San Jose	Commercial	Partial	2455
	486-43-001	2690 Story Rd, San Jose	Commercial	Partial	1155
	Capitol Avenue/Capitol Expressway Tunnel/Story Road Aerial Option				
	484-44-057	—	Commercial	Partial	1300
	484-45-001	2693 Lombard Ave, San Jose	Residential	Full	6400
	484-45-060	2686 Lombard Ave, San Jose	Residential	Partial	640
	484-45-061	353 S. Capitol Ave, San Jose	Residential	Partial	360
	484-45-062	455 S. Capitol Ave, San Jose	Residential	Partial	225
	484-45-116	459-461 S. Capitol Ave, San Jose	Commercial	Partial	900
	484-29-007	660 S. Capitol Ave, Alum Rock	Residential	Full	5040
	484-33-111	—	Residential	Partial	355
	484-33-043	888 S. Capitol Ave, San Jose	Commercial	Partial	1365
	484-33-112	920 S. Capitol Ave, San Jose	Commercial	Partial	1105
	484-33-037	—	Commercial	Partial	265
	484-33-137	—	Commercial	Partial	660

Segment	APN	Address	Use	Impact	Size (Sq. Ft.)
	484-33-107	2701 Story Rd, San Jose	Commercial	Partial	130
	484-33-108	—	Commercial	Partial	1765
	484-34-131	1091-1093 S. Capitol Ave, San Jose	Commercial	Full	4465
	484-34-019	2695 Story Rd, San Jose	Commercial	Partial	2630
	488-01-041	2710 Story Rd, San Jose	Commercial	Full	20375
	488-01-002	1148 S. Capitol Ave, San Jose	Commercial	Partial	2455
	486-43-001	2690 Story Rd, San Jose	Commercial	Partial	1155
	Capitol Avenue/Capitol Expressway/Story Road Tunnel Option				
	484-44-057	—	Commercial	Partial	940
	484-45-001	2693 Lombard Ave, San Jose	Residential	Full	6400
	484-45-060	2686 Lombard Ave, San Jose	Residential	Partial	570
	484-45-061	353 S. Capitol Ave, San Jose	Residential	Partial	420
	484-45-062	455 S. Capitol Ave, San Jose	Residential	Partial	245
	484-45-116	459-461 S. Capitol Ave, San Jose	Commercial	Partial	90
	484-33-107	2701 Story Rd, San Jose	Commercial	Partial	160
	484-33-108	—	Commercial	Partial	1305
	484-34-019	2695 Story Rd, San Jose	Commercial	Partial	460
	488-01-041	2710 Story Rd, San Jose	Commercial	Full	20375
	488-01-002	1148 S. Capitol Ave, San Jose	Commercial	Partial	795
	488-01-004	2710 Kollmar Dr, San Jose	Residential	Partial	960
	488-01-037	2709 Sussex Dr, San Jose	Residential	Partial	20
	488-06-025	1222 S Capitol Av, San Jose	Residential	Full	8700
	488-06-026	1210 S. Capitol Av, San Jose	Residential	Full	7680
	488-06-021	1244 Tudor Ct, San Jose	Residential	Partial	160
Story Road to Eastridge Transit Center					
	North of Eastridge Transit Center Tunnel with At-Grade Station Option (Includes Ocala Avenue Double Southbound Left Turn Station Option)				
	486-42-34	2538 Whitestone Ct, San Jose	Residential	Partial	255
	486-42-33	2530 Whitestone Ct, San Jose	Residential	Partial	155
	486-42-024	2533 Bluestone Ct, San Jose	Residential	Partial	520
	486-42-023	2532 Bluestone Ct, San Jose	Residential	Partial	670
	486-42-022	2526 Bluestone Ct, San Jose	Residential	Partial	170
	486-42-15	2517 Brownstone Ct, San Jose	Residential	Partial	1140
	486-42-014	2518 Brownstone Ct, San Jose	Residential	Full	8170
	486-42-013	2510 Brownstone Ct, San Jose	Residential	Partial	770
	486-42-008	1646 Pinkstone Ct, San Jose	Residential	Partial	2265

Segment	APN	Address	Use	Impact	Size (Sq. Ft.)
	486-42-007	1652 Pinkstone Ct, San Jose	Residential	Full	8355
	486-42-006	1658 Pinkstone Ct, San Jose	Residential	Partial	665
	486-42-003	1682 Silverstone Ct, San Jose	Residential	Partial	1770
	486-42-002	1690 Silverstone Ct, San Jose	Residential	Full	9760
	486-42-001	1698 Silverstone Ct, San Jose	Residential	Partial	75
	488-18-01	1701 S. Capitol Ave, San Jose	Residential	Partial	285
	488-18-41	1923 Evermont Ct, San Jose	Residential	Partial	150
	488-18-42	1917 Evermont Ct, San Jose	Residential	Partial	165
	488-18-43	1911 Evermont Ct, San Jose	Residential	Partial	40
	491-15-003	—	Commercial	Partial	30050
	491-15-004	1994 John Montgomery Dr, San Jose	Commercial	Partial	15000
	491-13-009	—	Public	Partial	3475
	491-02-057	3000 E. Capitol Expwy, San Jose	Commercial	Partial	545
	491-5-20	—	Commercial	Partial	2420
	North of Eastridge Transit Center Tunnel with At-Grade Station Option (includes Between Ocala and Cunningham Station Option)				
	491-02-057	3000 E. Capitol Expwy, San Jose	Commercial	Partial	545
	491-5-20	—	Commercial	Partial	2420
	486-42-15	2517 Brownstone Ct, San Jose	Residential	Partial	65
	486-42-014	2518 Brownstone Ct, San Jose	Residential	Partial	955
	486-42-013	2510 Brownstone Ct, San Jose	Residential	Partial	540
	486-42-008	1646 Pinkstone Ct, San Jose	Residential	Partial	1860
	486-42-007	1652 Pinkstone Ct, San Jose	Residential	Partial	2050
	486-42-006	1658 Pinkstone Ct, San Jose	Residential	Partial	520
	486-42-003	1682 Silverstone Ct, San Jose	Residential	Partial	1455
	486-42-002	1690 Silverstone Ct, San Jose	Residential	Full	9760
	486-42-001	1698 Silverstone Ct, San Jose	Residential	Partial	10
	491-15-003	—	Commercial	Partial	15750
	491-15-004	1994 John Montgomery Dr, San Jose	Commercial	Partial	6040
	491-33-039	1762 Home Gate Dr, San Jose	Residential	Partial	15
	491-33-040	1764 Home Gate Dr, San Jose	Residential	Partial	30
	491-33-041	1766 Home Gate Dr, San Jose	Residential	Partial	45
	491-33-042	1768 Home Gate Dr, San Jose	Residential	Partial	40
	491-33-043	1770 Home Gate Dr, San Jose	Residential	Partial	35
	491-33-044	1772 Home Gate Dr, San Jose	Residential	Partial	20
	491-13-009	—	Commercial	Partial	3485

Segment	APN	Address	Use	Impact	Size (Sq. Ft.)
	North of Eastridge Transit Center Tunnel with At-Grade Station Option (includes Cunningham Avenue Station Option)				
	491-02-057	3000 E. Capitol Expwy, San Jose	Commercial	Partial	545
	491-5-20	—	Commercial	Partial	2420
	486-42-15	2517 Brownstone Ct, San Jose	Residential	Partial	120
	486-42-014	2518 Brownstone Ct, San Jose	Residential	Partial	955
	486-42-013	2510 Brownstone Ct, San Jose	Residential	Partial	550
	486-42-008	1646 Pinkstone Ct, San Jose	Residential	Partial	1860
	486-42-007	1652 Pinkstone Ct, San Jose	Residential	Full	8375
	486-42-006	1658 Pinkstone Ct, San Jose	Residential	Partial	520
	486-42-003	1682 Silverstone Ct, San Jose	Residential	Partial	1455
	486-42-002	1690 Silverstone Ct, San Jose	Residential	Full	9760
	486-42-001	1698 Silverstone Ct, San Jose	Residential	Partial	15
	491-15-003	—	Commercial	Partial	3665
	491-15-004	1994 John Montgomery Dr, San Jose	Commercial	Partial	1200
	491-33-036	1756 Home Gate Dr, San Jose	Residential	Partial	40
	491-33-037	1758 Home Gate Dr, San Jose	Residential	Partial	125
	491-33-038	1760 Home Gate Dr, San Jose	Residential	Partial	180
	491-33-039	1762 Home Gate Dr, San Jose	Residential	Partial	230
	491-33-040	1764 Home Gate Dr, San Jose	Residential	Partial	275
	491-33-041	1766 Home Gate Dr, San Jose	Residential	Partial	315
	491-33-042	1768 Home Gate Dr, San Jose	Residential	Partial	340
	491-33-043	1770 Home Gate Dr, San Jose	Residential	Partial	340
	491-33-044	1772 Home Gate Dr, San Jose	Residential	Partial	355
	491-33-045	1774 Home Gate Dr, San Jose	Residential	Partial	575
	491-33-046	1776 Home Gate Dr, San Jose	Residential	Full	2940
	491-33-047	1778 Home Gate Dr, San Jose	Residential	Full	2945
	491-33-048	1780 Home Gate Dr, San Jose	Residential	Partial	415
	491-33-049	1782 Home Gate Dr, San Jose	Residential	Partial	400
	491-33-050	1784 Home Gate Dr, San Jose	Residential	Partial	375
	491-33-051	1786 Home Gate Dr, San Jose	Residential	Partial	520
	491-33-052	1788 Home Gate Dr, San Jose	Residential	Partial	305
	491-33-053	1790 Home Gate Dr, San Jose	Residential	Partial	360
	491-33-020	1995 Supreme Dr, San Jose	Residential	Partial	395
	491-13-009	—	Public	Partial	13325
	491-13-019	—	Public	Partial	4095

Segment	APN	Address	Use	Impact	Size (Sq. Ft.)
	491-13-022	—	Commercial	Partial	2635
	North of Eastridge Transit Center Aerial Crossing with Aerial Station Option (includes Ocala Avenue Double Southbound Left Turn Station)				
	491-2-66	—	Public	Partial	2705
	491-48-3	—	Public	Partial	5405
	486-42-34	2538 Whitestone Ct, San Jose	Residential	Partial	255
	486-42-33	2530 Whitestone Ct, San Jose	Residential	Partial	155
	486-42-024	2533 Bluestone Ct, San Jose	Residential	Partial	520
	486-42-023	2532 Bluestone Ct, San Jose	Residential	Partial	670
	486-42-022	2526 Bluestone Ct, San Jose	Residential	Partial	170
	486-42-15	2517 Brownstone Ct, San Jose	Residential	Partial	1140
	486-42-014	2518 Brownstone Ct, San Jose	Residential	Full	8170
	486-42-013	2510 Brownstone Ct, San Jose	Residential	Partial	770
	486-42-008	1646 Pinkstone Ct, San Jose	Residential	Partial	2265
	486-42-007	1652 Pinkstone Ct, San Jose	Residential	Full	8355
	486-42-006	1658 Pinkstone Ct, San Jose	Residential	Partial	665
	486-42-003	1682 Silverstone Ct, San Jose	Residential	Partial	1770
	486-42-002	1690 Silverstone Ct, San Jose	Residential	Full	9760
	486-42-001	1698 Silverstone Ct, San Jose	Residential	Partial	75
	488-18-01	1701 S. Capitol Ave, San Jose	Residential	Partial	285
	488-18-41	1923 Evermont Ct, San Jose	Residential	Partial	150
	488-18-42	1917 Evermont Ct, San Jose	Residential	Partial	165
	488-18-43	1911 Evermont Ct, San Jose	Residential	Partial	40
	491-15-003	—	Commercial	Partial	30050
	491-15-004	1994 John Montgomery Dr, San Jose	Commercial	Partial	15000
	491-13-009	—	Public	Partial	3475
	491-01-016	1631 Capitol Expressway	Commercial	Partial	720
	491-13-19	—	Public	Partial	1610
	491-2-57	3000 E. Capitol Expwy, San Jose	Commercial	Partial	530
	491-5-20	—	Commercial	Partial	3170
Eastridge Transit Center to Aborn Road					
	South of Eastridge Transit Center Tunnel Option (Includes Nieman West Side Station)				
	491-48-005	2365 Quimby Rd, San Jose	Commercial	Partial	4815
	491-48-004	—	Commercial	Partial	910
	673-16-16	2780 E. Capitol Expwy, San Jose	Residential	Partial	10880
	670-41-xxx	2218 Qumby Rd, San Jose	Common Area	Partial	21,280

Segment	APN	Address	Use	Impact	Size (Sq. Ft.)
	670-41-001	2260-2272 Quimby Rd, San Jose	Commercial	Partial	12,120
	670-41-007	2380 Quimby Rd, San Jose	Commercial	Partial	20,740
	670-29-20	2218 Quimby Rd, San Jose	Commercial	Partial	9810
	670-30-21	2212 Quimby Rd, San Jose	Residential	Partial	6100
	LOT 37	Pacific Gas and Electric Easement	Commercial	Partial	1040
	673-15-113	2219 Pettigrew Dr, San Jose	Residential	Partial	110
	673-15-114	2215 Pettigrew Dr, San Jose	Residential	Partial	135
	673-15-115	2211 Pettigrew Dr, San Jose	Residential	Partial	95
	673-15-116	2199 Pettigrew Dr, San Jose	Residential	Partial	90
	673-15-117	2195 Pettigrew Dr, San Jose	Residential	Partial	120
	673-15-118	2191 Pettigrew Dr, San Jose	Residential	Partial	85
	673-15-119	2179 Pettigrew Dr, San Jose	Residential	Partial	105
	673-15-120	2175 Pettigrew Dr, San Jose	Residential	Partial	525
	673-15-121	2909 Neiman Bl, San Jose	Residential	Partial	1505
	670-30-11	2910 Aborn Rd, San Jose	Commercial	Partial	335
	673-26	Townhome common area	Commercial	Partial	470
	South of Eastridge Transit Center Aerial Crossing Option (Includes Nieman Median Station)				
	491-48-5	2365 Quimby Rd, San Jose	Commercial	Partial	790
	491-48-4	—	Commercial	Partial	1275
	673-16-21	—	Public	Partial	1695
	673-16-16	2780 E. Capitol Expwy, San Jose	Residential	Partial	14285
	670-41-001	2260-2272 Quimby Rd, San Jose	Commercial	Partial	5710
	670-41-007	2380 Quimby Rd, San Jose	Commercial	Partial	2210
	670-29-20	2218 Quimby Rd, San Jose	Commercial	Partial	9810
	670-30-21	2212 Quimby Rd, San Jose	Residential	Partial	6100
	LOT 37	Pacific Gas and Electric Easement	Commercial	Partial	1040
	673-15-113	2219 Pettigrew Dr, San Jose	Residential	Partial	110
	673-15-114	2215 Pettigrew Dr, San Jose	Residential	Partial	135
	673-15-115	2211 Pettigrew Dr, San Jose	Residential	Partial	95
	673-15-116	2199 Pettigrew Dr, San Jose	Residential	Partial	90
	673-15-117	2195 Pettigrew Dr, San Jose	Residential	Partial	120
	673-15-118	2191 Pettigrew Dr, San Jose	Residential	Partial	85
	673-15-119	2179 Pettigrew Dr, San Jose	Residential	Partial	105
	673-15-120	2175 Pettigrew Dr, San Jose	Residential	Partial	525
	673-15-121	2909 Neiman Bl, San Jose	Residential	Partial	1505
	670-30-11	2910 Aborn Rd, San Jose	Commercial	Partial	335

Segment	APN	Address	Use	Impact	Size (Sq. Ft.)
	673-26	Townhome common area	Commercial	Partial	470
	South of Eastridge Transit Center Side-Running At-Grade/Tunnel at Nieman Boulevard Option (Includes Nieman West Side Station)				
	491-48-5	2365 Quimby Rd, San Jose	Commercial	Partial	21045
	491-48-4	—	Commercial	Partial	5425
	673-16-21	—	Public	Partial	350
	673-16-16	2780 E. Capitol Expwy, San Jose	Residential	Partial	6720
	670-41-xxx	2260 –2273 Quimby Rd, San Jose	Common Area	Partial	21,280
	670-41-001	2260-2272 Quimby Rd, San Jose	Commercial	Partial	12,120
	670-41-007	2380 Quimby Rd, San Jose	Commercial	Partial	20,740
	670-29-20	2218 Quimby Rd, San Jose	Commercial	Partial	56985
	670-30-21	2212 Quimby Rd, San Jose	Residential	Partial	1490
	673-15-121	2909 Neiman Bl, San Jose	Residential	Partial	451
	670-30-11	2910 Aborn Rd, San Jose	Commercial	Partial	335
	673-26	Townhome common area	Commercial	Partial	470
	South of Eastridge Center Side-Running/Cut and Cover Tunnel Option (Includes Nieman West Side Station)				
	491-48-5	2365 Quimby Rd, San Jose	Commercial	Partial	21045
	491-48-4	—	Commercial	Partial	5425
	673-16-21	—	Public	Partial	350
	673-16-16	2780 E. Capitol Expwy, San Jose	Residential	Partial	6720
	670-41-xxx	2260 –2273 Quimby Rd, San Jose	Common Area	Partial	21,280
	670-41-001	2260-2272 Quimby Rd, San Jose	Commercial	Partial	12,120
	670-29-20	2218 Quimby Rd, San Jose	Commercial	Partial	56985
	670-41-007	2380 Quimby Rd, San Jose	Commercial	Partial	20,740
	670-30-21	2212 Quimby Rd, San Jose	Residential	Partial	1490
	673-15-121	2909 Neiman Bl, San Jose	Residential	Partial	451
	670-30-11	2910 Aborn Rd, San Jose	Commercial	Partial	335
	673-26	Townhome common area	Commercial	Partial	470
	South of Eastridge Center Side-Running Depressed/At-Grade/Aerial Option (Includes Nieman West Side Station)				
	491-48-5	2365 Quimby Rd, San Jose	Commercial	Partial	21045
	491-48-4	—	Commercial	Partial	5425
	673-16-21	—	Public	Partial	350
	673-16-16	2780 E. Capitol Expwy, San Jose	Residential	Partial	6720
	670-41-xxx	2260 –2273 Quimby Rd, San Jose	Common Area	Partial	21,280
	670-41-001	2260-2272 Quimby Rd, San Jose	Commercial	Partial	12,120

Segment	APN	Address	Use	Impact	Size (Sq. Ft.)
	670-41-007	2380 Quimby Rd, San Jose	Commercial	Partial	20,740
	670-29-20	2218 Quimby Rd, San Jose	Commercial	Partial	56985
	670-30-21	2212 Quimby Rd, San Jose	Residential	Partial	2445
	673-15-121	2909 Neiman Bl, San Jose	Residential	Partial	450
	673-26	Townhome common area	Commercial	Partial	360
Aborn Road to Silver Creek Road					
	At-grade Median Crossing at Aborn Road Option				
	670-30-10	2920-2926 Aborn Rd, San Jose	Commercial	Partial	180
	670-30-15	2936 Aborn Rd, San Jose	Commercial	Partial	825
	670-30-13	1855 Aborn Rd, San Jose	Commercial	Partial	650
	676-11-94	—	Commercial	Partial	200
	670-15-40	1845 E. Capitol Expwy, San Jose	Commercial	Partial	60
	670-15-39	1825 E. Capitol Expwy, San Jose	Commercial	Partial	2715
	670-15-38	1801 E. Capitol Expwy, San Jose	Commercial	Partial	2070
	670-15-37	1707-1761 E. Capitol Expwy, San Jose	Commercial	Partial	2015
	670-15-36	1787 E. Capitol Expwy, San Jose	Commercial	Partial	975
	670-15-35	1707-1771 E. Capitol Expwy, San Jose	Commercial	Partial	655
	670-15-29	1705-1735 E. Capitol Expwy, San Jose	Commercial	Partial	880
	676-11-59	1819 Bagpipe Wy, San Jose	Residential	Partial	95
	676-07-60	1815 Bagpipe Wy, San Jose	Residential	Partial	165
	676-07-61	1809 Bagpipe Wy, San Jose	Residential	Partial	220
	676-07-62	1805 Bagpipe Wy, San Jose	Residential	Partial	250
	676-07-63	1799 Bagpipe Wy, San Jose	Residential	Partial	260
	676-07-64	1797 Bagpipe Wy, San Jose	Residential	Partial	240
	676-07-65	1791 Bagpipe Wy, San Jose	Residential	Partial	210
	676-07-66	1785 Bagpipe Wy, San Jose	Residential	Partial	145
	676-07-67	1779 Bagpipe Wy, San Jose	Residential	Partial	55
	Aerial Crossing at Aborn Road Option				
	670-30-10	2920-2926 Aborn Rd, San Jose	Commercial	Partial	135
	670-30-15	2936 Aborn Rd, San Jose	Commercial	Partial	270
	670-15-39	1825 E. Capitol Expwy, San Jose	Commercial	Partial	605
	670-15-38	1801 E. Capitol Expwy, San Jose	Commercial	Partial	1260
	670-15-37	1707-1761 E. Capitol Expwy, San Jose	Commercial	Partial	2015

Segment	APN	Address	Use	Impact	Size (Sq. Ft.)
	670-15-36	1787 E. Capitol Expwy, San Jose	Commercial	Partial	975
	670-15-35	1707-1771 E. Capitol Expwy, San Jose	Commercial	Partial	655
	670-15-29	1705-1735 E. Capitol Expwy, San Jose	Commercial	Partial	880
	676-11-59	1819 Bagpipe Wy, San Jose	Residential	Partial	95
	676-07-60	1815 Bagpipe Wy, San Jose	Residential	Partial	165
	676-07-61	1809 Bagpipe Wy, San Jose	Residential	Partial	220
	676-07-62	1805 Bagpipe Wy, San Jose	Residential	Partial	250
	676-07-63	1799 Bagpipe Wy, San Jose	Residential	Partial	260
	676-07-64	1797 Bagpipe Wy, San Jose	Residential	Partial	240
	676-07-65	1791 Bagpipe Wy, San Jose	Residential	Partial	210
	676-07-66	1785 Bagpipe Wy, San Jose	Residential	Partial	145
	676-07-67	1779 Bagpipe Wy, San Jose	Residential	Partial	55
	Aerial Crossing at Aborn Road Option (Only With Side-Running Options))				
	670-15-39	1825 E. Capitol Expwy, San Jose	Commercial	Partial	605
	670-15-38	1801 E. Capitol Expwy, San Jose	Commercial	Partial	1255
	670-15-37	1707-1761 E. Capitol Expwy, San Jose	Commercial	Partial	2025
	670-15-36	1787 E. Capitol Expwy, San Jose	Commercial	Partial	980
	670-15-35	1707-1771 E. Capitol Expwy, San Jose	Commercial	Partial	670
	676-11-59	1819 Bagpipe Wy, San Jose	Residential	Partial	95
	676-07-60	1815 Bagpipe Wy, San Jose	Residential	Partial	165
	676-07-61	1809 Bagpipe Wy, San Jose	Residential	Partial	220
	676-07-62	1805 Bagpipe Wy, San Jose	Residential	Partial	250
	676-07-63	1799 Bagpipe Wy, San Jose	Residential	Partial	260
	676-07-64	1797 Bagpipe Wy, San Jose	Residential	Partial	240
	676-07-65	1791 Bagpipe Wy, San Jose	Residential	Partial	210
	676-07-66	1785 Bagpipe Wy, San Jose	Residential	Partial	145
	676-07-67	1779 Bagpipe Wy, San Jose	Residential	Partial	55
Silver Creek Road to Coyote Creek					
	At-Grade Crossing of Highway 101 Option (Includes McLaughlin At-Grade Station)				
	670-15-19	3197 Silver Creek Rd, San Jose	Commercial	Full	35980
	670-15-20	1631 Capitol Expwy, San Jose	Commercial	Partial	1670
	670-15-21	—	Commercial	Partial	430
	670-15-22	—	Commercial	Partial	240

Segment	APN	Address	Use	Impact	Size (Sq. Ft.)
	670-15-24	453 Aborn Rd, San Jose	Residential	Partial	250
	676-44-4	1513 Ivycreek Circle, San Jose	Residential	Partial	860
	676-03-1	1520 E. Capitol Expwy, San Jose	Residential	Partial	1445
	499-1-10	3172 Brandywine Dr, San Jose	Residential	Partial	35
	499-2-14	3161 Yakima Circle, San Jose	Residential	Partial	725
	499-2-13	3157 Yakima Circle, San Jose	Residential	Partial	520
	499-2-12	3153 Yakima Circle, San Jose	Residential	Partial	465
	499-2-11	3149 Yakima Circle, San Jose	Residential	Partial	340
	499-2-10	3145 Yakima Circle, San Jose	Residential	Partial	210
	499-2-9	3141 Yakima Circle, San Jose	Residential	Partial	310
	499-2-8	3137 Yakima Circle, San Jose	Residential	Partial	115
	499-36-59	1091 E. Capitol Expwy, San Jose	Commercial	Partial	1540
	499-36-60	3111 McLaughlin Ave, San Jose	Commercial	Partial	1455
	499-36-58	1041 E. Capitol Expwy, San Jose	Commercial	Partial	990
	499-36-57	1033 E. Capitol Expwy, San Jose	Commercial	Partial	2370
	494-53-45	1121 Raposa Dr, San Jose	Residential	Partial	250
	494-53-046	1115 Raposa Dr, San Jose	Residential	Partial	650
	494-53-47	1109 Raposa Dr, San Jose	Residential	Partial	860
	494-53-48	1105 Rapose Dr, San Jose	Residential	Partial	1000
	Aerial Crossing of Highway 101 Option (Includes McLaughlin Aerial Station)				
	670-15-19	3197 Silver Creek Rd, San Jose	Commercial	Full	35980
	670-15-20	1631 Capitol Expwy, San Jose	Commercial	Partial	1655
	670-15-21	—	Commercial	Partial	430
	670-15-22	—	Commercial	Partial	240
	670-15-24	453 Aborn Rd, San Jose	Residential	Partial	120
	676-44-4	1513 Ivycreek Circle, San Jose	Residential	Partial	860
	676-3-1	1520 E. Capitol Expwy, San Jose	Residential	Partial	1520
	499-1-10	3172 Brandywine Dr, San Jose	Residential	Partial	430
	499-2-14	3161 Yakima Circle, San Jose	Residential	Partial	1880
	499-2-13	3157 Yakima Circle, San Jose	Residential	Partial	910
	499-2-12	3153 Yakima Circle, San Jose	Residential	Partial	650
	499-2-11	3149 Yakima Circle, San Jose	Residential	Partial	455
	499-2-10	3145 Yakima Circle, San Jose	Residential	Partial	340
	499-2-9	3141 Yakima Circle, San Jose	Residential	Partial	520
	499-2-8	3137 Yakima Circle, San Jose	Residential	Partial	130
	499-36-59	1091 E. Capitol Expwy, San Jose	Commercial	Partial	1540

Segment	APN	Address	Use	Impact	Size (Sq. Ft.)
	499-36-60	3111 McLaughlin Ave, San Jose	Commercial	Partial	1646
	499-36-58	1041 E. Capitol Expwy, San Jose	Commercial	Partial	705
	499-36-57	1033 E. Capitol Expwy, San Jose	Commercial	Partial	2060
	499-36-56	1001 E. Capitol Expwy, San Jose	Commercial	Partial	15
	494-53-37	1161 Raposa Dr, San Jose	Residential	Partial	65
	494-53-38	1165 Raposa Dr, San Jose	Residential	Partial	195
	494-53-39	1153 Raposa Dr, San Jose	Residential	Partial	90
	494-53-40	1149 Raposa Dr, San Jose	Residential	Partial	40
	494-53-41	1145 Raposa Dr, San Jose	Residential	Partial	20
	494-53-45	1121 Raposa Dr, San Jose	Residential	Partial	20
	494-53-046	1115 Raposa Dr, San Jose	Residential	Partial	440
	494-53-47	1109 Raposa Dr, San Jose	Residential	Partial	550
	494-53-48	1105 Rapose Dr, San Jose	Residential	Partial	335
Coyote Creek to Highway 87					
	At-Grade, Median-Running between Coyote Creek and SR 87 (With West Side of SR 87 Station Option)				
	497-51-8	635 E. Capitol Expwy, San Jose	Commercial	Partial	1145
	497-51-9	3148 Senter Rd, San Jose	Commercial	Partial	420
	497-13-61	3147 Senter Rd, San Jose	Commercial	Partial	1790
	497-13-60	611 E. Capitol Expwy, San Jose	Residential	Partial	1495
	497-13-27	485 Rodeo Pl, San Jose	Residential	Partial	395
	497-13-26	489 Rodeo Pl, San Jose	Residential	Partial	235
	497-13-25	493 Rodeo Pl, San Jose	Residential	Partial	95
	497-13-14	3188 Welby Ct, San Jose	Residential	Partial	265
	494-1-10	3151 Senter Rd, San Jose	Commercial	Partial	5015
	494-1-20	3161 Senter Rd, San Jose	Commercial	Partial	6825
	494-1-26	—	Commercial	Partial	460
	494-1-22	3167 Senter Rd, San Jose	Commercial	Partial	2830
	494-1-17	3195 Senter Rd, San Jose	Commercial	Partial	810
	494-69-00	—	Residential	Partial	525
	494-42-99	—	Commercial	Partial	315
	494-42-002	461 Cedro St, San Jose	Residential	Partial	1680
	494-6-39	3826 Seven Trees Bl, San Jose	Commercial	Partial	460
	494-13-10	3849-3861 Seven Trees Bl, San Jose	Residential	Partial	1625
	494-13-11	3879-3943 Seven Trees Bl, San Jose	Residential	Partial	6870
	497-1-9	142 Rancho Dr, San Jose	Residential	Partial	345

Segment	APN	Address	Use	Impact	Size (Sq. Ft.)
	462-18-7	3630 Hillcap Ave, San Jose	Commercial	Partial	3515
	462-43-15	3970 The Woods Dr, San Jose	Residential	Partial	275
	462-18-3	175 W. Capitol Expwy, San Jose	Commercial	Partial	1345
	462-19-6	3939 Snell Ave, San Jose	Commercial	Partial	1200
	462-19-14	3911 Snell Ave, San Jose	Commercial	Partial	540
	462-19-13	231 W. Capitol Expwy, San Jose	Commercial	Partial	260
	462-43-5	3951 Snell Ave, San Jose	Commercial	Partial	510
	462-43-9	222 W. Capitol Expwy, San Jose	Commercial	Partial	610
	462-43-18	131 Baroni Ave, San Jose	Commercial	Partial	655
	462-20-3	—	Commercial	Partial	7750
	462-22-2	404 W. Capitol Expwy, San Jose 406-430 Vistapark Dr, San Jose	Commercial	Partial	1435
	462-22-14	3958 Hastings Park Ct, San Jose	Residential	Partial	235
	462-22-15	3953 Hastings Park Ct, San Jose	Residential	Partial	100
	462-5-115	516 Lanfair Circle, San Jose	Residential	Partial	6420
	462-5-116	518 Lanfair Circle, San Jose	Residential	Partial	620
	462-64-6	503-519 W. Capitol Expwy, San Jose	Commercial	Partial	110
	462-64-10	—	Commercial	Partial	325
	462-64-5	535 W. Capitol Expwy, San Jose	Commercial	Partial	1655
	462-64-4	—	Residential	Partial	995
	462-64-12	551-565 W. Capitol Expwy, San Jose	Commercial	Partial	570
	462-64-3	575 W. Capitol Expwy, San Jose	Residential	Partial	545
	462-49-1	605-635 W. Capitol Expwy, San Jose	Commercial	Partial	1140
	462-15-20	—	Commercial	Partial	720
	462-15-21	—	Residential	Partial	300
	462-14-13	—	Commercial	Partial	395
	At-Grade, Median-Running between Coyote Creek and SR 87 (With Under SR 87 Station Option)				
	497-51-8	635 E. Capitol Expwy, San Jose	Commercial	Partial	1145
	497-51-9	3148 Senter Rd, San Jose	Commercial	Partial	420
	497-13-61	3147 Senter Rd, San Jose	Commercial	Partial	1790
	497-13-60	611 E. Capitol Expwy, San Jose	Commercial	Partial	1495
	497-13-27	485 Rodeo Pl, San Jose	Commercial	Partial	395
	497-13-26	489 Rodeo Pl, San Jose	Commercial	Partial	235
	497-13-25	493 Rodeo Pl, San Jose	Commercial	Partial	95
	497-13-14	3188 Welby Ct, San Jose	Commercial	Partial	265
	494-1-10	3151 Senter Rd, San Jose	Commercial	Partial	5015

Segment	APN	Address	Use	Impact	Size (Sq. Ft.)
	494-1-20	3161 Senter Rd, San Jose	Commercial	Partial	6825
	494-1-26	—	Commercial	Partial	460
	494-1-22	3167 Senter Rd, San Jose	Commercial	Partial	2830
	494-1-17	3195 Senter Rd, San Jose	Commercial	Partial	810
	494-69-00	—	Commercial	Partial	525
	494-42-99	—	Commercial	Partial	315
	494-42-002	461 Cedro St, San Jose	Residential	Partial	1680
	494-6-39	3826 Seven Trees Bl, San Jose	Commercial	Partial	460
	494-13-10	3849-3861 Seven Trees Bl, San Jose	Residential	Partial	1625
	494-13-11	3879-3943 Seven Trees Bl, San Jose	Residential	Partial	6870
	497-1-9	142 Rancho Dr, San Jose	Commercial	Partial	345
	462-18-7	3630 Hillcap Ave, San Jose	Commercial	Partial	3515
	462-43-15	3970 The Woods Dr, San Jose	Commercial	Partial	275
	462-18-3	175 W. Capitol Expwy, San Jose	Commercial	Partial	1345
	462-19-6	3939 Snell Ave, San Jose	Commercial	Partial	1200
	462-19-14	3911 Snell Ave, San Jose	Commercial	Partial	540
	462-19-13	231 W. Capitol Expwy, San Jose	Commercial	Partial	260
	462-43-5	3951 Snell Ave, San Jose	Commercial	Partial	510
	462-43-9	222 W. Capitol Expwy, San Jose	Commercial	Partial	610
	462-43-18	131 Baroni Ave, San Jose	Commercial	Partial	655
	462-20-3	—	Commercial	Partial	7750
	462-22-2	404 W. Capitol Expwy, San Jose 406-430 Vistapark Dr, San Jose	Commercial	Partial	1435
	462-22-14	3958 Hastings Park Ct, San Jose	Residential	Partial	235
	462-22-15	3953 Hastings Park Ct, San Jose	Residential	Partial	100
	462-5-115	516 Lanfair Circle, San Jose	Residential	Partial	6420
	462-5-116	518 Lanfair Circle, San Jose	Residential	Partial	620
	462-64-6	503-519 W. Capitol Expwy, San Jose	Commercial	Partial	110
	462-64-10	—	Commercial	Partial	325
	462-64-5	535 W. Capitol Expwy, San Jose	Commercial	Partial	1655
	462-64-4	—	Residential	Partial	995
	462-64-12	551-565 W. Capitol Expwy, San Jose	Residential	Partial	570
	462-64-3	575 W. Capitol Expwy, San Jose	Residential	Partial	545
Ocala Avenue Park-and-Ride					
	Ocala Avenue Station Park-and-Ride				
	491-15-3	—		Partial	16,450

Table 4.16-4. Continued

Segment	APN	Address	Use	Impact	Size (Sq. Ft.)
	491-15-4	1994 John Montgomery Dr, San Jose		Partial	16,450
Eastridge Park-and-Ride					
	491-04-012	Eastridge Mall	Commercial	Full	1250
	491-04-047	Eastridge Mall	Commercial	Full	7415
	491-04-036	Eastridge Mall	Commercial	Partial	5670
	491-04-040	Eastridge Mall	Commercial	Partial	174,075
Monterey Highway Park-and-Ride					
	Monterey Highway Cloverleaf Option				
	Expressway Land	—	Public	Partial	107,000
	Northwest of Monterey Highway Station Option				
	462-18-7	3630 Hillcap Ave, San Jose	Commercial	Partial	70,000
	Northeast of Monterey Highway Station Option				
	497-1-2	3900-3930 Monterey Rd, San Jose	Commercial	Full	36,180
	497-1-1	3852-3894 Monterey Rd, San Jose	Commercial	Full	36,680
Vehicle Storage Facilities					
	Southwest Corner of Capitol Expressway and Ocala Avenue Option				
	491-15-3	—	Public	Full	18,600
	491-15-4	1994 John Montgomery Dr, San Jose	PG&E	Full	54,050
	NA - Swift Avenue		Public	Partial	8,590
	North Park-and-Ride at Capitol Expressway and SR 87 Option				
	670-41-001	2260-2264 Quimby Rd, San Jose	VTA	Partial	97,240
	Southwest Corner of Capitol Expressway and Quimby Road Option				
	670-41-001	2260-2264 Quimby Rd, San Jose	Commercial	Partial	5760
	670-41-007	2380 Quimby Rd, San Jose	Commercial	Full	91,480

be acquired in full. Parts of the rear yards of three residential properties near Lombard Avenue and one residential property near Mervyns Way would also need to be acquired. This alternative would require the full acquisition of two commercial properties and partial acquisition of five commercial properties located near Story Road. A portion of four commercial properties along the frontage road between Mervyns Way and Story Road would also be acquired. Two of the commercial properties are currently being used by a church. In addition, the portion of two commercial properties between Alum Rock Avenue and Capitol Expressway would be acquired. Implementation of the Light Rail Alternative would require a total of 21 acquisitions (six full and 15 partial).

Story Road to Eastridge Transit Center

In this segment, implementation of the Light Rail Alternative would require a total of 23 acquisitions (three full and 20 partial). Three full residential acquisitions and 15 partial residential acquisitions along both sides of Capitol Expressway between Woodmoor Drive and Ocala Avenue would be needed. Portions of five commercial properties would need to be acquired between Ocala Avenue and Tully Road, including portions of the PG&E right-of-way (15,000 square feet) near Ocala Avenue and Reid-Hillview Airport (33,525 square feet). The electrical towers and gas pipelines within the PG&E right-of-way would need to be relocated to other locations within the remaining PG&E right-of-way or to nearby new right-of-way, if feasible.

Eastridge Transit Center to Aborn Road

Implementation of the Light Rail Alternative in this segment would require the acquisition of portions of 11 commercial parcels and 11 residential parcels along both sides of Capitol Expressway south of Eastridge Mall to Aborn Road. Typical acquisitions would include narrow strips of property adjacent to Capitol Expressway ranging from under 100 square feet for individual residences to over 10,000 square feet for larger lots with commercial or multifamily land uses. Commercial acquisitions would include 1,040 square feet of a PG&E easement and 188,410 square feet of property at Eastridge Mall. Residential acquisitions would include 470 square feet of the common area for a town home development and sliver takes from two mobile home parks that would affect approximately 33 mobile homes. The total number of partial acquisitions for the Light Rail Alternative would be 18 properties. No full acquisitions would be required.

Aborn Road to Silver Creek Road

The Light Rail Alternative would require the acquisition of portions of 11 commercial parcels and nine residential parcels along both sides of Capitol Expressway between Aborn Road and Silver Creek Road. Typical acquisitions would include narrow strips of property adjacent to Capitol Expressway ranging from 60 to 2,700 square feet. Total partial acquisitions for this segment would include 20 properties. No full acquisitions would be required.

Silver Creek Road to Coyote Creek

The Light Rail Alternative includes the full acquisition of one commercial property located at the intersection of Silver Creek Road and Capitol Expressway. Narrow strips from approximately 15 residential properties and seven commercial properties would also need to be acquired between Silver

Creek Road and Tuers Road. One of these parcels is a mobile home park and would involve a sliver take from approximately one mobile home. Typical acquisitions would range from 40–2,400 square feet.

Coyote Creek to State Route 87

The Light Rail Alternative would require the partial acquisition of 18 residential parcels and 27 commercial parcels between Coyote Creek and SR 87. Typical acquisitions would range from 100–8,000 square feet. No full acquisitions would be required.

Stations and Park-and-Ride Facilities

Eastridge Transit Center

The Eastridge Transit Center would be reconfigured to make the site more efficient and promote easy transfer between light rail and bus. The modifications to the Eastridge Loop Road and the locations of the bus bays would accommodate the light rail station. The facility would also include improved lighting, landscaping, and pedestrian and bicycle features. The preliminary site layout indicates the footprint for the light rail station would be the same for an at-grade or aerial station, and no displacement of businesses would occur. The park-and-ride facility would be expanded to meet increased demand with the total number of spaces dependent on the inclusion of a park-and-ride at Ocala Avenue. The total park-and-ride capacity of the Eastridge and Ocala Park-and-Rides is 250–550 parking spaces. An expansion of the park-and-ride facility at Eastridge Transit Center would necessitate a future agreement between VTA and the Eastridge Mall administration.

Ocala Avenue Park-and-Ride

The Ocala Avenue park-and-ride lot would require the partial acquisition of two commercial parcels to create an approximately 100-space park-and-ride lot. The acquisition would include approximately 32,900 square feet at the southwest corner of the intersection of Capitol Expressway and Ocala Avenue on property currently owned by PG&E and Reid-Hillview Airport.

Monterey Highway Park-and-Ride

One or a combination of three options have been identified as potential park-and-ride facilities at the interchange of Capitol Expressway and Monterey Highway. The total capacity of 300 spaces would accommodate estimated demand. The total number of spaces includes 100 spaces associated with the relocated Caltrain station.

- The Monterey Highway Cloverleaf Option would be located within the interchange loops on the northeast side of Monterey Highway. This option would make use of existing right-of-way.
- The Northwest of Monterey Highway Station Option would require the acquisition of 70,000 square feet of a parcel currently occupied by a drive-in theater.

- The Northeast of Monterey Highway Station Option would require the full acquisition of two commercial parcels.

Traction Power Substations

Seven additional substations would be required for the Light Rail Alternative. (An existing substation is located south of the Alum Rock Station.) These substations will require four partial acquisitions (one residential and three commercial). A portion of a residential property located on the south side of Capitol Expressway between Vista Park Drive and Bluefield Drive and would need to be acquired. Portions of three commercial properties located on the west side of Capitol Expressway at Ocala Avenue, Quimby Road and Silver Creek Road would also need to be acquired.

Despite all of the anticipated acquisitions associated with the alignment segments, stations, park-and-ride facilities and substations, the proposed improvements under the Light Rail Alternative are not anticipated to result in an adverse effect related to the displacement of residential or business properties; the number of properties needed along the 8.2-mile corridor is low, and all properties would be acquired at fair market value and relocation assistance provided where applicable in accordance with the Uniform Relocation Assistance and Real Property Acquisition Act of 1970, as amended. Implementation of the following mitigation measures is recommended to minimize any effects associated with the anticipated acquisitions.

Mitigation Measure SOC-16a: Comply with the Applicable Legislation Governing Acquisition and Relocation

VTA shall comply with the Uniform Relocation Assistance and Real Property Acquisition Act of 1970, as amended, and shall implement the project in conformance with all applicable regulations. VTA shall purchase properties at fair market value and shall provide relocation assistance to residents and business owners.

Mitigation Measure SOC-16b: Implement Community Information and Outreach Program to Effectively Inform Residents and Business Owners of the Proposed Transit Developments

VTA shall establish and conduct a community information and outreach program throughout the environmental, design, and construction phases of the project. The purpose of the program shall be to respond to community concerns (both adjacent residences and businesses). Outreach shall include, but shall not be limited to:

- holding community meetings;
- inviting project-related public comment on environmental review and conceptual design phases;
- notifying adjacent residences and businesses of construction activities; and
- providing access to an information officer.

SOC-17: Creation of Demand for Additional Housing that Cannot be Accommodated by Existing Housing Stock

Most of the proposed alignment under the Light Rail Alternative would be located in the median of Capitol Expressway. Although most of the proposed alignment would remain within the existing transportation corridor, acquisition and displacement of seven residential properties because of the construction of stations, parking lots, and other infrastructure improvements would also be required. Given the number of displacements, it is anticipated that existing housing stock could accommodate the demand for additional housing created by these displacements. The corridor has an extensive stock of available housing.

As a fully built-out area, it is unlikely that implementation of the Light Rail Alternative would induce substantial new growth in the corridor beyond planned growth levels that could result in a demand for new housing that cannot be accommodated by existing or planned housing stock. In addition to the Communications Hill Planned Community Specific Plan area, which is proposing an additional 500 units, there are several other developments close to the corridor that are already in the planning stage, including 475 units at The Woods Phase 5b, and 355 units at Bella Villagio (Section 4.13, *Land Use*). Therefore, there would be no adverse effect.

Mitigation: No mitigation is required.

Proposed Options

As described in Chapter 3.0, *Alternatives Considered*, the Light Rail Alternative includes station, segment, park-and-ride and light rail vehicle storage location options. The station options include at-grade, aerial and depressed open air station designs. Several platform configurations are also being explored including side platforms, single center platforms, offset platforms and a platform on the west side of the expressway. With the exception of the Capitol Avenue to Capitol Expressway transition, the side-running option between Eastridge Transit Center and Nieman Boulevard, and the U.S. 101 crossing, the light rail alignment would remain within the median at-grade, on an aerial structure above the corridor, or in a tunnel. These options could adversely affect socioeconomics. The effects on socioeconomics discussed above could result depending upon the alignment options or station designs selected.

SOC-18: Displacement of Existing Businesses or Housing, Especially Affordable Housing

A discussion of acquisitions related to the proposed options is provided below.

The Capitol Avenue/Capitol Expressway Tunnel/Story Road Aerial Option would be similar to the Light Rail Alternative, except that it would not require the full acquisition of two residential properties near the Alum Rock Station because the portion of the alignment near the properties would be in a tunnel underground instead of elevated. This option would require a total of 19 acquisitions (four full and 15 partial).

The Capitol Avenue/Capitol Expressway/Story Road Tunnel Option would require fewer residential and commercial acquisitions than the Light Rail Alternative and the tunnel/aerial option. This option would require one full residential acquisition, three partial residential acquisitions, and two partial commercial acquisitions near Lombard Avenue. However, this option would require more acquisitions near Story Road, including one full commercial acquisition and four partial commercial acquisitions near Story Road. Two full residential acquisitions and three partial acquisitions would also be required between Sussex Drive and Tudor Court. One of the partial residential acquisitions would involve an undetermined number of units at an apartment building. This option would require a total of 16 acquisitions (four full and 12 partial).

The North of Eastridge Transit Center Tunnel with At-Grade Station Option (including Between Ocala and Cunningham Station Option) would be similar to the Light Rail Alternative. However, the station would be moved to the south resulting in nine fewer residential acquisitions and two partial residential acquisitions instead of full acquisitions between Woodmoor Drive and Ocala Avenue. South of Ocala Avenue there would be six additional partial residential acquisitions, which would be necessary to accommodate the widening of the tracks to go around the station in the median of the Expressway. This option would require a total of 20 acquisitions (one full and 19 partial).

The North of Eastridge Transit Center Tunnel with At-Grade Station Option (including Cunningham Avenue Station Option) would be similar to the Light Rail Alternative. However, the station would be moved south to Cunningham Avenue resulting in nine fewer partial residential acquisitions and one partial instead of full acquisition near the intersection of Ocala Avenue and Capitol Expressway. South of Ocala Avenue there would be 17 additional partial residential acquisitions, two additional full residential acquisitions, and an additional two partial commercial acquisitions, which would be necessary to realign Capitol Expressway to accommodate the station at Cunningham Avenue, and to accommodate sidewalks and landscaping adjacent to the Expressway. This option would require a total of 35 acquisitions (four full and 31 partial).

The North of Eastridge Transit Center Aerial Crossing with Aerial Station Option would require a total of 27 acquisitions (three full and 24 partial). Four additional partial commercial acquisitions would be necessary with this option.

The South of Eastridge Transit Center Aerial Crossing Option (including Nieman Median Station) would require the partial acquisition of one additional commercial parcel than the Light Rail Alternative. However, some acquisitions may be slightly larger or smaller than the Light Rail Alternative.

The South of Eastridge Transit Center Side-Running At-Grade/Tunnel at Nieman Boulevard Option (including Nieman West Side Station) would be similar to the

Light Rail Alternative. However, it would require nine fewer partial residential acquisitions and one additional commercial acquisition (the Pacific Gas and Electric easement) due to the relocation of the Nieman Median Station to the west side of Capitol Expressway and the exclusion of new sidewalks and landscaping northeast of Nieman Boulevard. This option would require the acquisition of an additional 93,385 square feet from two commercial parcels to accommodate the station.

Acquisitions for the South of Eastridge Transit Center Side-Running/Cut and Cover Tunnel Option (including Nieman West Side Station) would be identical to the South of Eastridge Transit Center Side-Running At-Grade/Tunnel at Nieman Boulevard Option.

Acquisitions for the South of Eastridge Transit Center Side-Running Depressed At-Grade/Aerial Option (including Nieman West Side Station) would be similar to the South of Eastridge Transit Center Side-Running/Trench and Tunnel Option (including Nieman West Side Station). However, this option would require one less partial commercial acquisition.

The Aerial Crossing at Aborn Road Option would be similar to the Light Rail Alternative, but would not require three partial commercial acquisitions at the intersection of Aborn Road and Capitol Expressway. Total partial acquisitions for this option would include 17 properties (nine residential and eight commercial). No full acquisitions would be required.

The Aerial Crossing at Aborn Road Option (Only with Side-Running Options) would be similar to the Light Rail Alternative, but would not require five partial commercial acquisitions near the intersection of Aborn Road and Capitol Expressway and one partial commercial acquisition near Silver Creek Road. Total partial acquisitions for this option would include 14 properties (nine residential and five commercial).

The Aerial Crossing of U.S. Highway 101 Option (including the McLaughlin Aerial Station) would be similar to the Light Rail Alternative, but includes an additional five partial residential acquisitions from McLaughlin Avenue and Tuers Road and one additional partial commercial acquisition near the intersection of Tuers Road and Capitol Expressway. Typical acquisitions for the additional six parcels are less than 100 square feet.

The At-Grade, Median-Running between Coyote Creek and State Route 87 Option (with Under State Route 87 Station Option) would be similar to the Light Rail Alternative. However, it would require 13 fewer partial commercial acquisitions and eight fewer partial residential acquisition in the vicinity of the State Route 87 and the Capitol Expressway interchange.

The Expanded Eastridge Transit Center Park-and-Ride Option (Only if No Ocala Avenue Station Park-and-Ride) would be similar to the Light Rail Alternative. If no park-and-ride is provided at Ocala Avenue, the additional spaces would be pursued through a property acquisition or a lease agreement.

The Light Rail Alternative identifies three options for vehicle storage sites.

- The Southwest Corner of Capitol Expressway and Ocala Avenue Option would require the full acquisition of two parcels near the southwest corner of Ocala and Capitol Expressway. The parcels are approximately 18,600 and 54,050 square feet and are owned by PG&E and Reid-Hillview Airport. These acquisitions would be adjacent to the property acquired for the realignment of Capitol Expressway to the south of the proposed Ocala Avenue Station. The northern PG&E property is occupied by an overhead power transmission line and gas pipelines that would be relocated as part of the alternative.
- The North Park-and-Ride at Capitol Expressway and SR 87 Option would be located on land owned by VTA for the Capitol Light Rail Station. Therefore, this option would not require any acquisitions or displacements.
- The Southwest Corner of Capitol Expressway and Quimby Road Option would require the partial acquisition of a commercial parcel that would involve the full take of a mini-storage facility that occupies a portion of the parcel.
- The Adjacent to Eastridge Transit Center Option or the Nieman Boulevard Station West Side Option would use tail track for vehicle storage in Phase I of the Light Rail Alternative. Therefore, these options would not require any additional acquisitions or displacements.

Implementation of the following mitigation measures is recommended to minimize any effects associated with the anticipated acquisitions.

Mitigation Measure SOC-16a: Comply with the Applicable Legislation Governing Acquisition and Relocation (see previous text)

Mitigation Measure SOC-16b: Implement Community Information and Outreach Program to Effectively Inform Residents and Business Owners of the Proposed Transit Developments (see previous text)

Section 4.17
Utilities

4.17.1 Introduction

This section describes the environmental setting and effects of the alternatives analyzed in this EIR with regard to utilities. Specifically, this section discusses utility providers and service within the Capitol Expressway Corridor and describes applicable regulations pertaining to utilities. The assessment of adverse effects and mitigation measures of the alternatives related to utilities are also described.

4.17.2 Existing Conditions

Environmental Setting

The Capitol Expressway Corridor contains various utilities that cross or parallel the corridor and run underneath or above the corridor. Sanitary sewers are owned by the City. The County and City both own storm drains within the corridor. Gas and electricity lines are owned by the Pacific Gas & Electric Company (PG&E). Fiber optics and telephone lines are owned by a variety of companies. Communications companies with facilities in the corridor include XO Comm, Time Warner, Sprint, Qwest, MCI, SBC (formerly Pacific Bell), and AT&T. A 14-foot wide space of land running parallel to and directly underneath the corridor has been defined as a “utility envelope.” Table 4.17-1 summarizes the utilities within this envelope.

Table 4.17-1. Utilities Located within the Capitol Expressway Corridor

Type of Utility	Owner	Size Range
Sanitary Sewers	City	12 inches; 27 inches
Sanitary Sewer Maintenance Covers	City	Standard
Storm Drains	County and City	12–48 inches
Storm Drain Maintenance Covers	County and City	Standard
Unknown Maintenance Covers	Unknown	Standard
Water Mains	SCVWD	Unknown
Telephone/Fiber Optic	Various*	Unknown
Electric Lines	PG&E	Unknown
Electric Vaults	PG&E	Unknown
Electric Transmission Towers	PG&E	Unknown
High Pressure Gas Lines	PG&E	Unknown

Source: Santa Clara Valley Transportation Authority 2003.

Regulatory Setting

Public utilities are regulated by several entities, including (depending on the utility) the Federal Communications Commission, CPUC, and local ordinances. There are other applicable regulations regarding some public utilities. These are cited below.

State Plans, Programs, and Policies

National Pollution Discharge Elimination System Storm Water Discharge Permits

Two types of NPDES permits can be issued by an RWQCB for a proposed activity. The general industrial storm water discharge permit requires property owners to file an NOI to discharge stormwater runoff to waters of the United States from specified industrial activities, including transportation facilities. The permit requires dischargers to eliminate nonstormwater discharges to stormwater systems, develop and implement a SWPPP, perform inspections of stormwater pollution prevention measures, and monitor water quality. The general construction storm water discharge permit requires landowners to file an NOI to discharge stormwater runoff to waters of the United States from land disturbances greater than 1 acre. The permit generally requires dischargers to eliminate nonstormwater discharges to stormwater systems, develop and implement a SWPPP, and perform inspections of stormwater pollution prevention measures.

Coverage under a general permit requires the preparation of a SWPPP. A SWPPP includes pollution prevention measures (erosion and sediment control measures and measures to control nonstormwater discharges and hazardous spills), demonstration of compliance with all applicable local and regional erosion and sediment control standards, identification of responsible parties, a detailed construction timeline, and a BMP monitoring and maintenance schedule. VTA would be required to prepare a SWPPP before implementation of any transit development within the Capitol Expressway Corridor.

Local Programs

Santa Clara Valley Urban Runoff Pollution Prevention Program

The County, along with SCVWD and the 13 cities that discharge stormwater into the San Francisco Bay, have adopted a countywide nonpoint source pollution control program. The program addresses several elements such as existing control measures, municipal facility operations and maintenance, stormwater treatment, elimination of illicit connection and illegal dumping activities, planning and regulation of new development, regulatory controls for improper waste disposal, and public information and participation.

4.17.3 Environmental Consequences and Mitigation Measures

Approach and Methodology

The effects of the proposed alternatives on utilities were based on a qualitative assessment that includes an evaluation of the type of utility, its service characteristics, and its location within the corridor. Tools used included aerial photographs, conceptual engineering drawings, and utility location maps.

For each alternative, two primary issues are examined, as reflected by the thresholds of significance below: whether the alternative would place additional demand on existing utilities, and whether the construction and operation of an alternative would require relocation or modification of utilities.

Thresholds of Significance

Based on the significance criteria used by VTA and professional practice, the proposed alternatives may result in adverse effects related to utilities if they would:

- require or result in the construction of new storm water drainage facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects.

Environmental Consequences and Mitigation Measures of the No-Project Alternative

This analysis considers the effects of the No-Project Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

UTL-1: Require or Result in the Construction of New Stormwater Drainage Facilities or Expansion of Existing Facilities

The No-Project Alternative would keep in place the existing transit and roadway network within the Capitol Expressway Corridor. Because there would not be any large-scale construction of transit structures or other facilities, environmental conditions would not change. No expansion of facilities would be required. Therefore, there would be no adverse effect.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Baseline Alternative

Anticipated adverse effects associated with the projects included in the approved 1996 Measure B Improvement Program are independent of the proposed alternatives and are or will be reviewed in their respective environmental compliance documents. Additionally, the potential cumulative effects of these projects are considered in Chapter 5, *Other CEQA Considerations*, of this document. This analysis considers the effects of the bus service improvements that are included in the Baseline Alternative as outlined in Chapter 3, *Alternatives Considered*.

UTL-2: Require or Result in the Construction of New Stormwater Drainage Facilities Expansion of Existing Facilities

Implementation of the Baseline Alternative includes expansion of existing bus services within the Capitol Expressway Corridor. The expansion of bus services includes service frequency upgrades; a new route providing continuous, limited-stop service along Capitol Expressway; and enhanced limited-stop service along various routes throughout the existing bus transit network. There would not be any large-scale construction of transit structures or other facilities; environmental conditions would not change. There would be no necessity for expansion of these facilities. Therefore, there would not be an adverse effect.

Mitigation: No mitigation is required.

Environmental Consequences and Mitigation Measures of the Light Rail Alternative

This analysis considers the effects of the Light Rail Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

UTL-3: Require or Result in the Construction of New Stormwater Drainage Facilities or Expansion of Existing Facilities

Stormwater drainage facilities located within the Capitol Expressway Corridor could be affected by the proposed Light Rail Alternative in several ways:

- Existing facilities may need to be relocated to accommodate construction of the light rail alignment within the median of Capitol Expressway.
- Existing facilities may need to be altered to accept new sources of drainage created by construction of the light rail facilities.
- Additional facilities may need to be constructed to accept stormwater flows generated by construction of the light rail facilities.

Facilities associated with this alternative include the guideway and stations, park-and-ride lots, and vehicle maintenance facilities. Most of the guideway would be located in the existing Capitol Expressway right-of-way, often in the median. Some of the guideway could be located either on an aerial structure or underground depending on the alignment option selected; stations would be located at-grade or on aerial structures; park and ride facilities and any vehicle maintenance facilities would be located at-grade.

Locating the guideway and stations in the median of Capitol Expressway would require relocation of the storm drains and manholes located under the median and/or curb lanes, which would ensure that, following construction, the drains and manholes could be reached without interfering with light rail system operations. Storm drains and manholes would likely be relocated to adjacent lanes of the expressway. Replacing the paved median and/or curb lanes with light rail tracks and stations would not increase the impermeable surface within the Capitol Expressway right-of-way, and therefore would not create a need for new or expanded storm drain facilities. The installation of bikeways, walkways, and landscaped areas would increase the amount of permeable area within the Capitol Expressway right-of-way, and thereby reduce the amount of water directed to the storm drain system. Tunnels and aerial guideways would increase the amount of impermeable surface slightly, but it is unlikely that these marginal increases would have any substantial effect on storm drain facilities. Further, tunnels and aerial guideways would include appropriate drainage facilities that would be directed to the existing storm drain system.

Three new or expanded park-and-ride facilities are associated with the Light Rail Alternative:

- approximately 90 spaces at Ocala Avenue,
- an expansion of the existing Eastridge Transit Center, and
- approximately 310 spaces at Monterey Highway in an existing drive-in theater or within the highway loops at this interchange.

At Ocala Avenue and Monterey Highway, where existing pervious surfaces could be paved, approximately 0.75 and 2.5 acres of land, respectively, could require new connections to the storm drain system. It is unlikely that such connections would result in adverse effects because of the minimal amounts of new paved areas and its associated runoff potential. At the Eastridge Transit Center, the surfaces to be used for the expanded park-and-ride lot are already covered by impervious surfaces; there would be little or no effect on the storm drain system at this location. Similarly, a park-and-ride lot at the drive-in theater at Monterey Highway would not create any new runoff because the theater is already paved and has existing drainage facilities.

Of the possible sites under consideration for the vehicle storage facility, both the Quimby Road site and the north park-and-ride lot at the Capitol Station are currently paved with existing drainage facilities in place. The third site located along Capitol Expressway between Ocala and Cunningham Avenues is currently unpaved. This site would require new utility connections. Because more precise dimensions of the facility at that location are not currently known at this time, it is not possible to determine whether any storm drains would need to be enlarged. This could be considered an adverse effect. However, implementation of the following mitigation measures would minimize this effect.

Mitigation Measure HYD-14: Implement Measures to Maintain Operational Water Quality

VTA shall ensure that new stormwater inlets at parking lots include trash grates and maintainable silt traps, and that outlet structures provide for proper energy dissipation in accordance with best management practices consistent with the NPDES General Industrial Storm Water Permit. VTA shall ensure that regular maintenance of parking facilities includes a program to clean curbside pavement areas of litter, fuel, and oils spills. Storm drain inlet traps shall be inspected at least annually and cleaned as required.

Under the Light Rail Alternative, it is unlikely that new or expanded distribution facilities would be needed for gas, water, telecommunications, or sanitary sewage because this alternative would generate only minimal demand for these utilities. The primary source of power would be electrical, requiring that electricity be delivered to the proposed traction power substation sites. Electrical power would also be required for lighting facilities at stations and park-and-ride lots, and at vehicle maintenance facilities, which would require electricity for cleaning and maintenance equipment. However, none of these uses is anticipated to require substantial new generation or distribution facilities. None of the described constraints or requirement of new or additional facilities is considered an adverse effect.

Proposed Options

As described in Chapter 3.0, *Alternatives Considered*, the Light Rail Alternative includes station, segment, park-and-ride, and light rail vehicle storage location options. The station options include at-grade, aerial, and depressed open-air station designs. Several platform configurations are also being explored including side platforms, single center platforms, offset platforms, and a platform on the west side of the expressway. The option with a station at Cunningham Avenue would shift a portion of Capitol Expressway on top of existing PG&E gas lines. Other options reduce this impact with only a portion of the pedestrian path and landscaping on top of the gas line. With the exception of the Eastridge Transit Center segment and the side-running option between Eastridge and Nieman Boulevard, the light rail alignment would remain within the median at grade, on an aerial structure above the corridor, or in a tunnel. These options could adversely affect utilities. The effects on utilities discussed above would result depending on the alignment options or station designs selected.

Section 4.18
Visual Quality

4.18.1 Introduction

This section describes the environmental setting and effects of the alternatives analyzed in this EIR with regard to visual quality. Specifically, this section discusses existing visual quality conditions within the Capitol Expressway Corridor and describes applicable regulations pertaining to visual quality. The assessment of adverse effects and mitigation measures of the alternatives related to visual quality are also described.

For the purposes of this analysis, the study area is considered the area from which elements of the proposed alternatives are visually prominent, generally an area that encompasses the entire Capitol Expressway Corridor and all areas located approximately 100 feet from edge of the right-of-way along the corridor.

4.18.2 Existing Conditions

Environmental Setting

Visual Assessment Methods

Numerous federal agencies and organizations have created defined visual assessment methodologies to improve the quality and accuracy of visual analysis. This analysis uses the Federal Highway Administration's (FHWA's) *Visual Impact Assessment for Highway Projects* (1983).

The aesthetic value of a locale or region is a measure of viewer response combined with the visual character and scenic quality of an area. *Scenic quality* refers to the overall impression that an individual retains after being in an area (U.S. Bureau of Land Management 1980). *Visual character* is described as the elements of form, line, texture, and color of an object, combined with that object's characteristics of dominance, scale, diversity, and continuity (Federal Highway Administration 1983). Visual character is defined by the natural and artificial elements that compose and affect the perception of a view and its aesthetic value. Elements include urban development, geology, hydrology, botany, and wildlife. The perceived quality of visual images and the images themselves can vary significantly over seasons, even hours, as weather, light, shadow, and the elements that compose the viewscape change.

The *viewer response* component of aesthetic value consists of the sensitivity and exposure of the viewer to a given viewshed. *Sensitivity* relates to the magnitude of the viewer's concern for a viewshed. *Exposure* is a function of the number of viewers, the type of views seen, and the distance, perspective and duration of the view. The types and numbers of viewers affect an area's visual sensitivity.

FHWA's method for assessing visual impacts comprises six steps (Federal Highway Administration 1983).

1. Define the visual environment of the proposed alternatives.
2. Identify key views for visual assessment.
3. Analyze existing visual resources and viewer response.
4. Depict the visual appearance of the proposed alternatives.
5. Assess the visual impacts of proposed alternatives.
6. Determine ways to mitigate adverse visual effects.

Furthermore, a common set of criteria developed by FHWA is used to characterize the visual quality of an area (Federal Highway Administration 1983).

- *Vividness* is the visual power or memorability of landscape components as they combine in visual patterns.
- *Intactness* is the visual integrity of the natural and human-made landscape and its freedom from encroaching elements. This factor can be present in urban and rural landscapes, and natural settings.
- *Unity* is the visual coherence and compositional harmony of the landscape considered as a whole. It frequently attests to the careful design of individual components in the human-made landscape.

The following terms are defined and apply to this visual resource assessment (Federal Highway Administration 1983).

- *Foreground* elements are those features 0.25–0.5 mile from the viewer.
- *Middleground* elements are those features that extend from the far edge of the foreground zone to 3–5 miles from the viewer.
- *Background* elements are those features that extend from the far edge of the middleground zone to infinity.
- A *viewshed* is defined as all the surface area visible from a particular location or sequence of locations such as a roadway or trail.

View of background hills in the corridor.

Source: Jones & Stokes 2003.

Figure 4.18-1
Capitol Expressway Corridor, Existing Conditions

Figure 4.18-2a
Typical single-family residential uses within the corridor.

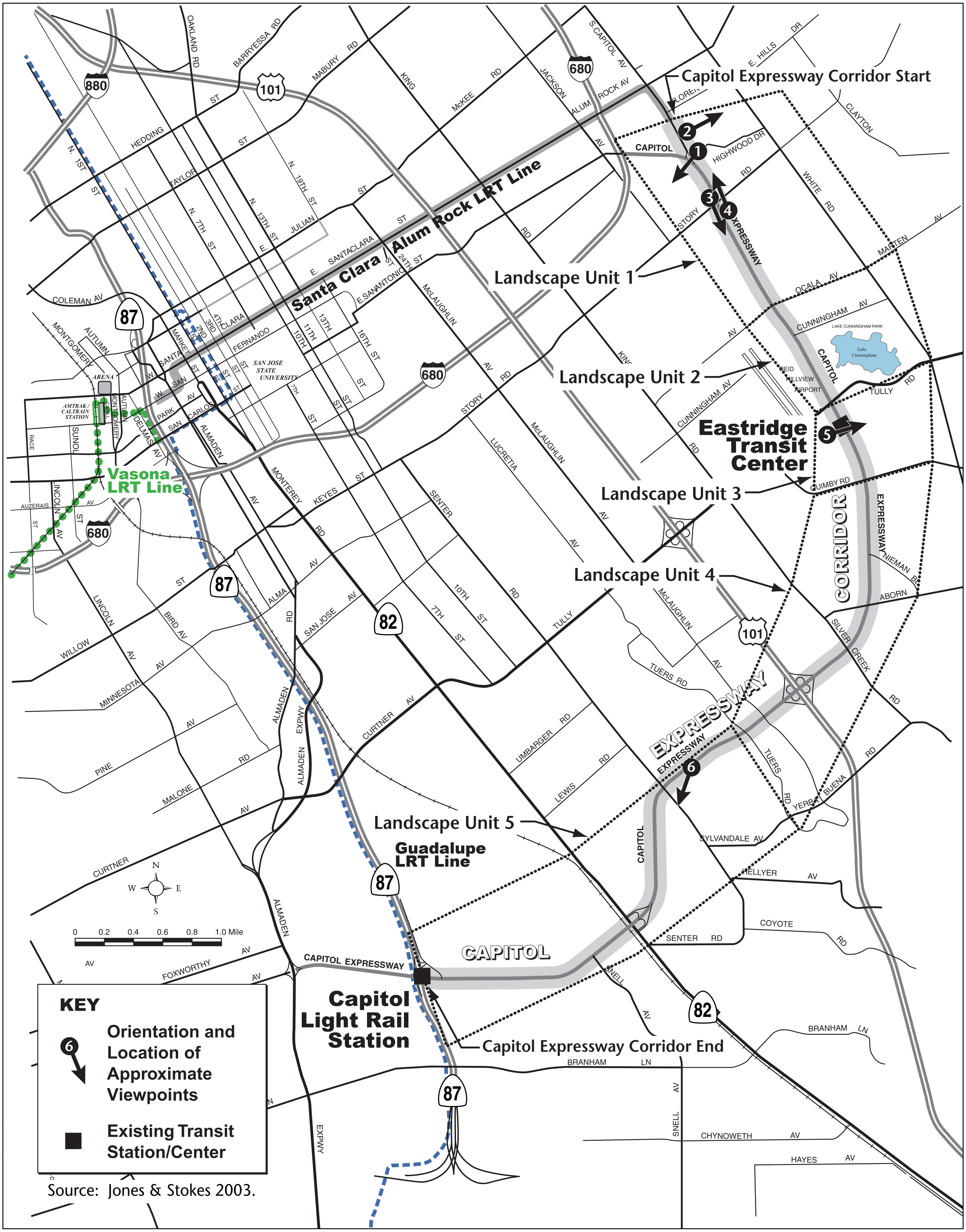
Figure 4.18-2b
Typical multifamily residential uses within the corridor.

Source: Jones & Stokes 2003.

Figure 4.18-3a
Typical commercial uses within the corridor.

Figure 4.18-3b
Typical commercial uses within the corridor.

Source: Jones & Stokes 2003.



Source: Jones & Stokes 2003.

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Figure 4.18-4
Key Viewpoints in the Capitol Expressway Corridor

Figure 4.18-5a
Existing view of Silver Creek overcrossing at Mervyn's Way.

Figure 4.18-5b
Existing view of Silver Creek channel.

Source: Jones & Stokes 2003.

Landscape Unit 1
Capitol Avenue/Capitol Expressway to Ocala Avenue

Source: Environmental Vision 2003.

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Figure 4.18-6
Viewpoint 1 – Capitol Avenue at Capitol Expressway from Highwood Drive Looking West

Source: Environmental Vision 2003.

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Figure 4.18-7
Viewpoint 2 – Capitol Expressway from the Vicinity of South Capitol Avenue Looking West

Source: Environmental Vision 2003.

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Figure 4.18-8
Viewpoint 3 – Story Road and Capitol Expressway Intersection Looking South from Story Road

Source: Environmental Vision 2003.

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Figure 4.18-9
Viewpoint 4 – Capitol Expressway at Story Road Looking North

Figure 4.18-10a
Existing view towards Reid-Hillview Airport.

Figure 4.18-10b
Existing view of electrical transmission tower.

Source: Jones & Stokes 2003.

**Landscape Unit 2 –
Ocala Avenue to Tully Road**

Ground-level reconnaissance field surveys were conducted in the corridor in March, April, and May 2003 to assess the visual resources of the study area and to identify key viewpoints and viewsheds. Weather on the days of the surveys were calm and sunny with good to fair visibility.

Because the proposed transit improvements follow a generally linear alignment along the corridor, the visual analysis is divided into five distinct landscape units that encompass generally similar visual quality conditions and concerns. Key viewpoints within the landscape units are identified and described under *Existing Conditions*. Representative photographs from key viewpoints analyzed, representative photographs depicting typical visual features within the landscape units, and a description of the viewer groups are included. This analysis focuses on the changes in views of the study area from the key viewpoints.

Regional Setting

The Capitol Expressway Corridor is located within San Jose, which is Santa Clara County. In general, this area is characterized by land that gently slopes toward San Francisco Bay from rounded and rolling grass-covered hills of the Diablo Range to the east. Seasonal changes are notable because of the natural grasslands turning green due to winter rainfall and becoming gold in color during the dry season. Background views in this setting include broad vistas of the hills to the east from a variety of locations along the corridor.

Local Setting

The study area is located within the Downtown/East Valley area of San Jose. The topography of the study area is generally flat, but there are distant views of the valley hills in the background from any vantage point along Capitol Expressway (Figure 4-18-1). Most of the study area is developed, but several creeks traverse the corridor, and recreational uses are located adjacent to the corridor. Portions of the corridor contain vacant land interspersed between development.

The major land uses within the corridor are residential and commercial. Most of the corridor contains single-family and multifamily residential uses directly adjacent to the expressway (Figures 4.18-2a and 4.18-2b). Commercial facilities such as shopping centers and small strip malls are interspersed through the corridor adjacent to the expressway (Figures 4.18-3a and 4.18-3b). Major development along the corridor includes Reid-Hillview Airport, Evergreen Shopping Center, Eastridge Mall, Eastridge Transit Center, Aborn Square Shopping Center, and Andrew P. Hill High School. Recreational uses adjacent to the expressway include Coyote Creek Regional Park, Lake Cunningham Park, and other neighborhood parks. However, these uses are not necessarily accessible from Capitol Expressway. A detailed description of these features is provided below.

Landscape Units and Key Viewpoints

Figure 4.18-4 depicts landscape units (1–5) and the location and orientation of key viewpoints (1–6) within the corridor. The discussion below describes these aspects of the visual setting within Capitol Expressway Corridor from north to south.

Landscape Unit 1: Capitol Avenue/Capitol Expressway to Ocala Avenue

Landscape Unit 1 encompasses the area between Capitol Avenue/Capitol Expressway and Ocala Avenue along Capitol Expressway. This area is heavily urbanized, with typical residential and commercial uses dominating the foreground and extending into the middleground. The background includes distant views of the valley hills. Silver Creek traverses Capitol Expressway near the termination of Mervyns Way (Figure 4.18-5a). The creek channel and vegetation are not directly visible from Capitol Expressway, and in general do not represent a vivid, intact, or unique visual quality (Figure 4.18-5b).

Several key viewpoints are located within this landscape unit. Viewpoint 1 depicts the existing view of Capitol Expressway from the Highwood Drive residential area located adjacent to the corridor (Figure 4.18-6). Viewpoint 2 depicts an existing view of roadway travelers using Capitol Expressway (Figure 4.18-7). The dominating visual features present in Viewpoints 1 and 2 are the presence of soundwalls in the foreground of the viewshed. Viewpoints 3 and 4 depict the existing views at the Story Road/Capitol Expressway intersection, at which a light rail station could be constructed (Figures 4.18-8 and 4.18-9). There are no dominating visual features within the viewsheds of Viewpoints 3 and 4. Furthermore, the viewsheds within each of these viewpoints are not unique compared to the general views present within this landscape unit.

The landscape unit possesses low value for vividness, intactness, and unity because the landscape components are common throughout the study area. Viewers who would be affected by changes in views within this landscape unit include residents of adjacent homes, VTA bus transit passengers with stops in the area, persons employed at businesses in the area, roadway travelers, pedestrians, and bicyclists.

Landscape Unit 2: Ocala Avenue to Tully Road

Landscape Unit 2 encompasses the area between Ocala Avenue and Tully Road along Capitol Expressway. This area is heavily urbanized. The major landscape component is Reid-Hillview Airport, located on the western side of Capitol Expressway between Cunningham Avenue and Tully Road (Figure 4.18-10a). Several electrical transmission towers are visible within the foreground along Capitol Expressway (Figure 4.18-10b). On the eastern side of Capitol Expressway, the viewshed includes single-family homes behind soundwalls, the western boundary of Lake Cunningham Park, and a large construction site near the Tully Road/Capitol Expressway intersection (Figures 4.18-11a and 4.18-11b). The background includes distant views of the valley hills. This visual analysis unit possesses low value for vividness, intactness, or unity, as the landscape components do not exhibit a unique visual quality or character.

Similar to Landscape Unit 1, viewers who would be affected by changes in views within Landscape Unit 2 include residents of adjacent homes, VTA bus transit passengers with stops within the area, persons employed at businesses located within the area, roadway travelers, pedestrians, and bicyclists.

Landscape Unit 3: Tully Road to Quimby Road

Landscape Unit 3 encompasses the area between Tully and Quimby Roads along Capitol Expressway. This area is urbanized with typical residential and commercial uses dominating the foreground and extending into the middleground. The background includes distant views of the valley hills (Figure 4.18-12).

The major natural visual feature in this landscape unit is Thompson Creek, located parallel to northbound Capitol Expressway (Figure 4.18-13). Thompson Creek is a culverted channel that travels north along Capitol Expressway until its drainage point in Lake Cunningham. Views of the creek channel and its riparian vegetation are visible from Capitol Expressway. Another dominating landscape component within this unit is the Eastridge Mall and Eastridge Transit Center, located adjacent to southbound Capitol Expressway. Viewpoint 5 depicts the existing view of the Eastridge Transit Center (Figure 4.18-14). The dominating visual features present from this key viewpoint are the existing transit station facility in the foreground and the prominent views of the valley hills in the background.

This viewshed possesses a sense of vividness because of the dominating view of the valley hills. However, the viewshed does not possess high value for intactness or unity because the existing development encroaches the viewshed. Viewers who would be affected by changes in views within this landscape unit include residents of adjacent homes, VTA transit commuters using the transit center, persons employed at businesses in the area, roadway travelers, pedestrians, and bicyclists.

Landscape Unit 4: Quimby Road to Coyote Creek

Landscape Unit 4 encompasses the area between Quimby Road and Coyote Creek along Capitol Expressway. This area is urbanized, with typical residential and commercial uses dominating the foreground and extending into the middleground. Views of U.S. 101 are visible from northbound and southbound Capitol Expressway at its interchange with U.S. 101, which is between Silver Creek Road and McLaughlin Avenue.

The most significant visual feature in this landscape unit is Coyote Creek, which traverses Capitol Expressway at its intersection with Tuers Road (Figure 4.18-15). Views of the creek channel and its dense vegetation are visible from both the northbound and southbound directions of Capitol Expressway. As shown in Figure 4.18-15, there is an unobstructed view of open fields and the distant hills within the Coyote Creek viewshed (between Tuers Road and Lone Bluff Way) with minimal obstruction from buildings or other development. A public golf driving range is located in the southwest quadrant of the Tuers Road/Capitol Expressway intersection (Figure 4.18-16). A trail is located adjacent to Coyote Creek as part of the larger Coyote Creek Park chain, but the trail is not directly accessible from Capitol Expressway.

Most of this landscape unit possesses low value for vividness, intactness, and unity because the landscape components are common throughout the study area. Within the Coyote Creek viewshed (between Tuers Road and Lone Bluff Way), the visual quality of the area possesses a high value for vividness, intactness, and unity as described above. Viewers who would be affected by changes in views within this landscape unit include residents of adjacent homes, VTA bus transit passengers with stops within the area, persons employed at businesses in the area, roadway travelers, recreational users of Coyote Creek Park chain, pedestrians, and bicyclists.

Landscape Unit 5: Coyote Creek to State Route 87

Landscape Unit 5 encompasses the area between Coyote Creek and SR 87 along Capitol Expressway. The description of Coyote Creek within this landscape unit is the same as above. South of Lone Bluff Way, the visual features are dominated by typical residential and commercial uses within the foreground and middleground.

Significant visual features within this landscape unit include Andrew P. Hill High School and Solari Park, both located in the southwest quadrant of the Senter Road/Capitol Expressway intersection. Viewpoint 6 depicts the existing view of the high school, located directly adjacent to Solari Park (Figure 4.18-17). The prominent visual features present from this key viewpoint are the existing high school buildings and athletic field facilities, and landscaping associated with Solari Park in the foreground. These features are set against prominent views of the valley hills in the background. This viewshed possesses high value for intactness because of its visual setting against the background. However, the viewshed does not possess high value for vividness or unity because structures and commercial development are interspersed within the viewshed.

Except for the views within the viewshed of Viewpoint 6, most of this landscape unit possesses low value for vividness, intactness, and unity because the landscape components are common throughout the study area. Viewers who would be affected by changes in views in this landscape unit include residents of adjacent homes, VTA bus transit passengers with stops within the area, persons employed at businesses in the area, roadway travelers, recreational users of Solari Park, pedestrians, and bicyclists.

Figure 4.18-11a
Views of eastern boundary of Lake Cunningham Park within Landscape Unit 2.

Figure 4.18-11b
Views of construction at Tully Road/Capitol Expressway.

Source: Jones & Stokes 2003.

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Landscape Unit 2 –
Ocala Avenue to Tully Road

Figure 4.18-12
Existing view of hills to the east.

Source: Jones & Stokes 2003.

**Landscape Unit 3 –
Tully Road to Quimby Road**

Figure 4.18-13
Existing view of Thompson Creek.

Source: Jones & Stokes 2003.

Source: Environmental Vision 2003.

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Figure 4.18-14
Viewpoint 5 – Eastridge Transit Center Looking East

Figure 4.18-15
Existing view of Coyote Creek viewshed looking northeast.

Source: Environmental Vision 2003.

Figure 4.18-16
Existing view of adjacent public golf course from west bank of Coyote Creek.

Source: Environmental Vision 2003.

Source: Environmental Vision 2003.

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Figure 4.18-17
Viewpoint 6 – Existing Views from Capitol Expressway Looking South towards Andrew P. Hill High School and Senter Road.

Scenic Routes and Vistas

There are no state-designated scenic highways within the study area. The closest designated or eligible scenic highway to the Capitol Expressway Corridor is a portion of I-280 from SR 17 to U.S. 101, approximately 2 miles west of Capitol Expressway. I-280 is an eligible scenic highway but not officially designated. There are several routes in Santa Clara County not yet officially designated, including U.S. 101 south of the study area and I-680 from U.S. 101 to the Alameda County line. The County has recognized all state-designated scenic highways within its jurisdiction. In its general plan, the City designates six scenic routes within the city limits: U.S. 101, Santa Teresa Boulevard south of Bernal Road, Almaden Road, McKean Road, Baily Avenue, and SR 85. Among the state and locally designated routes, the closest to the Capitol Expressway Corridor is U.S. 101, approximately 2 miles west of Capitol Expressway. Throughout the corridor, scenic views of the valley foothills of the Diablo Range to the east are visible.

Regulatory Setting

The City, County, and VTA provide policies and guidelines relating to the visual resources in the corridor that may be affected by the proposed alternatives. The San Jose 2020 General Plan provides policies regarding urban design in the city—for example, “Proposed structures adjacent to existing residential areas should be architecturally designed and sited to protect the privacy of the existing residences.”

The Santa Clara County General Plan provides strategies for preserving and enhancing the scenic values of both natural and built environments. Policy C-RC 62 states:

> Urban parks and open spaces, civic places, and public commons areas should be designed, developed and maintained such that the aesthetic qualities of urban settings are preserved and urban livability is enhanced. Natural resource features and functions within the urban environment should also be enhanced.

VTA has objectives regarding the integration of transportation and land use. As embodied in VTP 2030, a key objective is to “Design and construct transportation facilities to enhance the aesthetic quality of the built environment.”

4.18.3 Environmental Consequences and Mitigation Measures

Approach and Methodology

The analysis of effects on the visual quality is based on evaluating the change in views in the local setting and at each of the key viewpoints previously identified. For the Light Rail Alternative, the analysis of effects at the key viewpoints is based on visual simulations conducted by Environmental Vision (2003), as described below.

A series of visual simulations are presented to portray representative “before” and “after” visual conditions at the project site. The simulations illustrate the location, scale, and conceptual appearance of the Light Rail Alternative as seen from seven representative viewpoints. The simulation viewpoint locations and general view directions, delineated on Figure 4.18-4, are:

- Highwood Drive at Capitol Expressway,
- Capitol Expressway at South Capitol Avenue,
- Capitol Expressway at Story Road looking south,
- Capitol Expressway at Story Road looking north,
- Eastridge Transit Center looking east, and
- Capitol Expressway looking south.

Environmental Vision employed computer modeling and rendering techniques to produce the visual simulation images. The computer-generated visual simulations are the results of an objective analytical and computer modeling, and are accurate within the constraints of available site and project data. A brief description of the technical simulation methods is provided below.

A single lens reflex 35-millimeter camera with a slightly wide angle, 35-millimeter lens (54-degree view angle) was used to take site photographs. Site location data for each photograph were collected using rectified aerial photographs and detailed project mapping. Photo location data were later incorporated into the three-dimensional digital model. Existing topographic and aerial photographs supplied by Korve Engineering provided the basis for developing an initial digital model.

Using design data supplied by VTA, a three-dimensional model of the proposed improvements was developed. In addition to conceptual engineering plan, section, and profile drawings, VTA staff provided supplemental information including typical facility dimensions and aesthetic character photographs taken at selected light rail station locations. The three-dimensional computer model of the proposed facilities, combined with the digital site model, were used to produce a complete computer model of the alternative. A set of computer-generated perspective plots was then produced to represent the selected viewpoints.

For each simulation viewpoint, global positioning system viewer location data were added to the three-dimensional digital model using 5 feet as the assumed eye level. Computer “wireframe” perspective plots were overlaid on photographs to verify scale and viewpoint location. Digital visual simulation images were then produced based on computer renderings of the three-dimensional model combined with digital versions of the selected site photographs. Landscaping, portrayed at approximately 8–10 years of maturity, is shown for illustrative purposes.

Thresholds of Significance

Based on significance criteria used by VTA and professional practice, the proposed alternatives may result in adverse effects related to visual quality if they would:

- substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- substantially degrade the existing visual character or quality of the site and its surroundings;
- have a substantial adverse effect on a scenic vista; or
- create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Environmental Consequences and Mitigation Measures of the No-Project Alternative

This analysis considers the effects of the No-Project Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

Because there would be no transit improvements under the No-Project Alternative, the existing transit services and roadway network in the Capitol Expressway Corridor would remain except for the HOV lanes along Capitol Expressway. There would be no large-scale construction of structures or facilities, including physical alteration of existing facilities and construction of new facilities, and environmental conditions would not change. Therefore, there would be no adverse effect related to visual quality.

Environmental Consequences and Mitigation Measures of the Baseline Alternative

Anticipated adverse effects associated with the projects included in the approved 1996 Measure B Improvement Program are independent of the proposed alternatives and are or will be reviewed in their respective environmental compliance documents. Additionally, the potential cumulative effects of these projects are in Chapter 5, *Other CEQA Considerations*, of this document. This analysis considers the effects of the bus service improvements that are included in the Baseline Alternative as outlined in Chapter 3, *Alternatives Considered*.

Under the Baseline Alternative, there would be bus service improvements consisting of service frequency upgrades; a new route providing continuous, limited-stop service along Capitol Expressway; and ELS service along various routes throughout the existing bus transit network. These improvements would operate using existing service structures, route network, and bus stop locations and would not require the construction of any new structures or facilities. Therefore, there would be no adverse effect related to the visual quality.

Environmental Consequences and Mitigation Measures of the Light Rail Alternative

This analysis considers the effects of the Light Rail Alternative as outlined in Chapter 3, *Alternative Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

VQ-1: Creation of a New Source of Substantial Light or Glare

Consistent with the rest of the VTA LRT system, implementation of the Light Rail Alternative would result in almost 24-hour operations. The proposed operations would require lighting to be provided at the proposed light rail stations and park-and-ride lots 24 hours per day. Such lighting is commonly used at the existing stations and lots. This lighting would slightly increase light and glare affecting residences in the Capitol Expressway Corridor. This would be considered an adverse effect. However, implementation of the following mitigation measure would minimize this effect.

Mitigation Measure VQ-1: Incorporate Lighting Design Standards to Minimize Fugitive Light and Glare

VTA shall design lighting to illuminate designated areas only, to minimize intrusion onto adjoining land uses. VTA shall control potential light and glare by directing lighting associated with proposed park-and-ride facilities and stations onto the premises of each facility, and by ensuring that driveways providing access to parking areas are not directly opposite the windows of residential buildings. Lighting at platform-only stations shall be at reduced levels during hours when the LRT is not running. This would reduce potential light or glare and would not result in an adverse effect. The following specific elements shall be incorporated into the project design.

- Luminaire placement should be the minimum allowable by VTA, and spacing should be the maximum allowable, for safety.
- Luminaires should be cutoff-type fixtures that cast low-angle illumination to minimize incidental spillover of light onto adjacent private properties. Fixtures that project upward or horizontally should not be used.
- Luminaires should be directed toward the facility and away from adjacent residences and open space areas.
- Luminaire lamps should provide good color rendering and natural light qualities. Low-pressure and high-pressure sodium fixtures that are not color-corrected should not be used.
- Luminaire intensity should be the minimum allowable for safety.
- Luminaire mountings should be downcast and the height of the poles minimized to reduce potential for backscatter into the nighttime sky and incidental spillover of light into adjacent private properties and open space.
- Luminaire mountings should have nonglare finishes.
- All project surfaces shall be designed and finished to reduce horizontal glare from the sun.

VQ-2: Substantial Alteration or Effect on a Scenic Vista

The closest designated scenic route to the Capitol Expressway Corridor is U.S. 101, located 2 miles west of Capitol Expressway. The alignment of the Light Rail Alternative would not be visible from this segment of U.S. 101; there would be no adverse effect. As discussed in Section 4.6, *Cultural Resources*, there are no historic buildings within the corridor or within U.S. 101; there would be no adverse effect.

Mitigation: No mitigation is required.

VQ-3: Degradation of Existing Visual Quality

With implementation of the Light Rail Alternative, the streetscape of Capitol Expressway would be redesigned to create an urban parkway. The design would incorporate trees along the light rail median and along the curb edge of the roadway. A multi-use linear path along part of Capitol Expressway is also proposed. The path would be approximately 16 feet wide in most locations and would include a 10-foot-wide multi-use path and landscaping. To accommodate bicyclists to the greatest extent possible, the curb lanes on both sides of Capitol

Expressway would be 17–18 feet wide to allow use of the shoulders by bicycles. There would also be emergency pull-out areas for vehicles placed intermittently along Capitol Expressway.

Changes to the existing visual character of the Capitol Expressway Corridor would occur as a result of implementation of the Light Rail Alternative. These changes would include the construction of new station features such as shelters and platforms, placement of new trackway, and paving at two sites for new park-and-ride lots. One-story TPSS structures would be placed in various locations along the alignment, including some residential areas. In most locations, perhaps the most noticeable visual feature of this alternative would be the presence of the OCS that supplies electrical power to the light rail vehicles. These changes are illustrated in Figures 4.18-18 through 4.18-27.

Viewpoint 1

Figure 4.18-18a shows the existing view from Highwood Drive and Capitol Expressway, looking westward toward Capitol Expressway from the middle of Highwood Drive. The aerial structure would introduce a large concrete structure containing the light rail trackway into the median, which would partially block views across the roadway (Figure 4.18-18b). It would add the concrete structure and supporting trackway facilities, such as the overhead contact wire and catenary poles, into an urban setting that currently contains overhead power lines, street light poles, and traffic signals along an urban expressway. The aerial structure would be located approximately 38 feet above the ground level, but would be considerably lower than the existing overhead electrical towers in the area. With the OCS, the highest point on the structure would be 56 feet above ground level. The existing soundwall is shown in this simulation. This view would be most visible to residents adjacent to the light rail alignment in this location. Pedestrians, employees of businesses in the area, mobile viewers such as VTA bus transit passengers, automobile drivers, and bicyclists would have intermittent views of the structure as they pass. The introduction of the aerial structure would affect the visual quality of this landscape unit. Although the aerial structure would be an intrusive element in the viewshed at this location, it is not inconsistent with the existing urban roadway setting. For this viewpoint, there would be high value for vividness but no change in its low value for intactness and unity because of the consistency of the aerial structure with the existing setting.

If either of the tunnel vertical profile options were selected, the overhead wires and supporting poles would not be visible to the observer, and the median of the roadway would not be landscaped. A low wall separating the tunnel from the roadway for the length of the tunnel would be the most prominent feature. There is a similar wall along First Street in downtown San Jose, where the light rail alignment is located in a depressed section; this wall is depicted in Figure 4.18-19 where the light rail alignment would be adjacent to existing residences. At this location, the existing soundwall would obscure the view of the tunnel section, and the view would remain relatively unchanged. For this viewpoint, the tunnel option would result in low value for vividness, intactness, and unity

Figure 4.18-18a
Existing view from Highwood Drive at Capitol Expressway looking west

Figure 4.18-18b
Visual simulation of proposed aerial trackway

Source: Environmental Vision 2003.

Conceptual Visual Simulation: Viewpoint 1, Capitol Expressway Corridor

01277.01 007 (06/03)

Figure 4.18-19
Existing Depressed Light Rail Alignment

Figure 4.18-20a
Existing view of Capitol Expressway near South Capitol Avenue looking northeast

Figure 4.18-20b
Visual simulation of proposed aerial trackway

Source: Environmental Vision 2003.

Conceptual Visual Simulation: Viewpoint 2, Capitol Expressway Corridor

Figure 4.18-21a
Existing view from Capitol Expressway at Story Road looking south

Figure 4.18-21b
Visual simulation of Story Station - Median Access Option

Source: Environmental Vision 2003.

01277.01 007 (06/03)

Conceptual Visual Simulation: Viewpoint 3, Capitol Expressway Corridor

Figure 4.18-22a
Existing view from Capitol Expressway at Story Road looking south

Figure 4.18-22b
Visual simulation of Story Station - Pedestrian Overcrossing

Source: Environmental Vision 2003.

01277.01 007 (06/03)

Conceptual Visual Simulation: Viewpoint 3, Capitol Expressway Corridor

Figure 4.18-23a
Existing view from Capitol Expressway at Story Road looking north

Figure 4.18-23b
Visual simulation of Story Station - Median Access Option

Source: Environmental Vision 2003.

01277.01 007 (06/03)

Conceptual Visual Simulation: Viewpoint 4, Capitol Expressway Corridor

Figure 4.18-24a
Existing view from Capitol Expressway at Story Road looking north

Figure 4.18-24b
Visual simulation of Story Station - Pedestrian Overcrossing

Source: Environmental Vision 2003.

Conceptual Visual Simulation: Viewpoint 4, Capitol Expressway Corridor

Figure 4.18-25a
Existing view from Eastridge Transit Center looking east

Figure 4.18-25b
Visual simulation of Eastridge Station - At-Grade

Source: Environmental Vision 2003.

01277.01 007 (06/03)

Conceptual Visual Simulation: Viewpoint 5,
Capitol Expressway Corridor

Figure 4.18-26a
Existing view from Eastridge Transit Center looking east

Figure 4.18-26b
Visual simulation of Eastridge Station - Aerial Option

Source: Environmental Vision 2003.

Conceptual Visual Simulation: Viewpoint 5, Capitol Expressway Corridor

Figure 4.18-27a
Existing view from Capitol Expressway looking south

Figure 4.18-27b
Visual simulation of Senter Road Station

Source: Environmental Vision 2003.

Conceptual Visual Simulation: Viewpoint 6, Capitol Expressway Corridor

because the viewshed would not be significantly altered with implementation of the Light Rail Alternative.

Viewpoint 2

Figure 4.18-20a shows an existing view of Capitol Expressway looking northeast from near south Capitol Avenue. The vantage point of roadway travelers using Capitol Expressway is depicted in Figure 4.18-20b. At this location, the alignment is shown crossing northbound Capitol Expressway and would transition to the median of the roadway just south of this site. The proposed aerial structure is visible, as well as the existing soundwall, trees, and landscaping in the median. This view would be most visible to the residents adjacent to the light rail alignment in this location, pedestrians, and employees of businesses in the area. Mobile viewers such as VTA bus transit passengers, automobile drivers, and bicyclists would have intermittent views of the structure as they pass. However, the addition of the aerial structure in this view is not inconsistent with the existing urban roadway setting. The view of the roadway itself is enhanced by the urban parkway design of the streetscape. For this viewpoint, there would be high value for vividness but would remain unchanged in its low value for intactness and unity because of the consistency of the aerial structure with the existing setting of the roadway.

Viewpoint 3

Figure 4.18-21a shows the existing view from Capitol Expressway at Story Road looking toward the south. The most dominant yet unremarkable feature in this view is the roadway. In Figure 4.18-21b, the Story Road Aerial Station with Median Access Option is shown, with the center station platform and stairs. The overhead contact wire, catenary poles, and shelter over the station platform are visible. The parkway landscaping and the multi-use pathway is depicted. In the middle of the simulation, part of the structure that contains the station elevator is visible. This view would be most visible to pedestrians, employees of local businesses, and residents of adjacent homes. Pedestrians would be introduced to the shadows created by the overhead structures. Mobile viewers such as VTA bus transit passengers, automobile drivers, and bicyclists would have intermittent views of the aerial structure and station as they pass. In Figure 4.18-22b, the light rail station is shown with a pedestrian overcrossing. The elevator structure appears in this view. In both instances, the most significant change in the landscape unit would be the introduction of the aerial structure and station access facilities. For this viewpoint, the presence of the aerial structure would result in a high value for vividness and low values for intactness and unity. These values differ slightly from the existing condition.

Viewpoint 4

Figure 4.18-23a shows an alternate view from Capitol Expressway at Story Road, looking northward from the roadway toward the intersection. The roadway is the most significantly visible feature, with no scenic vistas. As shown in Figure 4.18-23b, with the Story Road Aerial Station with Median Access Option, the aerial structure and station access facilities are most prominent, with the elevator structure fully visible in this simulation. The overhead contact wire is visible but screened by trees. The urban parkway is prominent, with the widened sidewalk pathway, trees, and other landscaping, including the roadway median. The elevator structure is featured in this simulation. The same viewshed appears in Figure 4.18-24b, with the most visible feature of the Light Rail Alternative being the pedestrian bridge to the mezzanine and the structure that houses the stairs. At this location, these features would be most visible to pedestrians along the corridor and residents of adjacent homes. Viewers traveling through the corridor such as VTA bus transit passengers, automobile drivers, and bicyclists would have intermittent views of these facilities as they pass. Although the aerial structure is intrusive, it is not inconsistent with the existing roadway setting that dominates the viewshed, and the view of the roadway itself is enhanced by the urban parkway design of the streetscape. For this viewpoint, there would be low values for vividness, intactness, and unity under implementation of the Light Rail Alternative. This would not substantially change from the existing condition.

Viewpoint 5

Figure 4.18-25a depicts a view from the existing Eastridge Transit Center looking east toward the valley foothills. The bus transfer facility is visible in this view. Figure 4.18-25b shows the Light Rail Alternative with an at-grade light rail station beyond the bus parking in the background. In the foreground, the proposed landscaping, lighting, and decorative paving elements of the transit center are shown. The scenic vista of the hills in the distant background would be partially obstructed by the trees in the landscaping, which would represent the most significant change in the viewshed. A similar view from the same vantage point is shown in Figure 4.18-26b, with the Aerial Station Option. The aerial structure with the light rail trackway, shelter on the station platform, catenary poles, overhead contact wire, and elevator structure would be prominently visible at this site, fully obscuring the scenic views of the valley hills. These changes would affect VTA bus transit commuters using the transit center, patrons of Eastridge Mall, roadway travelers, pedestrians, and bicyclists. Views at this location could be similar to the views at the proposed park-and-ride lots along the alignment, where automobiles and transit centers would dominate the viewshed. For this viewpoint, there would be high value for vividness, but low values for intactness and unity because of the addition of the aerial structure. These values would remain unchanged from the existing condition with implementation of the Light Rail Alternative.

Viewpoint 6

Figure 4.18-27a depicts a view from Capitol Expressway near Senter Road, looking southward at the proposed Senter Road Station. This site is located in the segment between Coyote Creek and Monterey Highway along Capitol Expressway where an at-grade alignment is proposed. The high school buildings and playing fields are visible. The valley hills appear in the distant background. In the visual simulation, the station platform, shelters, decorative railing, and landscaped median are the most visible features in the foreground (Figure 4.18-27b). In the background, on the right side of the simulation, the pedestrian overpass and the structure housing the stairs and elevators are visible. Views of the valley hills would be obstructed at this location by the station facilities and landscape trees., resulting in a low value for intactness. Under the Light Rail Alternative, this viewpoint would continue to have low values for vividness and unity, unvaried from the existing condition.

The Light Rail Alternative would result in some degradation of visual quality. Viewpoints 1–3 would experience changes in values for vividness, and Viewpoint 6 would result in a change in the value of intactness. This would be considered an adverse effect. However, implementation of the following mitigation measure would minimize this effect.

Mitigation Measure VQ-3: Refine Project Design for Consistency within the Community

VTA shall develop and implement a public involvement program regarding station design during the final design phase of the Light Rail Alternative.

Mitigation Measure VQ-4: Incorporate Landscaping in the Project Design

VTA shall develop and implement a comprehensive landscaping plan to soften the massing, hardscape, and structural elements of the Light Rail Alternative. The landscaping shall be designed to be consistent with vegetation types and patterns within the Capitol Expressway Corridor, and shall provide year-round aesthetic enhancement.

Proposed Options

As described in Chapter 3.0, *Alternatives Considered*, the Light Rail Alternative includes station, segment, park-and-ride and light rail vehicle storage location options. The station options include at-grade, aerial and depressed open air station designs. Several platform configurations are also being explored including side platforms, single center platforms, offset platforms and a platform on the west side of the expressway. With the exception of the Capitol Avenue to Capitol Expressway transition, the Eastridge Transit Center segment, the side-running option between Eastridge and Nieman Boulevard, and the U.S. 101 crossing, the light rail alignment would remain within the median at-grade, on an aerial structure above the corridor, or in a tunnel. These options could adversely affect visual quality. The effects on visual quality discussed above could result depending upon the alignment options or station designs selected.

Section 4.19

Construction Impacts

4.19.1 Introduction

This section describes the construction scenarios and potential short-term construction impacts of the alternatives analyzed in this EIR. The description of the construction scenarios include staging and techniques. Specifically, this analysis addresses potential adverse construction impacts and mitigation measures related to transportation, air quality, biological resources, cultural resources, energy, environmental justice, hazardous materials, hydrology and water quality, land use, noise and vibration, and utilities.

4.19.2 Construction Scenario

No-Project Alternative

Because there are no transportation improvements under the No-Project Alternative, no construction activities would occur.

Baseline Alternative

Construction under the Baseline Alternative would be relatively minor, consisting of "enhanced bus stops," or station-like areas for passenger boarding, and bus bulbouts. The design and location of these facilities are not known as this time.

Light Rail Alternative

If selected as the preferred project, the Light Rail Alternative would likely be constructed in two or more phases: an initial phase terminating in the vicinity of the Eastridge Transit Center (Figure 3-3), and, in subsequent phases, continuing from the Eastridge Transit Center to the Guadalupe LRT Line at SR 87. Construction of the Light Rail Alternative would occur over a period of approximately 3 years, beginning in 2005, with revenue service scheduled to being in 2008. For the purposes of this environmental analysis, both phases of construction are evaluated. At the height of construction, during the midpoint from 18–24 months, construction employees and equipment would occupy portions of the street, including the median and parking lanes, at active construction locations. In the most active areas, construction activities would periodically reduce the roadway capacity of Capitol Expressway from three to two lanes in each direction during mid-day, off-peak periods, although VTA would make every effort to keep all three lanes open during peak periods of travel. As a result, construction activity would have such transportation effects as reduced traffic flow, LOS at intersections, availability of HOV lanes and on-street parking, and ability of transit schedule to maintain schedule adherence. Temporary construction easements would be employed to facilitate traffic flow. VTA would coordinate the construction schedule to minimize adverse effects and conduct public outreach throughout the process.

The proposed construction staging areas include sites at the Capitol Expressway/Ocala Avenue intersection, the Capitol Expressway/Quimby Road intersection, and at the existing north park-and-ride lot at the Capitol (State Route 87) Light Rail Station on the Guadalupe LRT Line. At the Capitol Expressway/Ocala Avenue intersection site, equipment would be staged in the ruderal field located at the southwest corner of the intersection. The land is currently owned by PG&E and would become a park-and-ride lot. The property located south of Quimby Road and west of Capitol Expressway is referred to as the “Arcadia” site. At this location, a temporary access road from Quimby Road to the staging area would need to be constructed. The final site is located west of Narvaez Avenue and north of Capitol Expressway, and is owned by VTA. Although no long-term staging site would occur at Coyote Creek, vehicles and equipment could be parked at the creek overnight during peak construction activity.

Potential utilities that would require relocation include five major overhead electrical towers in the segment south of Story Road to the Eastridge Transit Center, and natural gas lines at Reid-Hillview Airport. An existing box culvert at Canoas Creek would be replaced by a larger culvert.

4.19.3 Environmental Consequences and Mitigation Measures

Approach and Methodology

Analysis of construction impacts was based on quantitative and qualitative assessments of short-term effects identified for each resource area.

Thresholds of Significance

Based on standards of significance used by VTA and professional practice, an alternative may result in adverse effects related to construction if it would:

- result in substantial overcrowding on public sidewalks, creation of hazardous conditions for pedestrians, or elimination of pedestrian access to adjoining areas **(transportation)**;
- result in long-term (1 month or more) street closure, or closing of a lane or other interference of traffic flow on any major traffic-carrying street, diverting of traffic through residential areas **(transportation)**;
- result in long term (3 months or more) loss of parking or pedestrian access that is essential for continued operation of businesses **(transportation)**;
- not include implementation of Bay Area Air Quality Management District best management practices for construction activities **(air quality)**;
- substantially affect sensitive species or habitats, including natural communities and federally protected wetlands **(biological resources)**;
- demolish or materially alter a significant historical, archaeological, or paleontological resource **(cultural resources)**;
- consume non-renewable energy resources in a wasteful, inefficient, or unnecessary manner **(energy)**;
- create a potential public or environmental health hazard; an undue potential risk for health-related accidents; or result in a safety hazard for people residing or working in the project area **(hazardous materials)**;
- substantially affect surface water or groundwater quality or alter surface runoff rates thereby contributing to flooding or erosion hazards **(hydrology and water quality)**;
- result in construction-related effects on water quality during grading or other earthmoving activities **(hydrology and water quality);**
- disrupt a business for a period of 3 months or more **(land use)**;
- generate noise and vibration that substantially affects nearby sensitive receptors (e.g., residences, schools, hospitals) **(noise and vibration)**;
- disrupt any utility services for a period of 24 hours or more **(utilities)**; or
- create a new source of substantial light or glare which would adversely affect day or nighttime views in the area **(visual quality)**.

Environmental Consequences and Mitigation Measures of the No-Project Alternative

This analysis considers the effects of the No-Project Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document. No construction would occur under this alternative; therefore, there is no adverse effect.

Environmental Consequences and Mitigation Measures of the Baseline Alternative

Anticipated adverse effects associated with the projects included in the approved 1996 Measure B Improvement Program are independent of the proposed alternatives and are or will be reviewed in their respective environmental compliance documents. Additionally, the potential cumulative effects of these projects are considered in Chapter 5, *Other CEQA Considerations*, of this document. This analysis considers the effects of the bus service improvements that are included in the Baseline Alternative as outlined in Chapter 3, *Alternatives Considered*. There would be minimal construction under this alternative, none of which would result in an adverse effect.

Environmental Consequences and Mitigation Measures of the Light Rail Alternative

This analysis considers the effects of the No-Project Alternative as outlined in Chapter 3, *Alternatives Considered*. Additionally, the potential cumulative effects of this alternative are considered in Chapter 5, *Other CEQA Considerations*, of this document.

Transportation

TRN (Construction)-1: Long-Term (1 Month or More) Street Closure, Lane Closure, or Interference of Traffic Flow

TRN (Construction)-2: Long-Term (3 Months or More) Loss of Parking or Pedestrian Access Essential for Continue Operation of Business

Construction of the Light Rail Alternative would be a continuous, year-round process with construction taking place in 2- to 3-mile segments at a time. However, the peak of daily construction activity in any single area would take place during the off-peak commute hours when the LOS on Capitol Expressway at most major intersections is C or better. Implementation of the following mitigation measures would reducing this effect.

Mitigation Measure TRN (Construction)-2a: Prepare Traffic Management Plan

VTA shall require its contractors to prepare and implement traffic handling plans in concert with the City of San Jose. Based on the Traffic Management Plan, contractors would use flagmen and follow a daily construction schedule that would restore traffic capacity during peak periods on weekdays (the morning commute period is 7:00 to 9:00 a.m. and the evening commute period is 4:00 to 6:00 p.m.). VTA would use a Construction Management contractor and assign a specific Construction Management VTA team to oversee construction including contractor compliance to mitigation measures such as adequate flagmen and the Traffic Management Plans.

Construction equipment traffic from the contractors would be controlled by flagman and the procedures contained in the Traffic Management Plan. For example, the use of the median to store large pieces of equipment overnight would be regulated. Traffic that may attempt to use neighborhood streets to avoid construction areas would be controlled by two characteristics of the roadway network adjacent to Capitol Expressway:

- First, while there are no efficient, directly parallel detours around Capitol Expressway, some arterials are capable of handling traffic diverted from Capitol Expressway. White Road, King Road, Tully Road, and Branham Lane will likely handle most of the diverted traffic. Portable electronic variable message signs and other signage would be positioned at approaches to Capitol Expressway north and south of individual construction zones to warn motorists of construction ahead and direct traffic to use alternative routes where feasible. Flagmen would be at all major construction points to assist in the control of traffic and support the use of these roads as a detour.
- Second, there are very few paths of travel through neighborhood streets that offer parallel routes to Capitol Expressway. Therefore, neighborhood streets would be protected from being used as cut-through streets by motorists.

Mitigation Measure TRN (Construction)-2b: Provide Public Information Regarding Proposed Traffic Detours

VTA shall coordinate with the appropriate local jurisdiction to provide the public with advance notice of proposed traffic detours and their duration. VTA would continue to use a team of public outreach staff who would be dedicated to the Light Rail Alternative. VTA would establish a field office along the Project that would be open to the public during specific hours of the week and be equipped with a project phone hotline to assist phone calls. The public outreach staff would pro-actively inform the public of the ongoing project progress and exceptions to the expected plans. The staff would also respond to requests for information and assistance when impacts raise special concerns. Emergency requests would be addressed within a specific time goal.

Mitigation Measure TRN (Construction)-2c: Provide the Public and Transit Users with Advanced Notice of Reroutes and Changes in Stops and Service

Transit service on time performance could be affected during the construction period. The public and transit users would receive notifications of any changes in transit service due to the construction of the Light Rail Alternative. The program would be part of the Capitol Expressway Light Rail Project public outreach effort.

Air Quality

BAAQMD (1999) does not require emissions from construction activities to be estimated, but it requires implementation of all feasible control measures that would limit emissions of PM10 from construction activities. Quantities of PM10 emitted during construction activities vary greatly, depending on the level of activity, nature of specific operations, equipment operated, local soils, and weather conditions. Experience indicates that, despite the variability in emissions, a number of control measures can be reasonably implemented to reduce PM10 emissions during construction. These measures are included in Mitigation Measure AQ (Construction)-1.

Operation of construction equipment also emits CO and ozone precursors. Construction-related emissions of these pollutants are not estimated, however, because they are already included in the emission inventory that forms the basis for BAAQMD’s regional air quality plans ,and because those emissions are not expected to impede attainment or maintenance of ozone and CO standards in the Bay Area (Bay Area Air Quality Management District 1999).

AQ (Construction)-1: Temporary Increase in Construction-Related Emissions during Grading and Construction Activities

During construction of the Baseline Alternative, emissions of several air pollutants, including criteria pollutants, would be produced by various sources. Criteria pollutant emissions could be produced by construction equipment and fugitive dust created by wind and the operation of equipment over exposed earth. Construction-related emissions were not estimated, but, because construction activities could result in a significant increase in PM10 and construction vehicle exhaust emissions, this effect is considered adverse. Implementation of Mitigation Measure AQ (Construction)-1 would minimize this effect.

Mitigation Measure AQ (Construction)-1: Implement Dust and Vehicle Emission Control Measures (Best Management Practices) during Construction Activities

VTA will implement, or will require the designated contractor to implement, the following basic BMPs to control dust emissions during construction.

- Water all active construction areas at least twice daily as required to control dust.
- Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least 2 feet of freeboard.
- Pave, apply water daily to, or apply (nontoxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.
- Sweep (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites, as needed.
- Sweep streets (with water sweepers) if soil is visible on adjacent public streets, as needed.
- Hydroseed or apply (nontoxic) soil stabilizers to inactive construction areas (previously graded areas that will be inactive for 10 days or more).
- Enclose, cover, water twice daily, or apply (nontoxic) soil binders to exposed stockpiles (dirt and sand).
- Limit traffic speeds on unpaved roads to 15 mph.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways, as needed.
- Reduce idling of internal combustion engines to an absolute minimum to the greatest extent feasible.
- Maintain construction equipment properly and tune engines to minimize exhaust emissions.

Biological Resources

The vast majority of the adverse effects on biological resources that would result from the Light Rail Alternative would be construction-related, especially the temporary disturbance of species and their habitats. These effects and their associated mitigation measures have been discussed in Section 4.4, *Biological Resources* (specifically, BIO-7 to BIO-16, and BIO-18).

Community Services

CS (Construction)-1: Temporary Disruption of Emergency Access

Existing and planned service levels for police and fire protection are expected to be adequate with implementation of the Light Rail Alternative. However, construction activities would temporarily disrupt emergency access within the Capitol Expressway Corridor. Although the effect would not be permanent, the following mitigation measure is recommended to minimize the effect.

Mitigation Measure CS (Construction)-1: Coordinate Construction and Operational Activities with Emergency Service Providers
VTA shall expand fire safety and emergency response training to include the fire districts in the Capitol Expressway Corridor that will be responsible for providing these services. VTA shall work with emergency service providers to develop alternative routes and to adjust service areas and destinations as necessary to maintain emergency service coverage and response times following project completion.

Cultural Resources

CR (Construction)-1: Disturbance of Archaeological Resources, Including Human Remains, from Construction Activities

There are several known archaeological resources in the APE. The Capitol Expressway Corridor also has high sensitivity for the presence of additional archaeological sites. Ground-disturbing activities associated with construction of the Light Rail Alternative, such as grading and excavation at proposed station sites, park-and-ride lots, and below-grade alignment sections, have the potential to adversely affect known and unknown archaeological resources, including human remains, in the corridor. This is considered an adverse effect. Following the standard practice for the discovery of buried resources described in Section 4.6, *Cultural Resources*, would avoid this effect.

Mitigation: No further mitigation is required.

Energy

Construction-related energy consumption would result from project construction and secondary facilities. Energy consumed for project construction would be that used for the construction of trackway and support facilities, and for the transportation of materials and equipment to and from the work site. A secondary facility is a facility, such as a factory, that produces construction materials and machinery that would be used in the construction and maintenance of the structures and attendant facilities. These effects are discussed qualitatively. Special attention was given to the efficiency with which construction materials and machinery are produced and the choices made regarding construction methodology and procedures, including the adequacy of equipment maintenance.

E (Construction)-1: Consumption of Nonrenewable Energy Resources in a Wasteful, Inefficient, and/or Unnecessary Manner from Project Construction

The highest indirect energy consumption would occur during demolition and construction of onsite facilities, such as trackwork, guideways, structures, maintenance yards, stations, and support facilities. This construction-related energy consumption would result in the one-time, nonrecoverable energy costs associated with construction and the manufacture of light-rail train vehicles. Unplanned and inefficient delivery of materials to the work sites would increase the number of truck trips required, resulting in wasteful use of energy. Wasteful consumption of energy would result if construction equipment and machinery were not kept in good condition. Equipment and vehicles, if left idling, would also result in unnecessary use of energy. Because the Light Rail Alternative has only been designed to a conceptual level, specific details regarding construction practices and methods have not been specified. Effects to nonrenewable energy resources would therefore be considered potentially adverse. However, adherence to the mitigation below would reduce this effect.

Mitigation Measure E (Construction)-1: Adopt Energy Conservation Measures

VTA will require contractors to adopt construction energy conservation measures including, but not limited to, those listed below.

- Use energy-efficient equipment and incorporate energy-saving techniques in the construction of the Light Rail Alternative.
- Avoid unnecessary idling of construction equipment.
- Consolidate material delivery as much as possible to ensure efficient vehicle utilization.
- Schedule delivery of materials during non-rush hours to maximize vehicle fuel efficiency.
- Encourage construction workers to carpool.
- Maintain equipment and machinery, especially those using gasoline and diesel, in good working condition.

E (Construction)-2: Consumption of Nonrenewable Energy Resources in a Wasteful, Inefficient, and Unnecessary Manner from Secondary Facilities Activities

It is assumed that secondary facilities, such as those that produce cement and steel, employ all reasonable energy conservation practices in the interest of minimizing business costs. For example, Californian industry reduced electricity usage (mostly generated by natural gas, a nonrenewable fuel) from 54.7 million MWh in 2000 to 52.2 million MWh in 2001, a 4.6% reduction, even as the state's population increased by 513,352, or 1.5%. As such, it can be assumed that construction-related energy consumption by secondary facilities under the Light Rail Alternative would not consume nonrenewable energy resources in a wasteful, inefficient, or unnecessary manner, limiting the effect on nonrenewable energy resources.

Mitigation: No mitigation is required.

Geology, Soils, and Seismicity

GEO (Construction)-1: Lateral Spreading, Subsidence, and Collapse Caused by Underlying Unstable Geologic Units

The alignment of the Light Rail Alternative would be located in an area that may be susceptible to lateral spreading, subsidence, and collapse. Soils and underlying geologic materials that are susceptible to lateral spreading, subsidence, and collapse could increase the risk of structural loss, injury, or death. This potential risk would result in an adverse effect; however, implementation of the following mitigation measure would minimize this effect.

Mitigation Measure GEO (Construction)-1: Implement Proper Construction Methods to Minimize Risk of Lateral Spreading, Subsidence, and Collapse Hazards

Prior to implementation of the proposed transit improvement activities the following construction methods should be employed:

- construct edge containment structures such as berms, dikes, retaining structures, or compacted soil zones;
- remove or treat soils and geologic materials prone to lateral spreading and settling; and
- install drainage measures to lower the groundwater table below the level of settleable soils (California Division of Mines and Geology 1997).

GEO (Construction)-2: Presence of Expansive Soil

Transportation improvements proposed under the Light Rail Alternative would be located in an area that may have expansive soils. Expansive soils could cause structures to fail, presenting a risk of structural loss, injury, or death. This potential risk would result in an adverse effect; however, implementation of the following mitigation measure would minimize this effect.

Mitigation Measure GEO (Construction)-2: Reinforce Foundations or Excavate Expansive Soil to Minimize Risk of Soil Expansivity
Special engineering techniques such as using reinforced steel in foundations, using drainage control devices, and/or over-excavating and backfilling with non-expansive soil shall be implemented during construction activities to minimize the risk of structural loss, injury, or death.

Hazardous Materials

HAZ (Construction)-1: Significant Hazard to the Public or the Environment through Reasonable Foreseeable Upset and Accident Conditions Involving the Release of Hazardous Materials into the Environment

The Light Rail Alternative would extend service from the Capitol Station, located at the Capitol Avenue/Alum Rock Avenue intersection to the Guadalupe LRT Line along SR 87. Along the proposed 8.2-mile extension, the light rail right-of-way would be at, above, and below the existing grade of the roadway. Construction would involve subsurface drilling, which could lead to a finding of contaminated soil and/or groundwater. This would be considered an adverse effect, but implementation of the following mitigation measure would minimize this effect.

Mitigation Measure HAZ (Construction)-1a: Conduct Subsurface Investigations in Areas of the Corridor That May Be Underlain by Contaminated Soil or Groundwater
VTA shall conduct Phase I (and if necessary Phase II) site investigations to determine whether any chemicals of concern are present. If necessary, a risk assessment shall be prepared and procedures established before construction to address the identification, excavation, handling, and disposal of hazardous materials. If contaminated soil or groundwater is encountered, VTA shall notify the appropriate local environmental management agencies and local fire departments. VTA shall ensure that any identified environmental site conditions that may represent a risk to public health and safety will be remediated in accordance with federal, state, and local environmental laws and regulations.

Before construction, a determination shall be made by a qualified environmental assessor (based on field sampling of media, laboratory analysis of samples, visual confirmation of environmental conditions, etc.) as to the nature of environmental risk associated with construction activities at the identified hazardous materials sites. A similar determination shall also be made for each of the proposed park-and-ride lot sites. All recommendations of the qualified environmental assessor (e.g., preparation of a health and safety plan [HSP] for the project, implementation of a soil management work plan [SMWP] for the project, remediation of affected soil and groundwater, etc.) shall be implemented by VTA and all its representatives, including contractors and earthwork construction workers, such that people are not exposed to an environmental condition on the project site as a result of an existing sources of contamination.

Before construction activities, soil samples shall be taken at park-and-ride lot facilities (only where grading is planned) to determine the presence or absence of banned pesticides. If soil samples indicate the presence of any contaminant in hazardous quantities, VTA shall contact the RWQCB and Department of Toxic Substances Control (DTSC) to determine the level of any necessary remediation efforts. These soils shall be remediated in compliance with applicable laws.

Mitigation Measure HAZ (Construction)-1b: Control Contamination Resulting from Previously Unidentified Hazardous Waste Materials
In the event that previously unidentified waste or debris is discovered during construction/grading activities, and the waste or debris is believed to involve hazardous waste or materials, the contractor shall:

- immediately stop work in the vicinity of the suspected contaminant, and remove workers and the public from the area;
- notify the Resident Inspector;
- secure the area as directed by the Resident Inspector;
- notify the City of San Jose Hazardous Waste/Materials Coordinator and the San Jose Fire Department; and
- notify the City of San Jose Hazardous Waste/Materials Coordinator and the San Jose Fire Department.

The Light Rail Alternative will likely result in the demolition or renovation of structures constructed prior to 1990. As a result, the following mitigation measure is recommended to address lead-based paint and asbestos-containing material.

Mitigation Measure HAZ (Construction)-1c: Conduct Surveys for Lead and Asbestos prior to Demolition or Renovation
Lead-based paint and asbestos-containing material surveys will be conducted at any structure proposed for demolition or renovation during project development that is known or suspected to have been constructed prior to 1990. Identified lead-based paint and asbestos-containing materials will be abated and disposed of in accordance with applicable abatement, worker health and safety, and hazardous waste regulations.

Hydrology and Water Quality

HYD (Construction)-1: Water Quality Impairment Caused by Grading and Construction Activities

During construction of the Light Rail Alternative, large areas of bare soil would be exposed to erosive forces for long periods of time. Bare soils are much more likely to erode than vegetated areas because of the lack of dispersion, infiltration, and retention created by covering vegetation. Construction activities involving soil disturbance, excavation, cutting/filling, stockpiling, and grading activities could result in increased erosion and sedimentation to surface waters. If precautions are not taken to contain contaminants, construction activities could produce contaminated stormwater runoff (nonpoint source pollution), a major contributor to the degradation of water quality. Hazardous materials associated with construction equipment (such as fuels and lubricants) could also adversely affect water quality if spilled or stored improperly. This is considered an adverse effect. However, implementation of the following mitigation measure would minimize this effect.

Mitigation Measure HYD (Construction)-1: Implement Water Quality Control Measures during Construction Activities

VTA shall require the contractor to submit and implement an approved erosion and sedimentation control plan to control erosion and prevent water pollution during project construction. No ground-disturbing activities shall be performed until such a plan is accepted. The plan shall emphasize standard temporary erosion control measures to reduce sedimentation and turbidity of surface runoff from disturbed areas. Each rainy season (October 1 to May 1), the contractor shall have in place desilting basins for runoff from areas disturbed by cleaning, grubbing, and grading operations.

VTA shall require the contractor to submit a spill prevention, containment, and clean-up (SPCC) plan for fuels, oils, lubricants and other hazardous substances that may be used during construction. No construction activities shall be performed until such a plan is accepted.

HYD (Construction)-2: Depletion of Groundwater Supplies or Interference with Groundwater Recharge

Construction activities associated with this alternative could result in a temporary increase in water demand. Although this increase is not considered substantial, implementation of the following mitigation measure is recommended to minimize any temporary adverse effects.

Mitigation Measure HYD (Construction)-2: Use Non-Potable Water for Construction Activities

VTA shall require that non-potable water be used for construction activities as feasible.

Land Use

LU (Construction)-1: Disruption of Local Businesses

As noted in the discussion of transportation impacts during construction, lane and street closures, and detours would occur. A Traffic Management Plan would be implemented that would provide a daily construction schedule to restore traffic capacity and access to local businesses during peak periods for the duration of construction. Additionally, because on-street parking is not allowed along Capitol Expressway, and off-street parking facilities are provided, local businesses would not be adversely affected. These off-street parking facilities would not be impacted for more than 3 months during construction. Pedestrians along Capitol Expressway would be provided with alternative paths during construction of the new multi-use parkway pedestrian path. Signs would be posted to direct pedestrians to intersections where they may cross to proceed along Capitol Expressway and to avoid construction areas. Pedestrians would be able to maintain access to local businesses along Capitol Expressway. There would be no adverse effect to local businesses for a period of 3 months or more.

Mitigation: No mitigation is required.

Noise and Vibration

Construction noise criteria are based on the guidelines provided in the FTA guidance manual (1995). These criteria, summarized in Table 4.19-1 , are based on land use and time of day and are given in terms of L_{eq} for an 8-hour work shift.

Table 4.19-1. Federal Transit Administration Construction Noise Criteria

	Noise Limit, 8-Hour L_{eq} (dBA)	
Land Use	Daytime	Nighttime
Residential	80	70
Commercial	85	85
Industrial	90	90

Source: Federal Transit Administration 1995.

Construction activities that could cause intrusive vibration include vibratory compaction, jackhammers, and use of tracked vehicles such as bulldozers. The most serious sources of construction vibration are blasting and pile driving. Table 4.19-2 is an example of the noise projections for equipment that is often used during tie-and-ballast track construction.

Table 4.19-2. Typical Equipment List, At-Grade Track Construction

Equipment	Typical Maximum Sound Level at 50 ft (dBA)	Equipment Utilization Factor (%)	L_{eq} (dBA)
Air Compressor	83	50	80
Backhoe	80	40	76
Crane, Derrick	82	10	72
Bulldozer	85	40	81
Generator	81	80	80
Loader	85	40	81
Pavement Breaker	84	4	70
Shovel	80	40	76
Dump Truck	88	16	80
Total Workday L_{eq} at 50 feet (8-hour workday)			**88**

Source: Federal Transit Administration 1995.

NV (Construction)-1: Generation of Noise or Vibration That Substantially Affects Nearby Sensitive Receptors

Construction of the Light Rail Alternative would consist of site preparation and laying new track, and would involve a wide variety of construction equipment for such tasks as earth hauling and excavation, contouring, grading, and compacting. For the tunnel sections, cut-and-cover construction methods could be used. Other construction activities would include casting of columns, paving, and welding. Most of these activities would be performed using the types of equipment listed in Table 4.19-2. To expedite construction of the Light Rail Alternative and avoid adverse traffic effects on Capitol Expressway, it is possible that construction activities could occur after 5:00 p.m. and before 7:00 a.m. in some locations.

Based on the established criteria and the noise projections in shown Table 4.19-3, and assuming that construction noise is reduced by 6 dB for each doubling of distance from the center of the site, screening distances for potential construction noise impact can be estimated. These estimates suggest that the potential for construction noise impact will be minimal for commercial and industrial land uses, with impact screening distances of 70 feet and 40 feet, respectively. Even for residential land use, the potential for temporary construction noise effect would be limited to locations within about 125 feet of the corridor. However, the potential for noise impact from nighttime construction could extend to residences as far as 400 feet. Temporary noise during construction of the new tracks and the stations has the potential to be intrusive to residents near the construction sites. Construction activities may also generate noticeable ground vibration at nearby residences, primarily because of pile driving. These effects would be considered adverse. However, implementation of the following mitigation measures would minimize the effects.

Mitigation Measure NV (Construction)-1a: Notify Residents Adjacent to the Construction Sites

VTA will provide notification to residents located within 300 feet of planned construction activities. The notification shall describe the overall construction schedule, the duration of construction phases, and the schedule of major noise generating activities (e.g. pile driving). The notification shall also describe the noise abatement measures to be implemented during the construction of the Light Rail Alternative, and shall also note the infeasibility of other measures that were considered but rejected.

Mitigation Measure NV (Construction)-1b: Construct Noise Barriers to Provide Noise Reduction during Construction

VTA will construct temporary noise barriers or enclosures where feasible, around stationary construction equipment when such equipment will be operated for an extended period of time (i.e. more than two to three days) and where there are noise sensitive receptors that are substantially affected. Noise barriers and enclosures shall consist of absorptive material in order to prevent impacts upon other land uses due to noise reflection. In addition, complete enclosure structures shall close or secure any openings where pipes, hoses or cables penetrate the enclosure structure., between noisy activities and noise-sensitive receivers. At those locations along the alignment where existing soundwalls are to be replaced and/or new soundwalls are to be constructed, VTA will initiate construction of these walls as a first task in order to provide noise reduction to adjacent residences during construction whenever possible.

Mitigation Measure NV (Construction)-1c: Restrict Pile Driving Activities

VTA will restrict pile-driving to the hours of 8:00 a.m. to 5:00 p.m. Monday through Friday in those segments of the alignment where tunnels and support columns are required. If pile driving cannot be restricted to these hours, pile drivers will be shrouded or shielded to further buffer the noise and vibration impacts.

Mitigation Measure NV (Construction)-1d: Use Noise Suppression Devices and Mufflers on Construction Equipment

VTA will require contractors to use available noise suppression devices on quiet or “new technology” construction equipment and use properly maintained high-performance exhaust mufflers where feasible. VTA shall ensure that all internal combustion engines used at the construction site will be equipped with the type of muffler recommended by the vehicle manufacturer. In addition, all equipment will be maintained in good mechanical condition in order to minimize noise created by faulty or poorly maintained engines, drive-trains or other components.

Mitigation Measure NV (Construction)-1e: Locate Stationary Construction Equipment as Far as Possible from Noise-Sensitive Sites

VTA will avoid staging construction equipment and restrict unnecessary idling of equipment within (200 feet) of noise-sensitive land uses whenever feasible. “Feasible,” as used here, means that the implementation of the mitigation measures would not have a noticeable effect upon construction operations or schedule.

Mitigation Measure NV (Construction)-1f: Reroute Construction-Related Truck Traffic along Roadways That Will Cause the Least Disturbance to Residents
Where practical, construction activities will be restricted in order minimize construction traffic related noise impacts under an encroachment permit with the County of Santa Clara and the City of San Jose.

Safety and Security

SS (Construction)-1: Potential for Safety Risks during Construction

Construction of the Light Rail Alternative would last approximately 3 years. At the height of construction (18–24 months into the process), construction employees and equipment would occupy portions of the street, including the median and parking lanes at active construction locations.

Mitigation Measure SS (Construction)-1: Implement Construction BMPs to Protect Workers and the Public
VTA shall require construction contractors to implement BMPs to ensure the safety of construction workers and local residents during construction of the project. Fencing and lighting of construction and staging areas, as well as recognized construction materials, shall be used to contain construction activities and avoid accidents. VTA shall require the construction project coordinator to be responsible for job-site safety and security.

Utilities

UTL (Construction)-1: Disrupt a Utility Service for a Period of 24 Hours or More

Under the Light Rail Alternative, a 14-foot-wide strip running along and directly underneath the proposed light rail alignment has been defined as a “utility envelope.” This strip contains utility infrastructure that would need to be relocated under this alternative. Table 4.19-3 summarizes the utilities within this envelope.

Table 4.19-3. Utilities to be Relocated

Type of Utility	Owner	Size Range	Amount to be Relocated
Sanitary Sewers	City	12 inches; 27 inches	820 linear feet
Sanitary Sewer Maintenance Covers	City	Standard	4
Storm Drains	County and City	12–48 inches	14,408 linear feet
Storm Drain Maintenance Covers	County and City	Standard	44
Unknown Maintenance Covers	Unknown	Standard	2
Water Mains	SCVWD	Unknown	1,878 linear feet
Telephone/Fiber Optic	Various*	Unknown	591 linear feet
Electric Lines	PG&E	Unknown	2,604 linear feet
Electric Vaults	PG&E	Unknown	3
Electric Transmission Towers	PG&E	Unknown	3
Gas Mains	PG&E	Unknown	805

* Potential owners include XO Comm, Time Warner, Sprint, Qwest, MCI, SBC, and AT&T

Sources: Korve Engineering 2002b, HNTB 2003, Myra L. Frank & Associates 2003.

Relocation of utilities, which requires disruption of service, are commonly required during construction. However, the relocations required under the Light Rail Alternative would not be uncommonly large or complex. Related service disruptions are not expected to last more than a few hours, and disruptions of 24 hours are highly unlikely. Therefore, relocation and temporary disruption of these utilities is not considered an adverse effect. Implementation of the following mitigation measure would minimize any adverse effects.

Mitigation Measure UTL (Construction)-1: Coordinate with Utility Service Providers Prior to Construction of Light Rail Facilities
VTA shall conduct careful and periodic coordination with all utility providers during final design and construction stages to identify potential strategies for overcoming potential problems. VTA shall coordinate with all affected utility providers to restrict utility service disruption by time duration and geographic extent.

Visual Quality

VQ (Construction)-1: Creation of a New Source of Substantial Light or Glare

During construction of the Light Rail Alternative, nighttime construction activities would involve the use of lighting equipment that could cause glare, potentially affecting the residents adjacent to the light rail alignment. This would result in an adverse effect. However, implementation of the following mitigation measure would minimize this effect.

Mitigation Measure VQ (Construction)-1: Direct Lighting toward Construction Areas

To reduce glare from lighting used during nighttime construction activities, VTA shall require construction contractors to direct lighting onto the immediate area under construction only, and to avoid shining lights toward residences.

VQ (Construction)-2: Degradation of Visual Quality

During construction of the Light Rail Alternative, activities involving the use of heavy equipment, transport of soils and material, and other visual signs of construction would occur along the Capitol Expressway Corridor and at construction staging areas. These activities would be most visible to pedestrians along the corridor and residents of adjacent homes. Viewers traveling through the corridor such as VTA bus transit passengers, automobile drivers, and bicyclists would have intermittent views of these activities and construction staging areas. However, these construction-related visual changes would be short-term in nature and would not substantially alter the visual character of the urban expressway, where roadway maintenance activities are accepted visual elements. There would be no adverse effect.

Mitigation: No mitigation is required.

Chapter 5.0
Other CEQA Considerations

5.1 Introduction

This chapter presents a summary of environmental issues, including those that are of particular relevance to CEQA. The environmental impacts disclosed in Chapter 4, *Environmental Analysis*, that would be considered significant under CEQA are disclosed in this chapter. Impacts found not to be significant are summarized, and the potential for the alternatives to stimulate unplanned growth in the San Jose region is considered. The environmentally superior alternative is also discussed.

CEQA requires identification of an impact's level of significance in an EIR, and requires mitigation for significant impacts. This EIR reports all of the impacts of the alternatives and proposes mitigation wherever practicable to reduce the impacts identified. This chapter provides specific discussion of impact significance and mitigation in accordance with CEQA. This chapter also discusses the analysis of cumulative environmental effects. For each significant impact that cannot be avoided, findings and a statement of overriding considerations will be prepared by VTA and considered for adoption by the VTA Board of Directors.

5.2 Determination of Significance under CEQA

Sections 4.2–4.19 of Chapter 4 analyze the potential impacts of the alternatives for each environmental resource area. Each section identifies adverse effects and mitigation measures for one resource area. As required by CEQA, this EIR examines the environmental impacts and cumulative impacts of the alternatives.

Thresholds of Significance

The *Thresholds of Significance* discussion in each section describes the criteria by which an impact is declared and is therefore in need of mitigation (i.e., an action to minimize the effects of the impact). These are criteria used by VTA and in professional practice. Where appropriate, criteria are based on state or federal standards. For example, air quality significance criteria or thresholds are based on the state and federal ambient air quality standards, and noise significance thresholds are based on criteria defined by FTA. Also, where appropriate, criteria are based on the State CEQA Guidelines that are used by VTA, which generally describe circumstances under which impacts would be considered significant. Table 5.1-1 identifies the significance criteria developed for each resource area by VTA. The table includes only those resource areas that are evaluated under CEQA.

Types of Impacts

Under CEQA, the following types of impacts are identified.

- **No Impact:** A finding of *no impact* is made when the analysis concludes that the proposed alternatives would not affect the resource or issue area in any way.
- **Less Than Significant:** An impact is considered *less than significant* if the analysis concludes that the impact of the proposed alternatives would not exceed established or defined thresholds.
- **Significant:** An impact is considered *significant* or *potentially significant* (not clear whether a significant impact would occur) if the analysis concludes that the proposed alternatives could have a substantial adverse impact on the resource or issue area by exceeding an established or defined threshold. For example, air pollutant emissions that exceed federal ambient air quality standards or elimination of a rare or endangered species would be a significant adverse impact. In cases in which an impact is *potentially significant*, the analysis conservatively assesses reasonably foreseeable potential impacts, but the discussion acknowledges that there is uncertainty regarding the extent of the impact. Mitigation can be implemented to reduce a significant impact to a less-than-significant level, such that no substantial adverse change in the environment is expected to result.
- **Significant and Unavoidable**: An impact is considered *significant and unavoidable* if the analysis concludes that the effects of the proposed alternatives exceed established or defined thresholds that could have a substantial adverse effect on the resource or issue area, and no mitigation is available to reduce the impact to a less-than-significant level.
- **Beneficial:** *Beneficial* effects include impacts that enhance or improve an existing environmental condition.

5.3 Significant and Unavoidable Impacts

This section summarizes the impacts of the proposed alternatives and identifies the significant and unavoidable impacts of each alternative (significant impacts that can be mitigated but not reduced to a less-than-significant level)**.** Table 5.2-1 contains a summary of impacts for each resource area, as well as an

EIS/EIR Section	Explanation of CEQA Significance Threshold	Source(s)
4.2 Transportation	A significant impact would occur if the project would: ▪ cause an intersection's LOS to deteriorate from LOS E when compared to the No-Project Alternative; ▪ increase the critical volume delay by 4 seconds or more and increase the critical v/c ratio by 0.01 or more at an intersection already operating at LOS F under the No-Project Alternative; ▪ result in a change of two letter grades at an intersection operating at LOS A or B under the No-Project Alternative; ▪ cause a substantial increase in regional VMT or VHT; ▪ cause a substantial diversion of traffic onto a residential street; ▪ substantially disrupt traffic operations and/or substantially affect emergency vehicle response at grade crossings; ▪ result in a loss of parking spaces such that the loss results in substantial adverse economic effects on the businesses in the area; ▪ construct a park-and-ride lot where demand is projected to be 105% or more of its planned capacity; ▪ create particularly hazardous conditions for bicyclists or eliminate bicycle facilities, and adequate facilities do not remain to serve the community's needs; or ▪ result in substantial overcrowding on public sidewalks, creation of hazardous conditions for pedestrians, or elimination of pedestrian access to adjoining areas.	Santa Clara County CMA, City of San Jose, VTA
4.3 Air Quality	A significant impact would occur if the project would: ▪ conflict or obstruct implementation of the federal CAA or CCAA; ▪ violate federal or California air quality standards or contribute substantially to an existing or projected air quality violation; ▪ exceed BAAQMD's significance criteria; ▪ expose sensitive receptors to substantial pollutant concentrations; ▪ create objectionable odors affecting a substantial number of people; ▪ result in a cumulatively considerable net increase of any criteria pollutant for which the project region is classified as nonattainment under an applicable federal or California ambient air quality standard; ▪ result in a net increase in pollutant emissions of 80 pounds per day or 15 tons per year of ROG, NOX, or PM10; or ▪ result in a net increase in CO emissions exceeding 550 pounds per day, reduction of roadway LOS of intersections operating at LOS E or F, reduction of intersection LOS to E or F, or increase in traffic volumes on nearby roadways by 10% or more, and violation of state CO concentration standards as determined by the modeling of CO emissions.	State CEQA Guidelines, EPA, CARB, BAAQMD

EIS/EIR Section	Explanation of CEQA Significance Threshold	Source(s)
4.4 Biological Resources	A significant impact would occur if the project would: ▪ have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by CDFG or USFWS; ▪ have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in regional plans, policies, or regulations or by CDFG or USFWS; ▪ have a substantial adverse effect on federally protected wetlands as defined by CWA Section 404 (including, but not limited to, marshes, vernal pools, and coastal wetlands) through direct removal, filling, hydrological interruption, or other means; ▪ interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites; or ▪ conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state HCP.	State CEQA Guidelines
4.5 Community Services (Public Services)	A significant impact would occur if the project would: ▪ result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any the following public services: - fire protection, - police protection, - schools, - parks, or - other public facilities.	Derived from State CEQA Guidelines, VTA
4.6 Cultural Resources	A significant impact would occur if the project would: ▪ cause a substantial adverse change in the significance of a historical resource as defined in the State CEQA Guidelines, Section 15064.5; ▪ cause a substantial adverse change in the significance of an archaeological resource pursuant to the State CEQA Guidelines, Section 15064.5; ▪ directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or ▪ disturb any human remains, including those interred outside of formal cemeteries.	State CEQA Guidelines

EIS/EIR Section	Explanation of CEQA Significance Threshold	Source(s)
4.10 Geology, Soils and Seismicity	A significant impact would occur if the project would: ▪ expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: - rupture of a known earthquake fault; - strong seismic ground shaking; - seismic-related ground failure, including liquefaction; - lateral spreading, subsidence, and collapse as a result of underlying unstable geologic units; or - expansive soil.	Derived from State CEQA Guidelines, VTA
4.11 Hazardous Materials	A significant impact would occur if the project would: ▪ create a significant hazard to the public or the environment through reasonable foreseeable upset and accident conditions involving the release of hazardous materials into the environment; ▪ emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within a quarter-mile of an existing or proposed school; ▪ be located on a site that is included on a list of hazardous materials sites and, as a result, create a significant hazard to the public or the environment; or ▪ create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	Derived from State CEQA Guidelines
4.12 Hydrology and Water Quality	A significant impact would occur if the project would: ▪ violate any water quality standards or waste discharge requirements; ▪ substantially deplete water resources; ▪ create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; ▪ substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site; ▪ place within a 100-year flood hazard area structures that would impede or redirect flood flows; ▪ expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; or ▪ substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would	Derived from State CEQA Guidelines

EIS/EIR Section	Explanation of CEQA Significance Threshold	Source(s)
	be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted).	
4.13 Land Use	A significant impact would occur if the project would: ▪ physically divide an established community; ▪ be incompatible with existing adjacent land uses; ▪ result in substantial adverse effects to the efficiency or effectiveness of adjacent land uses; ▪ conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project, adopted for the purpose of avoiding or mitigating an environmental effect; or ▪ conflict with an HCP or NCCP.	Derived from State CEQA Guidelines, VTA
4.16 Socioeconomics (Population and Housing)	A significant impact would occur if the project would: ▪ disrupt or divide the physical arrangement of an established community such that social interaction within the community is severely hampered; ▪ substantially affect the population, household, or community characteristics of the project study area in a negative way, or impede or detract from efforts to economically revitalize the study area; ▪ induce substantial growth in an area either directly (e.g., by proposing new homes or buildings) or indirectly (e.g., through extension of roads or infrastructure) not in accordance with existing community or city plans; ▪ displace existing businesses or housing, especially affordable housing; ▪ create a demand for additional housing that cannot be accommodated by existing housing stock; or ▪ conflict with applicable regional plans and policies.	Derived from State CEQA Guidelines, VTA
4.17 Utilities	A significant impact would occur if the project would: ▪ require or result in the construction of new storm water drainage facilities expansion of existing facilities the construction of which could cause significant environmental effects.	VTA

EIS/EIR Section	Explanation of CEQA Significance Threshold	Source(s)
4.18 Visual Quality (Aesthetics)	A significant impact would occur if the project would: ▪ substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway; ▪ substantially degrade the existing visual character or quality of the site and its surroundings; ▪ have a substantial adverse effect on a scenic vista; or ▪ create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	State CEQA Guidelines

Sources: Santa Clara Valley Transportation Authority and other sources as noted, July 2003.

explanation of which impacts are considered significant under CEQA before and after mitigation. For a more complete description of the impacts and mitigation measures summarized in Table 5.2-1, please refer to Chapter 4.

5.4 Significant and Irreversible Environmental Changes

CEQA defines the significant and irreversible changes that would be caused by the proposed alternatives should they be implemented, as the use of nonrenewable resources during the initial and continued phases of a project that require a large commitment of such resources that may make unlikely the future removal or nonuse of the resources.

Energy is a non-renewable resource. As discussed in Section 4.3, *Air Quality*, vehicle trips would not be reduced and vehicle miles traveled would continue to increase with the No-Project Alternative. Therefore, the No-Project Alternative would result in higher overall energy consumption as compared to the Baseline and Light Rail Alternatives. The Baseline Alternative reduces some vehicle trips and vehicle miles traveled below the levels that result with the No-Project Alternative. Although the Baseline Alternative results in lower overall energy consumption than the No-Project Alternative, energy savings are the greater with the Light Rail Alternative. As discussed in Section 4.8, *Energy*, the Light Rail Alternative represents an annual energy savings equivalent of about 380,000 barrels of oil in 2010 and 2025, or about 3% of the energy consumption of the No-Project Alternative. However, all alternatives would involve commitments of non-renewable energy resources.

5.5 Analysis of Cumulative Effects

The State CEQA Guidelines Section 15355 defines the term *cumulative impacts* to refer to “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.” A cumulative impact consists of a change in the environment that results from the incremental impact of a project when added to closely related past, present and reasonably foreseeable probable future projects.

To analyze a proposed project’s contribution to cumulative impacts, CEQA requires that the lead agency identify past, present and probable future projects in the vicinity of the proposed project; summarize their effects, and identify the contribution of the proposed project to cumulative impacts in the region. CEQA requires that feasible options for mitigating or avoiding the project’s contribution to any significant cumulative effects be recommended (State CEQA Guidelines Section 15130[b][3]). Cumulative impacts should be considered separately for each resource area addressed in an EIR. However, when the combined cumulative impact associated with the project’s incremental effect and the effect of other projects is not significant, the EIR shall briefly indicate why the cumulative impact is not significant and why it is not discussed in further detail in the EIR.

5.5.1 Approach

For this analysis, two approaches to identifying related past, present, and future projects and their impacts have been used: a "list" approach, in which projects are identified on an individual basis, and a "projection" approach, in which the analysis of cumulative impacts is based on a summary of projections in an adopted general plan or related planning document. Projections resulting from traffic modeling have been incorporated into the analysis of cumulative impacts for transportation and air quality. Additionally, the cumulative impact analysis from the RTP EIR (Dyett & Bhatia 2001) was considered. The Capitol Expressway Corridor is included in the RTP, as well as the programmed transportation projects that are included in the Baseline Alternative.

For all other resource areas, the list approach has been used. Table 5.4-1 identifies a list of approved, pending, and reasonably foreseeable potential developments within the City of San Jose that were included in this cumulative analysis. These projects were identified in consultation with city staff. The table also includes other reasonably foreseeable projects in the project study area, which is identified in Section 4.1, *Introduction to Environmental Analysis*.

The impact analysis in Chapter 4 has identified impacts associated with the proposed alternatives that are considered significant and the mitigation measures required to reduce those impacts to a less-than-significant level. The analysis has identified that the cumulative effects of the proposed alternatives would be less than significant in the following resource areas:

- air quality,
- community services,
- electromagnetic fields,
- energy,
- environmental justice,
- hazardous materials,
- safety and security, and
- utilities.

As a result, there would be no significant cumulative effects for these resources. Cumulative impacts in the following areas for each of the proposed alternatives are summarized below:

- transportation,
- biological resources,

Resource Area	Impact	Significance	Mitigation Measure	Significance After Mitigation
No-Project Alternative				
Transportation	None.	None.	None.	None.
Air Quality	AQ-2: Potential Net Increase in Emissions of Reactive Organic Gases, Oxides of Nitrogen, and PM10	Significant	No mitigation is available.	Significant
Biological Resources	None	None	None	None
Community (Public) Services	None	None	None	None
Cultural Resources	None	None	None	None
Geology, Soils, and Seismicity	None	None	None	None
Hazardous Materials	None	None	None	None
Hydrology and Water Quality	None	None	None	None
Land Use	LU-3: Conflicts with Any Applicable Land Use Plan, Policy, or Regulation of an Agency with Jurisdiction	Significant	No mitigation is available.	Significant
Noise and Vibration	None	None	None	None
Socioeconomics (Population and Housing)	SOC-2: Detraction from Efforts to Economically Revitalize the Study Area	Significant and unavoidable	No mitigation is available.	Significant and unavoidable
Utilities	None	None	None	None
Visual Quality (Aesthetics)	None	None	None	None
Construction Impacts	None	None	None	None
Baseline Alternative				
Transportation	TRN-1a Traffic Impacts at the Capitol Expressway/Story Road Intersection. (2010)	Significant	Mitigation Measure TRN-1a: Addition of a Third Southbound Left Turn Lane to Capitol Expressway at Story Road	Less than significant with mitigation incorporated

Resource Area	Impact	Significance	Mitigation Measure	Significance After Mitigation
	TRN-1b: Traffic Impacts at the Capitol Expressway/Senter Road Intersection (2010)	Significant	Mitigation Measure TRN-1b: Addition of Left-Turn and Through Lanes on Capitol Expressway at Senter Road	Less than significant with mitigation incorporated
	TRN-7a: Traffic Impacts at the Capitol Expressway/Ocala Avenue Intersection (2025)	Significant	Mitigation Measure TRN-7a: Signal Modifications to the Capitol Expressway/Ocala Avenue Intersection	Less than significant with mitigation incorporated
	TRN-7b: Traffic Impacts at the Capitol Expressway/Aborn Road Intersection (2025)	Significant	Mitigation Measure TRN-7b: Addition of Left- and Right-Turn Lanes from Aborn Road to Capitol Expressway	Less than significant with mitigation incorporated
	TRN-7c: Traffic Impacts at the Capitol Expressway/Senter Road Intersection (2025)	Significant	Mitigation Measure TRN-1b: Addition of Left-Turn and Through Lanes on Capitol Expressway at Senter Road	Less than significant with mitigation incorporated
Air Quality	AQ-3: Violation of State Carbon Monoxide Standards as Determined by Modeling of Carbon Monoxide Emissions	Beneficial	None	Beneficial
	AQ-4: Potential Net Increase in Emissions of Reactive Organic Gases, Oxides of Nitrogen, and PM10	Beneficial	None	Beneficial
Biological Resources	None	None	None	None
Community (Public) Services	CS-2: Physical Alteration of Existing Government Facilities or Required Construction of New Government Facilities	Beneficial	None	Beneficial
Cultural Resources	None	None	None	None
Geology, Soils, and Seismicity	None	None	None	None
Hazardous Materials	None	None	None	None
Hydrology and Water Quality	None	None	None	None

Resource Area	Impact	Significance	Mitigation Measure	Significance After Mitigation
Land Use	None	None	None	None
Noise and Vibration	None	None	None	None
Socioeconomics (Population and Housing)	SOC-8: Detractions of Efforts to Economically Revitalize the Study Area	Significant and unavoidable	No mitigation is feasible.	Significant and unavoidable
Utilities	None	None	None	None
Visual Quality (Aesthetics)	None	None	None	None
Construction Impacts	None	None	None	None
Light Rail Alternative				
Transportation	TRN-2a: Traffic Impacts at the Capitol Expressway/Story Road Intersection (2010)	Significant and unavoidable	No mitigation is feasible.	Significant and unavoidable
	TRN-2b: Traffic Impacts at the Capitol Expressway/Ocala Avenue Intersection (2010)	Significant and unavoidable	No mitigation is feasible.	Significant and unavoidable
	TRN-2c: Traffic Impacts at the Capitol Expressway/Tully Road Intersection (2010)	Significant	Mitigation Measure TRN-2c: Maintain HOV Lane on Capitol Expressway as an HOV Bypass Lane	Less than significant with mitigation incorporated
	TRN-2d: Traffic Impacts at the Capitol Expressway/Aborn Road Intersection (2010)	Significant	Mitigation Measure TRN-2d: Addition of a Third Left-Turn Lane to Aborn Road at Capitol Expressway	Less than significant with mitigation incorporated
	TRN-2e: Traffic Impacts at the Capitol Expressway/Silver Creek Road Intersection (2010)	Significant	Mitigation Measure TRN-2e: Construct Interchange at Silver Creek Road	Less than significant with mitigation incorporated
	TRN-2f: Traffic Impacts at the Capitol Expressway/McLaughlin Avenue Intersection (2010)	Significant	Mitigation Measure TRN-2f: Change Intersection Approaches at McLaughlin Avenue	Less than significant with mitigation incorporated
	TRN-5: Changes to Park-and-Ride Lot Demand and Capacity (2010)	Significant	Mitigation Measure TRN-5: Supply Additional Parking Warranted by Demand	Less than significant with mitigation

Resource Area	Impact	Significance	Mitigation Measure	Significance After Mitigation
				incorporated
	TRN-8a: Traffic Impacts at the Capitol Expressway/Capitol Avenue Intersection (2025)	Significant	Mitigation Measure TRN-8a: Addition of Shared Left-Turn and Through Lane on Capitol Avenue at Capitol Expressway	Less than significant with mitigation incorporated
	TRN-8b: Traffic Impacts at the Capitol Expressway/Story Road Intersection (2025)	Significant and unavoidable	No mitigation is feasible.	Significant and unavoidable
	TRN-8c: Traffic Impacts at the Capitol Expressway/Ocala Avenue Intersection (2025)	Significant and unavoidable	No mitigation is feasible.	Significant and unavoidable
	TRN-8d: Traffic Impacts at the Capitol Expressway/Tully Road Intersection (2025)	Significant	Mitigation Measure TRN-2c: Maintain HOV Lane on Capitol Expressway as an HOV Bypass Lane	Less than significant with mitigation incorporated
	TRN-8e: Traffic Impacts at the Capitol Expressway/Quimby Road Intersection (2025)	Significant	No mitigation is feasible.	Significant and unavoidable.
	TRN-8f: Traffic Impacts at the Capitol Expressway/Aborn Road Intersection (2025)	Significant	Mitigation Measure TRN-8f: Addition of Third Left-Turn Lane on Aborn Road at Capitol Expressway	Less than significant with mitigation incorporated
	TRN-8g: Traffic Impacts at the Capitol Expressway/Silver Creek Road Intersection (2025)	Significant	Mitigation Measure TRN-2e: Construct Interchange at Silver Creek Road	Less than significant with mitigation incorporated
	TRN-8h: Traffic Impacts at the Capitol Expressway/McLaughlin Avenue Intersection (2025)	Significant	Mitigation Measure TRN-2f: Change Intersection Approaches at McLaughlin Avenue	Less than significant with mitigation incorporated
Air Quality	AQ-5: Violation of State Carbon Monoxide Standards as Determined by Modeling of Carbon Monoxide Emissions	Beneficial	None	Beneficial
	AQ-6: Potential Net Increase in Emissions of Reactive Organic Gases, Oxides of Nitrogen, and PM10	Beneficial	None	Beneficial

Resource Area	Impact	Significance	Mitigation Measure	Significance After Mitigation
Biological Resources	BIO-7: Permanent Loss of Biological Habitats and Disturbance to Inhabiting Species	Significant	Mitigation Measure BIO-7: Conduct Pre-construction Surveys for Nesting and Wintering Western Burrowing Owls and Implement Measures to Avoid or Minimize Adverse Effects if Owls Are Present	Less than significant with mitigation incorporated
	BIO-8: Temporary Disturbance of Riparian Forest during Construction	Significant	Mitigation Measure BIO-8a: Conduct Pre-construction Surveys to Identify Environmentally Sensitive Habitat Areas	Less than significant with mitigation incorporated
			Mitigation Measure BIO-8b: Compensate for Disturbed Riparian Forest	Less than significant with mitigation incorporated
	BIO-9: Placement of Fill within Open Waters of the United States and Aquatic and Bare Soil (Ruderal) Habitats under the Jurisdiction of the California Department of Fish and Game	Significant	Mitigation Measure BIO-9: Restore or Create Jurisdictional Waters of the United States	Less than significant with mitigation incorporated
	BIO-10: Temporary Degradation of Water Quality	Significant	Mitigation Measure BIO-10: Implement Water Quality Control Measures	Less than significant with mitigation incorporated
	BIO-11: Permanent Loss or Temporary Disturbance of Potential Habitat for California Red-Legged Frog	Significant	Mitigation Measure BIO-8b: Compensate for Disturbed Riparian Forest	Less than significant with mitigation incorporated
			Mitigation Measure BIO-9: Restore or Create Jurisdictional Waters of the United States	
			Mitigation Measure BIO-10: Implement Water Quality Control Measures	
			Mitigation Measure BIO-11a: Avoid and Minimize Effects to California Red-Legged Frog Habitat	Less than significant with mitigation incorporated

Resource Area	Impact	Significance	Mitigation Measure	Significance After Mitigation
			Mitigation Measure BIO-11b: Compensate for Loss of Aquatic Habitat through Protection or Enhancement of Suitable California Red-Legged Frog Habitat	Less than significant with mitigation incorporated
	BIO-12: Permanent Loss of Aquatic, Temporary Disturbance of Riparian Habitat, and Temporary Disturbance of Southwestern Pond Turtle	Significant	Mitigation Measure BIO-8a: Conduct Pre-construction Surveys to Identify Environmentally Sensitive Habitat Areas	Less than significant with mitigation incorporated
			Mitigation Measure BIO-8b: Compensate for Disturbed Riparian Forest	Less than significant with mitigation incorporated
			Mitigation Measure BIO-9: Restore or Create Jurisdictional Waters of the United States	Less than significant with mitigation incorporated
			Mitigation Measure BIO-10: Implement Water Quality Control Measures	Less than significant with mitigation incorporated
			Mitigation Measure BIO-12: Conduct Pre-construction Surveys for Western Pond Turtles and Implement Measures to Avoid or Minimize Adverse Effects if Turtles are Present	Less than significant with mitigation incorporated

Resource Area	Impact	Significance	Mitigation Measure	Significance After Mitigation
	BIO-13: Temporary Disturbance of Steelhead and Chinook Salmon in Coyote Creek	Significant	Mitigation Measure BIO-8b: Compensate for Disturbed Riparian Forest Mitigation Measure BIO-9: Restore or Create Jurisdictional Waters of the United States Mitigation Measure BIO-10: Implement Water Quality Control Measures Mitigation Measure BIO-13a: Limit In-Water Construction Activities to Dry Season	Less than significant with mitigation incorporated
			Mitigation Measure BIO-13b: Divert Live Flow around Active Construction Area	Less than significant with mitigation incorporated
	BIO-14: Temporary Disturbance of Nesting Raptors during Construction	Significant	Mitigation Measure BIO-14a: Conduct a Pre-construction Survey for Nesting Raptors	Less than significant with mitigation incorporated
			Mitigation Measure BIO-14b: Avoid Active Raptor Nests during the Nesting Season	Less than significant with mitigation incorporated
	BIO-15: Temporary Disturbance to Nesting Habitat for Migratory Birds, Including Swallows	Significant	Mitigation Measure BIO-8a: Conduct Pre-construction Surveys to Identify Environmentally Sensitive Habitat Areas	Less than significant with mitigation incorporated
			Mitigation Measure BIO-8b: Compensate for Disturbed Riparian Forest	Less than significant with mitigation incorporated

Resource Area	Impact	Significance	Mitigation Measure	Significance After Mitigation
			Mitigation Measure BIO-15: Conduct Pre-construction Surveys for Nesting Migratory Birds	Less than significant with mitigation incorporated
	BIO-16: Temporary Disturbance of Roosting and Foraging Habitat for Special-Status Bat Species	Significant	Mitigation Measure BIO-16: Conduct Pre-construction Survey of Coyote Creek Overpass	Less than significant with mitigation incorporated
	BIO-18: Loss of Urban Trees	Significant	Mitigation Measure BIO-18a: Conduct a Tree Survey to Assess Tree Resources Impacted by the Light Rail Alternative	Less than significant with mitigation incorporated
			Mitigation Measure BIO-18b: Replace Trees	Less than significant with mitigation incorporated
Community (Public) Services	None	None	None	None
Cultural Resources	CR-5: Direct or Indirect Impacts to an Archaeological Resource	Significant	Mitigation Measure CR-5a: Retain Qualified Archaeologist and Native American Representative to Monitor Surface-Disturbing Construction Activities	Less than significant with mitigation incorporated
			Mitigation Measure CR-5b: Develop Historic Properties Treatment Plan	Less than significant with mitigation incorporated
Geology, Soils, and Seismicity	GEO-4: Risk to People or Structures Caused by Strong Seismic Ground Shaking	Significant	Mitigation Measure GEO-4: Incorporate Caltrans Seismic Design Criteria	Less than significant with mitigation incorporated
	GEO-5: Risk to People or Structures Caused by Seismic-Related Ground Failure, Including Liquefaction	Significant	Mitigation Measure GEO-5: Incorporate Liquefaction Minimization Methods to Prevent Localized Liquefaction	Less than significant with mitigation incorporated

Resource Area	Impact	Significance	Mitigation Measure	Significance After Mitigation
	GEO-6: Risk to People or Structures from Lateral Spreading, Subsidence, and Collapse Caused by Underlying Unstable Geologic Units	Significant	Mitigation Measure GEO-6: Implement Proper Construction Methods to Minimize Risk of Lateral Spreading, Subsidence, and Collapse Hazards	Less than significant with mitigation incorporated
	GEO-7: Risk to People or Structures Caused by the Presence of Expansive Soil	Significant	Mitigation Measure GEO-7: Reinforce Foundations or Excavate Expansive Soil to Minimize Risk of Soil Expansivity	Less than significant with mitigation incorporated
Hazardous Materials	HAZ-9: Hazard to the Public or Environment through Reasonable Foreseeable Upset and Accident Conditions Caused by the Release of Hazardous Materials	Significant	Mitigation Measure HAZ-9a: Conduct Subsurface Investigations in Areas of the Corridor That May Be Underlain by Contaminated Soil or Groundwater	Less than significant with mitigation incorporated
			Mitigation Measure HAZ-9b: Control Contamination Resulting from Previously Unidentified Hazardous Waste Materials	Less than significant with mitigation incorporated
Hydrology and Water Quality	HYD-11: Violation of Water Quality Standards or Waste Discharge Requirements	Significant	Mitigation Measure HYD-11: Comply with All Applicable Regulations and Subsequent Permit Programs Related to Water Quality Control	Less than significant with mitigation incorporated
	HYD-12: Creation or Contribution of Additional Runoff, Including Increasing Additional Sources of Polluted Runoff	Significant	Mitigation Measure HYD (Construction)-1: Implement Water Quality Control Measures during Construction Activities	Less than significant with mitigation incorporated
			Mitigation Measure HYD-11: Comply with All Applicable Regulations and Subsequent Permit Programs Related to Water Quality Control	Less than significant with mitigation incorporated
			Mitigation Measure HYD-12: Implement Measures to Maintain Operational Water Quality	Less than significant with mitigation

Resource Area	Impact	Significance	Mitigation Measure	Significance After Mitigation
				incorporated
	HYD-13: Alterations in Existing Drainage Patterns	Significant	Mitigation Measure HYD (Construction)-1: Implement Water Quality Control Measures during Construction Activities	Less than significant with mitigation incorporated
	HYD-14: Exposure of People or Structures to Flood Hazards	Significant	Mitigation Measure HYD-14: Construct Facilities to Minimize Flood Impacts	Less than significant with mitigation incorporated
Land Use	None	None	None	None
Noise and Vibration	NV-4: Vibration Levels in Buildings from Transit Operations That Exceed Federal Transit Administration Criteria	Significant	Mitigation Measure NV-4a: Conduct Follow-Up Vibration Mitigation Assessments	Less than significant with mitigation incorporated
			Mitigation Measure NV-4b: Use Vibration-Dampening Track Construction Materials	Less than significant with mitigation incorporated
Socioeconomics (Population and Housing)	SOC-16: Displacement of Existing Businesses or Housing, Especially Affordable Housing	Significant and unavoidable	Mitigation Measure SOC-16a: Comply with the Applicable Legislation Governing Acquisition and Relocation	Less than significant with mitigation incorporated
			Mitigation Measure SOC-16b: Implement Community Information and Outreach Program to Effectively Inform Residents and Business Owners of the Proposed Transit Developments	Less than significant with mitigation incorporated
Utilities	UTL-3: Require or Result in the Construction of New Stormwater Drainage Facilities or Expansion of Existing Facilities	Significant	Mitigation Measure HYD-14: Implement Measures to Maintain Operational Water Quality	Less than significant with mitigation incorporated
Visual Quality (Aesthetics)	VQ-1: Creation of a New Source of Substantial Light or Glare	Significant	Mitigation Measure VQ-1: Incorporate Lighting Design Standards to Minimize Fugitive Light	Less than significant with mitigation

Resource Area	Impact	Significance	Mitigation Measure	Significance After Mitigation
			and Glare	incorporated
	VQ-3: Degradation of Existing Visual Quality	Significant	Mitigation Measure VQ-3: Refine Project Design for Consistency within the Community	Less than significant with mitigation incorporated
			Mitigation Measure VQ-4: Incorporate Landscaping in the Project Design	Less than significant with mitigation incorporated
Construction Impacts	TRN (Construction)-1: Long-Term (1 Month or More) Street Closure, Lane Closure, or Interference of Traffic Flow	Significant	Mitigation Measure TRN (Construction)-2a: Prepare Traffic Management Plan	Less than significant with mitigation incorporated
	TRN (Construction)-2: Long-Term (3 Months or More) Loss of Parking or Pedestrian Access Essential for Continue Operation of Business	Significant	Mitigation Measure TRN (Construction)-2b: Provide Public Information Regarding Proposed Traffic Detours	Less than significant with mitigation incorporated
			Mitigation Measure TRN (Construction)-2c: Provide the Public and Transit Users with Advanced Notice of Reroutes and Changes in Stops and Service	Less than significant with mitigation incorporated
	AQ (Construction)-1: Temporary Increase in Construction-Related Emissions during Grading and Construction Activities	Significant	Mitigation Measure AQ (Construction)-1: Implement Dust and Vehicle Emission Control Measures (Best Management Practices) during Construction Activities	Less than significant with mitigation incorporated
	BIO-7 to BIO-16, BIO-18	Significant	Mitigation Measures BIO-7 to BIO-16, BIO-18	Less than significant with mitigation incorporated
	CS (Construction)-1: Temporary Disruption of Emergency Access	Significant	Mitigation Measure CS (Construction)-1: Coordinate Construction and Operational	Less than significant with mitigation

Resource Area	Impact	Significance	Mitigation Measure	Significance After Mitigation
			Activities with Emergency Service Providers	incorporated
	CR (Construction)-1: Disturbance of Archaeological Resources, Including Human Remains, from Construction Activities	Significant	Follow the standard practice for the discovery of buried resources described in Section 4.6, *Cultural Resources*, would avoid this effect.	Less than significant with mitigation incorporated
	E (Construction)-1: Consumption of Nonrenewable Energy Resources in a Wasteful, Inefficient, and/or Unnecessary Manner from Project Construction	Significant	Mitigation Measure E (Construction)-1: Adopt Energy Conservation Measures	Less than significant with mitigation incorporated
	GEO (Construction)-1: Lateral Spreading, Subsidence, and Collapse Caused by Underlying Unstable Geologic Units	Significant	Mitigation Measure GEO (Construction)-1: Implement Proper Construction Methods to Minimize Risk of Lateral Spreading, Subsidence, and Collapse Hazards	Less than significant with mitigation incorporated
	GEO (Construction)-2: Presence of Expansive Soil	Significant	Mitigation Measure GEO (Construction)-2: Reinforce Foundations or Excavate Expansive Soil to Minimize Risk of Soil Expansivity	Less than significant with mitigation incorporated
	HAZ (Construction)-1: Significant Hazard to the Public or the Environment through Reasonable Foreseeable Upset and Accident Conditions Involving the Release of Hazardous Materials into the Environment	Significant	Mitigation Measure HAZ (Construction)-1a: Conduct Subsurface Investigations in Areas of the Corridor That May Be Underlain by Contaminated Soil or Groundwater	Less than significant with mitigation incorporated
			Mitigation Measure HAZ (Construction)-1b: Control Contamination Resulting from Previously Unidentified Hazardous Waste Materials	Less than significant with mitigation incorporated
			Mitigation Measure HAZ (Construction)-1c: Conduct Surveys for Lead and Asbestos prior to Demolition or Renovation	Less than significant with mitigation incorporated

Resource Area	Impact	Significance	Mitigation Measure	Significance After Mitigation
	HYD (Construction)-1: Water Quality Impairment Caused by Grading and Construction Activities	Significant	Mitigation Measure HYD (Construction)-1: Implement Water Quality Control Measures during Construction Activities	Less than significant with mitigation incorporated
	HYD (Construction)-2: Depletion of Groundwater Supplies or Interference with Groundwater Recharge	Significant	Mitigation Measure HYD (Construction)-2: Use Non-Potable Water for Construction Activities	Less than significant with mitigation incorporated
	NV (Construction)-1: Generation of Noise or Vibration That Substantially Affects Nearby Sensitive Receptors	Significant	Mitigation Measure NV (Construction)-1a: Notify Residents Adjacent to the Construction Sites	Less than significant with mitigation incorporated
			Mitigation Measure NV (Construction)-1b: Construct Noise Barriers to Provide Noise Reduction during Construction	Less than significant with mitigation incorporated
			Mitigation Measure NV (Construction)-1c: Restrict Pile Driving Activities	Less than significant with mitigation incorporated
			Mitigation Measure NV (Construction)-1d: Use Noise Suppression Devices and Mufflers on Construction Equipment	Less than significant with mitigation incorporated
			Mitigation Measure NV (Construction)-1e: Locate Stationary Construction Equipment as Far as Possible from Noise-Sensitive Sites	Less than significant with mitigation incorporated
			Mitigation Measure NV (Construction)-1f: Reroute Construction-Related Truck Traffic along Roadways That Will Cause the Least Disturbance to Residents	Less than significant with mitigation incorporated
	SS (Construction)-1: Potential for Safety Risks during Construction	Significant	Mitigation Measure SS (Construction)-1: Implement	Less than significant with

Resource Area	Impact	Significance	Mitigation Measure	Significance After Mitigation
			Construction BMPs to Protect Workers and the Public	mitigation incorporated
	UTL (Construction)-1: Disrupt a Utility Service for a Period of 24 Hours or More	Significant	Mitigation Measure UTL (Construction)-1: Coordinate with Utility Service Providers Prior to Construction of Light Rail Facilities	Less than significant with mitigation incorporated
	VQ (Construction)-1: Creation of a New Source of Substantial Light or Glare	Significant	Mitigation Measure VQ (Construction)-1: Direct Lighting toward Construction Areas	Less than significant with mitigation incorporated
Proposed Options				
Transportation				
▪ South of Eastridge Transit Center Side-Running/Tunnel at Nieman Boulevard and Side-Running At-Grade/Aerial Options	Side-running operations would prevent signal progression for this portion of the corridor.	Significant	No mitigation is feasible.	Significant and unavoidable.
▪ Aerial Crossing at Aborn Road with Median and Side-Running Options	A benefit of these grade separation options would be to eliminate any increase in delay.	Beneficial	None	None
▪ Aerial Crossing of U.S. Highway 101 Option	The grade separation would eliminate any increase in delay.	Beneficial	None	None
Biological Resources	BIO-7: Permanent Loss of Biological Habitats and Disturbance to Inhabiting Species	Significant	Mitigation Measure BIO-7: Conduct Pre-construction Surveys for Nesting and Wintering Western Burrowing Owls and Implement Measures to Avoid or Minimize Adverse Effects if Owls Are Present	Less than significant with mitigation incorporated
Cultural Resources ▪ South of Eastridge Transit Center Aerial	CR-5: Direct or Indirect Impacts to an Archaeological Resource	Significant	Mitigation Measure CR-5a: Retain Qualified Archaeologist and Native American Representative to Monitor Surface-Disturbing Construction	Less than significant with mitigation

Resource Area	Impact	Significance	Mitigation Measure	Significance After Mitigation
Crossing Option ▪ Aerial Crossing at Aborn Road Option			Activities	incorporated
			Mitigation Measure CR-5b: Develop Historic Properties Treatment Plan	Less than significant with mitigation incorporated
Hazardous Materials	HAZ-9: Hazard to the Public or Environment through Reasonable Foreseeable Upset and Accident Conditions Caused by the Release of Hazardous Materials	Significant	Mitigation Measure HAZ-9a: Conduct Subsurface Investigations in Areas of the Corridor That May Be Underlain by Contaminated Soil or Groundwater	Less than significant with mitigation incorporated
			Mitigation Measure HAZ-9b: Control Contamination Resulting from Previously Unidentified Hazardous Waste Materials	
Noise and Vibration ▪ South of Eastridge Transit Center Side-Running/At-grade/Aerial Option	NV-5: Noise Levels from Light Rail Alternative Proposed Options That Would Be Considered a Severe Impact by Federal Transit Administration Criteria	Significant	Mitigation Measure NV-5: Provide Noise Barriers or Other Mitigation between Quimby Road and Aborn Road	Less than significant with mitigation incorporated
▪ Various	NV-6: Vibration Levels in Buildings from Light Rail Alternative Proposed Options That Exceed Federal Transit Administration Criteria	Significant	Mitigation Measure NV-4a: Conduct Follow-Up Vibration Mitigation Assessments	Less than significant with mitigation incorporated
			Mitigation Measure NV-6: Use Vibration-Dampening Track Construction Materials	Less than significant with mitigation incorporated
Socioeconomics (Population and Housing)	SOC-18: Displacement of Existing Businesses or Housing, Especially Affordable Housing	Significant and unavoidable	Mitigation Measure SOC-16a: Comply with the Applicable Legislation Governing Acquisition and Relocation	Less than significant with mitigation incorporated
			Mitigation Measure SOC-16b:	Less than

Resource Area	Impact	Significance	Mitigation Measure	Significance After Mitigation
			Implement Community Information and Outreach Program to Effectively Inform Residents and Business Owners of the Proposed Transit Developments	significant with mitigation incorporated
Utilities				
Visual Quality (Aesthetics)	VQ-3: Degradation of Existing Visual Quality	Significant	Mitigation Measure VQ-3: Refine Project Design for Consistency within the Community	Less than significant with mitigation incorporated
			Mitigation Measure VQ-4: Incorporate Landscaping in the Project Design	Less than significant with mitigation incorporated

Table 5.4-1. City of San Jose Development Permit Activity, Capitol LRT Corridor Area (within 0.25 Mile of Street Centerline)

File Number*	Filing Date	Project Name	Tracking APN	Street Location	Land Use Type	Dwelling Units	Square Feet	Approval Date
Completed Projects								
PD99-039	7/8/1999	Monte Vista Family Apartments	484-44-003	West side of Capitol Avenue, 1000 feet northerly of Capitol Expressway	Residential	213	—	10/28/1999
H01-069	9/26/2001	Target Stores	592-19-006	East side of North Capitol Expressway, 260 feet northerly of McKee Road	Commercial	—	155,000	12/5/2001
PD99-008	2/5/1999	A-1 Self Storage	462-43-018	South side of Capitol Expressway, 275 feet westerly Snell Avenue	Commercial	—	69,000	5/3/1999
Total						**213**	**224,000**	
Projects under Construction								
PD96-002	1/4/1996	The Woods, Phase 5B	462-45-010	Southeast corner of Capitol Expressway and Snell Avenue	Residential	475	—	8/30/1996
PD01-126	12/20/2001	Bella Villagio	462-20-003	Northeast corner of Capitol Expressway and Vistapark Drive	Residential	357	—	4/5/2002
PD00-032	4/13/2000	Monte Vista Senior Apartments	484-44-057	West side of Capitol Avenue, 1000 feet north of Capitol Expressway	Residential	49	—	9/24/2001
CPA01-105-01	7/25/2002	Beshoff MotorCars	491-02-057	Northeast corner of Capitol Expressway and Tully Road	Commercial	—	74,000	9/25/2002
Total						**881**	**74,000**	
Approved Projects (Construction Not Yet Commenced)								
PDC01-004	1/18/2001	Madden Townhomes	484-02-045	Easterly terminus of Madden Avenue at I-680	Residential	32	—	9/4/2001
PDC01-066	6/14/2001	Narvaez Housing	462-51-076	East side of Narvaez Avenue, 220 feet northerly of Amanda Drive	Residential	5	—	5/7/2002
PDC00-102	10/10/2000	Tamara Homes	494-42-099	Northeast corner of Capitol Expressway and Carpentier Way	Residential	3	—	8/28/2001
PD01-059	5/4/2001	Capitol Self Storage	462-18-007	Northwest corner of Capitol Expressway and Monterey Highway		—	111,000	3/22/2002
Total						**40**	**111,000**	

Table 5.4-1. Continued.

File Number*	Filing Date	Project Name	Tracking APN	Street Location	Land Use Type	Dwelling Units	Square Feet	Approval Date
Projects Pending City Approval								
CP02-047	8/1/2002	Eastridge Shopping Center	491-04-006	Southwest corner of Tully Road and Capitol Expressway			307,000	
Total						**—**	**307,000**	
Grand Total						**1,134**	**716,000**	

* File number prefixes: PDC = Planned Development Rezoning, PD = Planned Development Permit, H = Site Development Permit, CP = Conditional Use Permit

Source: City of San Jose 2002.

- cultural resources,
- geology, soils and seismicity,
- hydrology and water quality,
- land use,
- noise and vibration,
- socioeconomics (population and housing), and
- visual quality**.**

Transportation

As described in Section 4.2, *Transportation*, the CMP travel forecast model was used to develop future-year traffic projections and transit ridership forecasts. The model incorporates local and regional government projections of future background growth, land use, and employment intensities and locations, as well as programmed highway, street and transit improvements and the transportation consequences of other anticipated development projects for 2010 and 2025. Accordingly, the analysis of adverse effects based on this model already accounts for the cumulative impacts of the proposed alternatives in combination with other projects. The RTP EIR identifies as a cumulative impact greater traffic congestion as a result of insufficient transportation capacity and alternative travel options compared to projected growth. The proposed alternatives would contribute to the cumulative impacts listed below, which unless indicated otherwise are considered less than significant or would be reduced to a less-than-significant level with mitigation incorporated.

No-Project Alternative

- 2010 traffic impacts at the Capitol Expressway/Capitol Avenue, Capitol Expressway/Story Road, Capitol Expressway/Aborn Road, and Capitol Expressway/Silver Creek Road intersections (significant and unavoidable); and
- 2025 traffic impacts at the Capitol Expressway/Capitol Avenue, Capitol Expressway/Story Road, Capitol Expressway/Quimby Road, Capitol Expressway/Aborn Road, and Capitol Expressway/Silver Creek Road intersections (significant and unavoidable).

Baseline Alternative

- 2010 traffic impacts at the Capitol Expressway/Story Road and Capitol Expressway/Senter Road intersections (significant and unavoidable); and
- 2025 traffic impacts at the Capitol Expressway/Ocala Avenue, Capitol Expressway/Aborn Road and Capitol Expressway/Senter Road intersections.

Light Rail Alternative

- 2010 traffic impacts at the Capitol Expressway/Tully Road, Capitol Expressway/Quimby Road, and Capitol Expressway/McLaughlin Avenue intersections; and
- 2025 traffic impacts at the Capitol Expressway/Quimby Road intersection.

Biological Resources

The historic extent of biological resources, including upland, riparian, and freshwater wetland habitats, has been substantially reduced and fragmented by development. Remaining areas of open space include riparian forest, freshwater marsh, ruderal, and aquatic habitats. Despite the level of disturbance already present in the project area, the Light Rail Alternative in combination with other reasonably foreseeable projects are expected to result in cumulative impacts on biological resources to the extent that cumulative losses may occur. The RTP EIR identifies as cumulative impacts the direct loss of wildlife habitats and travel paths from transportation improvements, and indirect loss from locally planned development that is supported by transportation improvements. The No-Project and Baseline Alternatives would not contribute to cumulative impacts on biological resources. The Light Rail Alternative would contribute to the following potential cumulative impacts, which are considered less than significant or would be reduced to a less-than-significant level with mitigation incorporated

- permanent loss of biological habitats and disturbance to inhabiting species;
- placement of fill within open waters of the United States and aquatic and bare soil (ruderal) habitats under the jurisdiction of CDFG;
- permanent loss or temporary disturbance of potential habitat for California red-legged frog;
- permanent loss of aquatic habitat, temporary disturbance of riparian habitat, and temporary disturbance of southwestern pond turtle; and
- loss of urban trees.

Cultural Resources

As described in Section 4.6, *Cultural Resources*, there is potential for the Light Rail Alternative in combination with other projects to result in cumulative impacts on important archaeological resources. The RTP EIR identifies as a cumulative impact the potential for accidental impact to unknown cultural resources during construction of transportation improvements. The No-Project and Baseline Alternatives would not contribute to cumulative impacts on cultural resources. The Light Rail Alternative would contribute to the following potential cumulative impact on cultural resources, which is considered less than significant or would be reduced to a less-than-significant level with mitigation incorporated:

- direct or indirect impacts to an archaeological resource.

Geology, Soils, and Seismicity

As discussed in Section 4.10, *Geology, Soils and Seismicity*, there is potential for the Light Rail Alternative in combination with other projects to result in cumulative impacts on geology, soils, and seismicity. Because the San Francisco Bay Area is a region of expansive soils and considerable seismic activity, the RTP EIR identified as a cumulative impact the increased potential for human injury or loss from increased travel on facilities that may be damaged during a major earthquake. The No-Project and Baseline Alternatives would not contribute to cumulative impacts on geology, soils, or seismicity. The Light Rail Alternative would contribute to the following potential cumulative impacts on geology, soils, and seismicity, which are considered less than significant or would be reduced to a less-than-significant level with mitigation incorporated:

- risk to people or structures caused by strong seismic ground shaking,
- risk to people or structures caused by seismic-related ground failure, including liquefaction,
- risk to people or structures from lateral spreading, subsidence, and collapse caused by underlying unstable geologic units, and
- risk to people or structures caused by the presence of expansive soil.

Hydrology and Water Quality

As described in Section 4.12, *Hydrology and Water Quality*, there is potential for the Light Rail Alternative in combination with other projects to result in cumulative impacts on hydrology and water quality. The RTP EIR identifies as a cumulative impact increased water runoff from transportation facilities that may not be collected and treated. The No-Project and Baseline Alternatives would not contribute to cumulative impacts on hydrology and water quality. The Light Rail Alternative would contribute to the following potential cumulative impacts on hydrology and water quality, which are considered less than significant or would be reduced to a less-than-significant level with mitigation incorporated:

- violation of water quality standards or waste discharge requirements,
- creation or contribution of additional runoff, including increasing additional sources of polluted runoff,
- alterations in existing drainage patterns, and
- exposure of people or structures to flood hazards.

Land Use

As described in Section 4.13, *Land Use*, there is potential for the No-Project Alternative in combination with other projects to result in cumulative impacts on land use in the Capitol Expressway Corridor. The Baseline and Light Rail Alternatives would not contribute to cumulative impacts on land use. The No-Project Alternative would contribute to the following cumulative impact on land use, which is considered significant and unavoidable:

- conflicts with any applicable land use plan, policy, or regulation of an agency with jurisdiction.

Noise and Vibration

As described in Section 4.14, *Noise and Vibration*, there is potential for the Light Rail Alternative in combination with other projects to result in cumulative impacts on noise and vibration. The No-Project and Baseline Alternatives would not contribute to cumulative impacts on noise and vibration. The Light Rail Alternative would contribute to the following cumulative impacts on noise and vibration, which are considered less than significant or would be reduced to a less-than-significant level with mitigation incorporated:

- vibration levels in buildings from transit operations that exceed FTA criteria,
- noise levels from Light Rail Alternative proposed options that would be considered a severe impact by FTA criteria, and
- vibration levels in buildings from Light Rail Alternative proposed options that exceed FTA criteria.

Socioeconomics (Population and Housing)

As described in Section 4.16, *Socioeconomics*, there is potential for the proposed alternatives in combination with other projects to result in cumulative impacts on socioeconomics. The RTP EIR identified as a cumulative impact the displacement of some residences and businesses. The No-Project Alternative would not contribute to cumulative impacts on socioeconomics. The Baseline and Light Rail Alternatives would contribute to the following cumulative impacts on socioeconomics, which are considered less than significant or would be reduced to a less-than-significant level with mitigation incorporated.

Baseline Alternative

- detraction of efforts to economically revitalize the study area.

Light Rail Alternative

- displacement of existing businesses or housing, especially affordable housing

Visual Quality (Aesthetics)

As described in Section 4.18, *Visual Quality*, there is potential for the Light Rail Alternative in combination with other projects to result in cumulative impacts on visual quality. The RTP EIR identified as cumulative impacts changes in the visual character of the Bay Area from multiple transportation projects and the possible loss of some views and vistas. The No-Project and Baseline Alternatives would not contribute to cumulative impacts on visual quality. The Light Rail Alternative would contribute to the following cumulative impact on visual quality, which is considered less than significant or would be reduced to a less-than-significant level with mitigation incorporated.

- degradation of existing visual quality.

5.6 Growth-Inducing Impacts

Pursuant to State CEQA Guidelines Section 15126.2(d), an EIR must address the growth-inducing effects of a project. A project is considered growth-inducing if it has the potential to directly or indirectly foster economic or population growth or the construction of new housing. Section 15126.2(d) states that an EIR shall:

> discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects that would remove obstacles to population growth (a major expansion of wastewater treatment plant, might, for example allow for more construction in service areas). Increases in the population may further tax existing community service facilities requiring construction of new facilities that could cause significant environmental effects. Also [an EIR shall] discuss the characteristic of some projects which may encourage or facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

The No-Project and Baseline Alternatives involve no building and/or a minimal increase in bus service and would have a minimal effect on growth. Therefore, the analysis in this section focuses on whether the Light Rail Alternative would directly or indirectly induce economic, population, or housing growth within the surrounding environment.

5.6.1 Growth, Land Use, and Transportation Systems

Growth rates and patterns within an area are influenced by various local, regional, and national forces that reflect ongoing social, economic, and technological changes. Ultimately, the amount and location of population growth and economic development that occurs within a specific area is regulated by city and county governments through zoning, land use plans and policies, and decisions regarding development applications. Local government and other regional, state, and federal agencies also make decisions regarding the provision of infrastructure (e.g., transportation facilities, water facilities, sewage facilities) that may influence growth rates and the location of future development.

Transportation projects can have a wide range of growth-inducing effects. A project may hasten growth in certain areas, retard it in other areas, intensify growth in certain locations, or shift growth from one locality to another. Generally, transportation improvements support growth, whereas land use development generates new travel demand and therefore supports the need for new transportation facility capacity. Transportation infrastructure is one component of the overall infrastructure that may serve to accommodate planned growth.

Extension of urban services or transportation facilities into previously unserved or underserved areas, and removal of obstacles to growth and development are considered factors that contribute to growth inducement. However, City projections include substantial future population and employment growth in the San Jose area over the next 20 years, as detailed in Section 4.16, *Socioeconomics.* The proposed alternatives are planned to serve the existing Capitol Expressway Corridor's transit needs and to accommodate planned future development.

Generally, extension of rail transit systems, such as VTA's light rail system, into communities has concentrates growth into infill areas and produces positive economic benefits to a community. More compact development is made possible by the high-volume service of light rail transit systems, creating less urban sprawl than if all development were auto-oriented. This more compact style of development is a key principle of "smart growth," a movement to foster responsible land use development patterns and growth that benefits the economy, community, and environment. The implementation of "smart growth" principles is achieved through zoning, land use plans, and policies that include the interest and support of public agencies, community members, and private sector developers.

5.6.2 Growth Inducement Analysis

Regional Growth Inducement

The Light Rail Alternative is designed to serve the current and planned growth in population, housing, and employment in the next 15–20 years in the Capitol

Expressway Corridor. If the Light Rail Alternative is selected, an additional 8.2 miles of VTA LRT service would be extended from the existing terminus at the Capital Avenue LRT Line at the Alum Rock Station to the existing Guadalupe LRT Line at SR 87.

On a regional level, MTC has determined that the regionwide transportation improvements in the Bay Area (specifically those included in MTC's 2001 RTP, such as the Light Rail Alternative, and other area mass transit projects) would not have a significant growth inducement effect in the Bay Area because the proposed transportation systems lag behind the growth that has already occurred in the region. MTC has determined that these transportation improvements are consistent with projected and planned growth in the region overall and would not adversely alter land designated for future development in existing local plans (Dyett & Bhatia 2001). MTC, in conjunction with ABAG and other regional agencies, has since created a smart-growth approach to planning regional transportation improvements that support updated general plans, redevelopment plans, and concept plans with a transit-oriented development focus (Dyett & Bhatia 2001, Association of Bay Area Governments 2003). In Santa Clara County, VTA has prepared and adopted "best practices" that reflect similar principles for integrating transportation and land use.

Direct Growth Inducement in the Local Project Area

The Light Rail Alternative would include nine stations spaced approximately 0.75 mile apart along the corridor and an optional station at Silver Creek Road (shown in Figure 3-5, Chapter 3). Based on the analysis in Section 4.13, *Land Use*, most of the land along the corridor is already developed, although some parcels remain undeveloped and some properties are proposed for redevelopment. Most of the projects that have been approved recently or are pending approval are residential or commercial developments (Table 4.13-1). These projects are undergoing or have undergone a consistency analysis with *San Jose 2020 General Plan* policies and implementation strategies. Therefore, the Light Rail Alternative would not directly induce substantial population or housing growth beyond that currently planned for by the City.

Operation of the Light Rail Alternative, including the light rail stations, would result in the employment of approximately 50 new employees. As described in Section 4.16, *Socioeconomics*, total employment in San Jose is projected to increase 31% by 2025 and employment within the Capitol Expressway Corridor would increase 29% during the same period. Project-related employment would constitute far less than 1% of the city's total employment growth during this period and would therefore be minimal in the context of total employment growth in San Jose. These new employees could generate a demand for housing. If each new employee required separate housing, as many as 50 new housing units would be required for the new employees. This represents a minimal increase within the context of total households in the city. The Light Rail Alternative would therefore not directly foster substantial economic growth beyond the levels that have been planned for by the City. In conclusion, the Light Rail Alternative would not directly induce substantial population, housing, or economic growth beyond that currently defined in the *San Jose 2020 General Plan*.

Indirect Adverse Growth-Inducing Impacts in the Local Project Area

Although the Light Rail Alternative would not directly induce substantial population, housing, or economic growth, it could indirectly induce growth in San Jose through several means, including alleviating highly congested transportation systems; improving access to existing neighborhoods, civic resources, and employment centers from regional public transit that may grow as a result; and providing incentive for development on vacant and underused land in the vicinity. The *San Jose 2020 General Plan* designates the Capitol Avenue/Expressway Corridor as an “Intensification Corridor” in which higher residential densities, mixed uses, and nonresidential uses would be centered along an existing or planned light rail line. The new stations would provide access points for residents and employees seeking transit on the VTA system. Therefore, to the extent that improved transit systems encourage development by removing obstacles to mobility or improving access in the region, the Light Rail Alternative could have an indirect growth-inducing effect by accelerating planned growth in a more compact, transit-oriented form, particularly in and around the proposed light rail stations.

Any potential future growth that could result from implementation of the Light Rail Alternative would be under City jurisdiction. The City’s planning efforts for the areas surrounding the proposed light rail stations are intended to encourage land use designations and zoning to accommodate anticipated growth, including transit-oriented development. These changes reflect the indirect influence of the Light Rail Alternative. Any new transit-oriented development proposals would be subject to environmental review on a project-specific basis.

5.7 Environmentally Preferable (Superior) Alternative

CEQA requires that an *environmentally superior alternative* be selected among the alternatives that were analyzed in an EIR. CEQA does not provide a definition for the environmentally superior alternative; in general, however, the environmentally superior alternative is defined as that alternative with the least adverse impacts on the project site and its surrounding environment.

The No-Project Alternative would best avoid the impacts identified for the Baseline Alternative and Light Rail Alternative. In particular, it would not involve construction and operational impacts, such as increased traffic volumes and delays at intersections, effects on special-status species and habitats, or residential and commercial displacements. Therefore, the No-Project Alternative could be considered the environmentally superior alternative largely because of the minimized impacts on natural resources. However, the No-Project Alternative would have impacts on the physical environment by failing to address continuing long-term congestion- and traffic-related air quality and energy impacts. Under the No-Project Alternative, projected growth and subsequent travel patterns would not be served. There would be intersection LOS failures and increased traffic volumes on roadways. The No-Project Alternative would not be consistent with the *San Jose 2020 General Plan* in terms of supporting vigorous economic growth along a designated "Intensification Corridor."

Overall, the Baseline Alternative would have would have fewer natural and physical environmental impacts than the Light Rail Alternative and would require less mitigation. It would also avoid the impacts associated with the Light Rail Alternative, such as traffic congestion at intersections and grade crossings near proposed stations, effects on special-status species and habitats, and some relocation of residents and businesses. However, traffic impacts would still occur at some intersections, although fewer than under the Light Rail Alternative. The Baseline Alternative would also be inconsistent with the *San Jose 2020 General Plan.* The potential disturbances of cultural resources would not occur under the Baseline Alternative.

While the Baseline Alternative would impose the least environmental impacts on natural resources, it is noted that beneficial effects (i.e., reduction in roadway traffic volumes, increased transit ridership, reductions in air pollution emissions, vehicle miles traveled, and regional energy consumption) are greatest under the Light Rail Alternative. Therefore, the Light Rail Alternative would be considered environmentally superior to the Baseline Alternative.

Chapter 6.0

Section 4(f) Evaluation

This section is required by Section 4(f) of the Department of Transportation Act of 1966 (49 USC 303). However, subsequent to the public review of the Draft EIS/EIR, VTA decided to continue the state environmental process only, because no federal involvement in this project is anticipated. Since VTA is no longer continuing the federal environmental process, this section has been removed.

Chapter 7.0
Financial Considerations

7.1 Introduction

This chapter describes the financial assumptions of the proposed alternatives. It summarizes the capital, operating, and maintenance costs of the proposed alternatives. Finally, the financial feasibility and local financial commitment toward the proposed transportation improvements are also discussed.

The financial plan indicates that the Capitol Expressway Corridor project will need additional revenue in order to be constructed and operated in the time frame described. The financial plan in the Draft EIS/EIR is based on financial projections and governmental actions that are not yet finalized.

7.2 Cost Summary

The estimated capital, operating, and maintenance costs associated with each of the proposed alternatives are summarized below. The estimates are based on the latest local unit cost information available for the types of construction and procurement items. These costs are inclusive of engineering, contingencies, and reserves. No capital costs would be associated with the No-Project Alternative.

7.2.1 Capital Costs

The estimated capital costs (costs of long-term assets of a public transit system such as property, buildings, vehicles, etc.) of the proposed alternatives are summarized in this section.

The estimated capital cost of the bus service improvements incorporated in the Baseline Alternative is summarized below. The estimate includes costs for procurement items such as low-floor and high-capacity buses, signal preemption equipment, and fare machines. Features associated with enhanced limited-stop service, including streetside fare prepayment and station stops, are still under consideration and have not been included in the estimates.

Construction costs for the bus improvements outlined in the Baseline Alternative are presented in Table 7-1. Major capital expenditures for street reconstruction and widening, property acquisition, and relocation of homes and businesses would not be applicable to the Baseline Alternative's bus service improvements.

Table 7-1. Estimated Capital Costs for the Baseline Alternative

Description	Cost (Millions)
High-Capacity, Low-Floor Buses	$12
Transit Signal Priority	2
Bus Facilities and Passenger Information	4
Total	**18**

The estimated capital costs for the Light Rail Alternative are presented in Table 7-2 and are based on preliminary information developed during the conceptual engineering analysis. These estimates are presented in 2003 dollars and are not escalated to represent year-of-expenditure dollars. As shown in Table 7-2, the estimated total capital costs for the Minimum Operating System (MOS), Phase 1 and Phase 2 of the Light Rail Alternative are $706 million. Construction would begin in 2006 with revenue service scheduled for 2009. The estimated cost for the MOS in year-of-expenditure dollars is $278 million.

Table 7-2. Estimated Capital Costs for the Light Rail Alternative (2003 Dollars)

Description	Cost (Millions)
MOS (Phase 1)	
Alum Rock to Eastridge Transit Center	$259
▪ Median Running	
▪ Aerial over Capitol Expressway and over Story Road	
▪ Ocala Station	
▪ Tunnel into Eastridge Transit Center	
▪ Pedestrian Overcrossing at Story Road	
▪ Kiss-and-ride Lot at Story Road	
Total MOS	**259**
Phase 2	
Eastridge Transit Center to Nieman Boulevard	125
▪ Station at Nieman Boulevard	
▪ Tunnel from Eastridge Transit Center	
Nieman Boulevard to Monterey Highway	234
▪ At Grade over U.S. 101	
▪ Relocation of Capitol Caltrain Station	
Monterey Highway to SR 87	88
▪ End-of-Line Station West of SR 87	
▪ No Connection to Guadalupe LRT Line	
Total Phase 2 (Including Four LRT vehicles)	**447**
Total Phases 1 and 2	***706***

Source: Korve Engineering in consultation with VTA.

Construction costs for the Light Rail Alternative consist of costs for trackway and structures, stations and park-and-ride lots, systems (electrification, communications, automatic train control equipment), revenue vehicles, and construction management. Contingency or add-on costs include design, construction management, right-of-way, agency costs, and project reserves. In general, the base option has fewer grade-separations and remains largely in the median of the expressway. The costs of the base option include the park-and-ride lots at Ocala and Eastridge, the kiss-and-ride and bus bays at Story Road, and the relocation of the Capitol Caltrain Station at Monterey Highway. Additional park-and-ride lots and the potential light rail vehicle storage facilities are not included in the base option but are reflected in the costs of the alternative design options in the next section of the report.

Table 7-3 summarizes the estimated costs for each design option, including the light rail design and alignment, park-and-ride lots, and vehicle storage facilities.

Table 7-3. Estimated Capital Costs for Light Rail Alternative Design Options

Option	Cost (Millions)
Tunnel into Capitol, Aerial over Story Road	$32
Tunnel into Capitol and under Story Road	65
No Pedestrian Overcrossings at Story Road	(7)
Single Left-Turn Lane onto Ocala Avenue with Station at Ocala	(3)
Station between Ocala and Cunningham Avenue	(1)
Station at Cunningham	(3)
Aerial into Eastridge Transit Center	(30)
Aerial from Eastridge Transit Center	(53)
Side-Running at Grade from Eastridge to Nieman Boulevard	(67)
Side-Running in Tunnel and Channel Out of Eastridge to Nieman	(14)
Tunnel into Capitol from Side Running at Nieman	60
Aerial over Aborn Road from Median-Running south of Nieman	12
Aerial into Capitol and over Aborn from Side-Running at Nieman	40
Aerial from Silver Creek Road to Coyote Creek over U.S. 101	31
Station under SR 87	(3)
Right-of-Way for Monterey Highway Station Park-and-Ride	7
Ocala Avenue Storage Facility	16
South of Eastridge Storage Facility	21
SR 87 Storage Facility	13

Note: Parentheses denote costs to be deducted from the total cost of the segment.
Source: Korve Engineering, 2003 (in consultation with VTA).

7.2.2 Operating and Maintenance Costs

The estimated operating and maintenance costs of the proposed alternatives are shown in Table 7-4. These costs are based on the service and fleet assumptions described in Chapter 3, *Alternatives Considered*, and were prepared using VTA's operating and maintenance cost model. The model uses systemwide operating statistics for each mode operated by VTA.

Table 7-4. Estimated Operating and Maintenance Costs of the Proposed Alternatives (2003 Dollars)

Alternative	Operating and Maintenance Costs	Incremental Costs vs. No Project
No Project Alternative	$336,170,000	—
Baseline Alternative	344,426,000	$8,256,000
Light Rail Alternative		
MOS (Phase 1)	340,430,000	4,260,000
Phase 2	345,960,000	9,790,000

Source: Korve Engineering and Manual Padron & Associates 2001.

The No Project Alternative includes light rail in the Guadalupe, Almaden, Tasman/Capitol, and Vasona corridors, and bus services. The systemwide annual operating and maintenance costs are projected to increase by $8,256,000 for all modes under the Baseline Alternative compared to the No-Project Alternative. For the Light Rail Alternative, the annual operating and maintenance costs are projected to increase for the MOS by $4,260,000 and a total of $9,790,000 for Phase 2 (to SR 87). Operating and maintenance costs would be funded with local VTA revenues (fares and sales taxes).

7.3 Financial Feasibility and Local Financial Commitment

The Light Rail Alternative is estimated to cost $706 million to construct. Table 7-5 summaries the estimated project costs by phase and identifies the committed funding sources. The MOS has committed funding sources and would be initially constructed if the alternative is selected. Phase 2 is expected to be implemented at a future date but does not currently have a committed funding plan or schedule.

Table 7-5. Sources of Capital Funding for the Light Rail Alternative

Estimated Costs of the Light Rail Alternative	MOS ($259 million)	Phase 2 ($447 million)
Committed Funding Sources: VTA Local Sales Tax Measure A	$554*	
Future Funding		TBD

Note: Funding in 2003 dollars.
* Total shared with other DTEV corridors.
Source: Santa Clara Valley Transportation Authority 2003.

The $447 million needed to fund Phase 2 may come from state and local funding and other sources.

7.3.1 Measure A 0.5-Cent Sales Tax

On November 7, 2000, voters in Santa Clara County approved a 30-year 0.5-cent sales tax for transit purposes. The new 2000 Measure A will take effect April 1, 2006, and provides funding for capital and operating expenditures. The sales tax measure specified the allocation of the funds to various projects, including Downtown/East Valley. The Preferred Investment Strategy for Downtown/East Valley includes three separate corridors: Santa Clara/Alum Rock, Capitol Expressway, and BRT on Monterey Highway. The Measure A funds for Downtown/East Valley may be used for all three corridors. The VTA Board of Directors approved the Preferred Investment Strategy for Downtown/East Valley in August 2000, following the completion of an 18-month MIS that evaluated 16 transportation alternatives.

7.3.2 Existing Systemwide Funding Sources

An analysis of VTA's financial capacity to build, operate, and maintain the Light Rail Alternative, while continuing to operate and maintain the existing bus, light rail, and paratransit service over the next 20 years, indicates that the current operating and financial plan must be revised to improve long-term financial results. This analysis is based on a series of assumptions relative to existing systemwide funding sources, including sales tax revenues, passenger fares, and federal Section 5307 formula funds, and is documented in the Short Range Transit Plan, adopted in February 2004 (Santa Clara Valley Transportation Authority 2004).

7.3.3 Funding Issues

The Light Rail Alternative, one element of the Downtown/East Valley Transit Improvement Project, will be supported by the 0.5-cent sales tax Measure A, which was passed by over 70% of the voters in November 2000. The Light Rail Alternative is included as a committed project in the financially constrained 2001 RTP, as amended in November 2002 (Metropolitan Transportation Commission 2002).

Historically, sales tax-based revenues accounted for approximately 80 percent of VTA's annual operating revenues, making it the single most important determinant to VTA's financial strength. The recent economic downturn in Santa Clara County has caused a significant reduction in sales tax revenues used to fund the operation and maintenance of VTA's existing system. Year-over-year, sales tax receipts have declined for the last eight quarters. In response to declining sales tax receipts, VTA has converted a large portion of the federal capital grants to operating assistance (i.e., preventative maintenance). Sales tax revenues currently account for less than 65 percent of operating revenue because of the declining sales tax and increasing amounts of funds programmed for preventative maintenance. The change in the economy has also negatively impacted ridership and related fare revenues.

To address the funding issues presented by the economic downturn, VTA has embarked on a program of ongoing financial assessments and plans for achieving a stable and reliable funding program. In November 2002, VTA provided an assessment of its financial condition given the recent economic factors that indicated that significant additional operating revenues were needed to continue the system as then planned. As a part of this evaluation, VTA secured an independent forecast of near-term sales tax revenues, which were then incorporated into the analysis. The analysis included a series of sensitivity tests on sales tax growth, inflation rate, wage increases, fare increases, and American with Disabilities Act (ADA) ridership growth. VTA identified four ways to improve long-term financial results:

- Increasing existing revenues
- Implementing cost efficiency strategies and changes in service levels
- Reducing the capital program
- Introducing new revenue sources

The Silicon Valley Business Review Team submitted its report on the *Efficiency and Effectiveness of the Santa Clara Valley Transportation Authority (VTA)* in November 2002. The Business Review Team, comprised of members of the Silicon Valley business community and VTA management and staff, was formed to investigate the efficiency and effectiveness of VTA, and to help assure VTA's financial stability throughout the next decade of growth. Five recommendations addressing farebox recovery and average fare per boarding, health benefits costs, ADA paratransit program, marketing efforts, and the role of VTA in Joint Powers Authorities in approving operating and capital budgets were provided.

To broaden the work begun by the Business Review Team, the VTA Board appointed an Ad Hoc Financial Stability Committee in December 2002. The purpose of the Ad-Hoc Financial Stability Committee was to carefully consider options that would address the near-term financial situation and establish a sound plan for the long-term financial stability of the organization. The committee consisted of VTA Board of Directors and stakeholders and met weekly from February through October 2003.

The Ad Hoc Financial Stability Committee developed 19 recommendations to improve VTA's financial stability in both the near- and long-term. One of the main recommendations that would directly impact the Light Rail Alternative includes pursuing a new local revenue source dedicated to VTA. The revenue enhancement options considered by the committee include supporting a statewide legislative effort to broaden the sales tax base, as well as to reduce the threshold for passing broad-based local transportation measures, and partnering with other entities when seeking new revenue sources. In the near-term, VTA would also implement possible fare increases, fare policy changes, service reductions, service restructuring, and other measures to improve the efficiency and effectiveness of the organization.

In June 2003, the VTA Board of Directors adopted all of the recommendations of the Ad Hoc Financial Stability Committee, including a fare increase (over the past five years, VTA has had a cost recovery rate ranging from 13.3 to 18.1 percent) and further cost efficiency improvements to VTA's paratransit service. The VTA Board also directed the Ad Hoc Committee to develop recommendations for a proposed new revenue source for VTA Board consensus, with subsequent adoption by the VTA Board.

In response to the Board's direction, the Ad Hoc Committee developed a revenue enhancement strategy, which was based upon the current economic climate and the viability of obtaining a new or broadened revenue source at this time. The strategy covered the near- to mid-term, as well as a long-term horizon and included revenue enhancement, project prioritization, and financial management strategies. The Committee's recommended strategy was discussed at a VTA Board Workshop on November 7, 2003, and scheduled for VTA Board consideration in February 2004. Adoption of the Financial Stability Strategy would establish a broad policy statement for the Board to utilize in implementing measures to address VTA's current and future financial needs.

7.3.4 Potential New Funding Sources

To address the long-term projections for operational funding needs and resources, VTA will need additional operating revenues. Several potential funding sources have been identified. However, before pursing some of them, selected legislative actions may be needed to help make them a reality. Potential sources for these new revenues, which could be considered by the VTA Board, include the following:

- **One-Quarter to Half-Cent Sales Tax.** The VTA Board of Directors could put a local sales tax measure on the ballot, including a one-quarter or half-cent sales tax increase. Presently, such a measure requires a two-thirds vote to pass. However, VTA is working in partnership with other transportation organizations from around the state, as well as with key groups, on a potential amendment to California's Constitution to change the voting requirement for local transportation sales tax from a two-thirds to a 55 percent majority vote.
- **Broadening the Sales Tax Base.** The California State Legislature has explored a number of options for increasing revenues, one of which was broadening the sales tax base to include some professional services. The prospects for legislative action in the near-term do not appear promising, given the controversial nature of this approach. However, given the long-term structural problem with the sales tax resulting from an increasingly higher percentage of personal income being spent on non-taxable transactions, the concept of broadening the sales tax base will continue to be a part of the discussions. Broadening the sales tax base would require a two-thirds vote of both houses of Legislature.
- **Joint Development.** VTA has statutory authority to pursue joint development in conjunction with transportation projects via Assembly Bill No. 1937. There may be opportunities for joint development at some of the Light Rail Alternative stations, which could yield both capital funding and on-going operational support.
- **Benefit Assessment Districts.** On October 11, 2003, the Governor signed legislation (Assembly Bill No. 935) that gives VTA the right to assess fees on property owners within a half-mile of any existing or proposed rail transit station. With the concurrence of a majority of the affected property owners and the appropriate local jurisdiction, the proceeds generated from such

assessments could be used to build, maintain, operate, and improve the rail transit station that is located within a particular benefit assessment district.

- **Proposition 42.** This proposition provided a new state source of transportation funding, including supplemental State Transportation Improvement Program funds beginning in 2009. Since these funds are not currently committed, it is assumed that a portion could be used to supplement the Measure A sales tax.
- **Regional Gas Tax.** A number of years ago, state legislation was enacted that empowered the Bay Area's MTC to place a regional gas tax on the ballot of up to $0.10 per gallon. Such a tax measure, as the law currently stands, would require a two-thirds vote to pass. Recently, the Bay Area Council, a regional business organization, proposed that a measure imposing a $0.03 to $0.05 per gallon gas tax be placed on the ballot sometime in the near future. Interest in the Bay Area about such a ballot measure remains high, and discussions involving MTC, the countywide congestion management agencies, Bay Area transit operators, and other stakeholders are taking place regarding if and when it would be appropriate to put a regional gas tax measure before the voters.
- **Bay Area Bridge Tolls.** In 2003, the State Legislature approved and the Governor subsequently signed Senate Bill No. 916. This bill authorizes a March 2004 vote to increase tolls on the seven state-owned bridges in the Bay Area by $1 to improve transportation along the bridge corridors. If the Bay Area voters approve this ballot measure, VTA could conceivably receive *a small increment of* transit operating funds *to support transbay services and capital improvement funds for regional initiative projects.*

The capital funding strategy for the Light Rail Alternative will rely on local sales taxes and other potential sources for funding. Although local sales tax receipts have dropped in the past two years, forecasts anticipate that the economy will rebound. Amidst the recent financial uncertainty, the Light Rail Alternative continues to be a high priority for VTA and the community. As such, VTA will continue to pursue solutions that will achieve financial stability to assure that the Light Rail Alternative and the VTA system as a whole are adequately funded. At this phase in the development of the Light Rail Alternative, the systemwide-funding plan for VTA is based on financial projections and governmental actions that are not finalized.

Chapter 8.0
Agency and Community Participation

This chapter discusses the agency and community participation efforts conducted by VTA in preparing this EIR. Coordination and consultation with various federal, state, and local agencies; elected officials; community leaders; organizations; and other individuals from the neighborhoods and communities within the Downtown/East Valley study area were achieved through a variety of means, including public agency coordination, a public scoping process, and an extensive public involvement and community outreach program. These efforts originally followed both NEPA and CEQA guidelines. However, subsequent to the public review of the Draft EIS/EIR, VTA decided to continue the state environmental process only, because no federal involvement in this project is anticipated.

8.1 Summary of Scoping

8.1.1 Purpose and Process of Scoping

NEPA specifically requires the lead agency to consult with federal agencies that have jurisdiction over the proposed action by law or special expertise. The lead agency must also solicit appropriate information from the public during EIS preparation. Scoping is the process by which the lead agency conducts these activities. This process will help to determine the scope of the EIS, including the extent of the action, the range of the alternatives, and the types of significant adverse effects to be evaluated. The lead agency's scoping process may include early scoping meetings that can be incorporated with other aspects of the federal agency planning process.

Similarly, the State CEQA Guidelines state that scoping is the process of determining the scope, focus, and content of an EIR. Scoping helps to identify the range of actions, alternatives, environmental effects, methods of assessment, and mitigation measures to be analyzed in depth. It also eliminates from detailed study those issues that are not important to the decision at hand. Scoping is an effective way to bring together and resolve the concerns of interested federal, state, and local agencies; the proponent of the action; and other interested persons.

8.1.2 Notice of Intent

NEPA and FTA require that an NOI to prepare an EIS be filed with EPA and appear in the Federal Register. The NOI for the Capitol Expressway Corridor EIS was filed on September 17, 2001, and appeared in the Federal Register on September 18, 2001. The NOI provided a description of the project area and scope, stated the project's purpose and need, presented the preliminary alternatives, and identified the probable effects that would be analyzed in the EIS/EIR. A copy of the NOI is included in Appendix J.

8.1.3 Notice of Preparation

CEQA requires that an NOP be filed with the State Clearinghouse The NOP for the Capitol Expressway Corridor EIR was filed on August 31, 2001. The NOP was provided to appropriate state agencies and invited them to offer comments during the scoping period. The scoping period encompassed the 30 days following the filing of the NOP. In addition, copies of the NOP were provided to local agencies. A copy of the NOP is included in Appendix J.

8.1.4 Public Scoping Meeting

An environmental scoping meeting for the Capitol Expressway Corridor was held in fall 2001. During the environmental scoping meeting, the public made comments about project alternatives and possible mitigation measures to reduce or eliminate the significant adverse environmental effects of the project. The formal scoping meeting for the Capitol Expressway project was held on September 26, 2001, at St. Francis of Assisi Catholic Church, located at 5111 San Felipe Road in San Jose. A transcript of the scoping meeting is included in Appendix J.

8.2 Summary of Public Agency Coordination

Public agencies formally or informally contacted and consulted during the preparation of this environmental document are listed below. These agencies received copies of the NOI and NOP and received notification of the public scoping meeting.

8.2.1 Federal Agencies

- Federal Aviation Administration
- Federal Transit Administration

- U.S. Army Corps of Engineers
- U.S. Environmental Protection Agency, Region IX
- U.S. Fish and Wildlife Service
- U.S. Department of Commerce, NOAA Fisheries

8.2.2 State Agencies

- California Department of Transportation, District 4
- California Department of Fish and Game
- State Office of Historic Preservation
- Native American Heritage Commission
- State Clearinghouse
- California Public Utilities Commission
- California Department of Water Resources
- State Lands Commission

8.2.3 Local and Regional Agencies

- Metropolitan Transportation Commission
- City of San Jose
- City of San Jose Redevelopment Agency
- County of Santa Clara
- Santa Clara Valley Water District
- Peninsula Corridor Joint Powers Board

8.3 Summary of Ongoing Public Involvement

VTA has conducted an extensive public information and outreach program. Since beginning in January 2001, the program has consisted of stakeholder interviews, community open houses, public meetings, and numerous presentations to community-based organizations, including businesses and neighborhood associations. The public outreach components of the program have consisted of public meeting notices, advertisements, press releases, newsletters, fact sheets, web site updates, project updates, information display boards, door-to-door meet and greets, participation in community events and festivals, general project information materials, and summaries of public comments that incorporated multi-lingual and special needs applications.

The purpose of the public involvement program was to solicit input from the community regarding the conceptual design for the Capitol Expressway Corridor. The goals of the public involvement program are as follows:

- Inform and educate the public regarding the project.
- Involve the public in shaping the environmental and conceptual design process.
- Assist with the formulation of alternatives.
- Ensure that issues of concern are considered and addressed.
- Present the results of all relevant project decision points to the general public, key project partners, community stakeholders, interested groups, task forces, and government agencies before decisions are made.
- Ensure that the Downtown/East Valley Policy Advisory Board and VTA Board of Directors have a thorough understanding of public input and concerns when formulating findings and recommendations.

The public involvement program since the beginning of the conceptual engineering is summarized in four public involvement program summary documents. The first three summaries were completed in August 2001, December 2001, and June 2002; the fourth will be completed in July 2003.

The summary reports consist of various components, including an overview of the public involvement and comments received, open houses and public meetings conducted, and a summary of individuals' comments and community outreach activities. Supporting documentation includes copies of the public meeting notification mailers, advertisements, press releases, and newsletters, general project information materials, surveys and summaries of survey responses, summaries of public comments, public meetings and stakeholder meetings and community outreach activities.

The Downtown/East Valley Plan has a web site located at http://www.dtev-vta.org. Comments have been received orally, and via facsimile transmittal, mail, and electronic mail. All of the comments received during the four phases of public involvement have been considered during the development of the conceptual engineering.

From the beginning of the conceptual engineering in January 2001 to April 2003, there have been nine public meetings (including the environmental scoping meeting) and open houses and 25 project presentations about the Capitol Expressway Corridor to community groups and organizations. In addition, there have been a significant number of project presentations about the larger Downtown/East Valley Plan.

Chapter 9.0
Agencies, Organizations, and Individuals Receiving Copies

9.1 Public Review Locations

The draft EIS/EIR was made available for public review at the following locations:

Santa Clara Valley Transportation Authority
3331 North First Street, Building B
San Jose, CA 95134

San Jose Public Library - Dr. Martin Luther King, Jr. Main Library
180 West San Carlos Street
San Jose, CA 95113

San Jose Public Library - East San Jose Carnegie Branch
1102 East Santa Clara Street
San Jose, CA 95116

San Jose Public Library - Evergreen Branch
2635 Aborn Road
San Jose, CA 95121

San Jose Public Library - Hillview Branch
2255 Ocala Avenue
San Jose, CA 95122

San Jose Public Library - Santa Teresa Branch
290 International Circle
San Jose, CA 95119

San Jose Public Library - Seventrees Branch
3597 Cas Drive
San Jose, CA 95111

Santa Clara County Library
Alum Rock Library
75 South White Road
San Jose, CA 95127

9.2 Public Distribution

The draft EIS/EIR was distributed to the following agencies, organizations and individuals.

9.2.1 Federal and State Officials

U.S. Senator Barbara Boxer

U.S. Senator Dianne Feinstein

U.S. Representative Michael M. Honda

U.S. Representative Zoe Lofgren

California State Senator Byron Sher

California State Senator John Vasconcellos

California State Assemblyman Manny Diaz

9.2.2 Federal Agencies

Federal Aviation Administration
831 Milten Road, Room 210
Burlingame, CA 94010-1301
Attention: Mr. Joseph Rodriguez
Supervisor Planning and Programming

Federal Highway Administration
980 Ninth Street, Suite 400
Sacramento, CA 95814-2724
Attention: Gary N. Hamby
Division Administrator

Federal Transit Administration
400 7th Street, SW
Washington, DC 20590
Attention: Mr. Joseph Ossi
Office of Planning (TPL)

Federal Transit Administration, Region 9
201 Mission Street, Suite 2210
San Francisco, CA 94105
Attention: Mr. Leslie Rogers
Regional Administrator

National Oceanic and Atmospheric Administration
777 Sonoma Avenue, Room 325
Santa Rosa, CA 95404
Attention: Steve Edmundson

U.S. Army Corps of Engineers
333 Market Street
San Francisco, CA 94105
Attention: Mr. Calvin Fong
Branch Chief

U.S. Department of the Interior
Main Interior Building, MS-2340
1849 C Street, NW
Washington, DC 20240
Attention: Dr. Willie R. Taylor
Director, Office of Environmental Policy and Compliance

U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA 94105
Attention: Mr. Wayne Nastri
Acting Regional Administrator

U.S. Fish and Wildlife Service
2800 Cottage Way, Room 2605
Sacramento, CA 95825
Attention: Mr. Wayne White
Dual Supervisor Sacramento Fish/Wildlife

9.2.3 California State Agencies

California Department of Fish and Game
1416 9th Street, 12th Floor
Sacramento, CA 95814
Attention: Mr. Ryan Broddrick
Director

California Department of Toxic Substances Control
700 Heinz Avenue, Building F, Suite 200
Berkeley, CA 94710
Attention: Ms. Barbara Cook
Chief, Northern California Coastal Cleanup Operations

California Department of Transportation, District 4
P.O. Box 23660
Oakland, CA 94623
Attention: Ms. Jean Finney
CEQA Coordinator

California Department of Transportation, District 4
Division of Design West
475 Holger Way
San Jose, CA 95134
Attention: Mr. Stewart Ng
District Office Chief

California Department of Water Resources
1416 9th Street
Sacramento, CA 95814
Attention: Nadell Gayou

California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102
Attention: Mr. Wesley M. Franklin
Executive Director

Native American Heritage Commission
915 Capitol Mall, Room 228
Sacramento, CA 95814
Attention: Mr. Larry Myers
Executive Secretary

State Clearinghouse
1400 10th Street
Sacramento, CA 95814
Attention: Dr. Terry Robert

State Lands Commission
100 Howe Avenue, Suite 100
Sacramento, CA 95825
Attention: Betty Silva

State Office of Historic Preservation
P.O. Box 942896
Sacramento, CA 94296
Attention: Dr. Knox Mellon
State Historic Preservation Officer

9.2.4 Regional Agencies

Association of Bay Area Governments
101 Eighth Street
Oakland, CA 94607
Attention: Mr. Eugene Leong
Executive Director

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109
Attention: Mr. Tom Peradi
Director of Planning and Research

Metropolitan Transportation Commission
101 Eighth Street
Oakland, CA 94607
Attention: Mr. Steve Heminger
Executive Director

Metropolitan Transportation Commission
101 Eighth Street
Oakland, CA 94607
Attention: Mr. Marc Roddin
Santa Clara County Liaison

Peninsula Joint Powers Board
1250 San Carlos Avenue
San Carlos, CA 94070
Attention: Mr. Mike Scanlon
Executive Director

Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612
Attention: Mr. Bruce H. Wolfe
Executive Director

Transportation Agency for Monterey County
55 B Plaza Circle
Salinas, CA 93901
Attention: Mr. William Reichmuth, P.E.
Executive Director

9.2.5 Local Agencies and Officials

City of San Jose
Terry O. Gregory
Councilmember, District 7
801 North First Street, Room 600
San Jose, CA 95110

City of San Jose
801 North First Street, Room 400
San Jose, CA 95110
Attention: Mr. Stephen M. Haase
Director of Planning, Building and Code Enforcement

City of San Jose
Department of Transportation
4 North 2nd Street, 10^{th} Floor
San Jose, CA 95113
Attention: Mr. James R. Helmer
Director of Transportation

City of San Jose
Office of the Mayor
801 North First Street
San Jose, CA 95110
Attention: Mr. James Webb
Transportation Officer

City of San Jose Redevelopment Agency
50 West San Fernando Street
San Jose, CA 95113
Attention: Mr. Harry Mavrogenes
Interim Executive Director

County of Santa Clara
Airport Land Use Commission
70 West Hedding Street, 10^{th} Floor
San Jose, CA 95110

County of Santa Clara
Office of Planning
70 West Hedding Street
San Jose, CA 95110
Attention: Ms. Ann Draper
Director of Planning

County of Santa Clara
Parks and Recreation Department
298 Garden Hill Drive
Los Gatos, CA 95032
Attention: Ms. Lisa Killough
Director of Parks and Recreation

County of Santa Clara
Roads Commission
70 West Hedding Street
San Jose, CA 95110
Attention: Mr. Ted Brown

County of Santa Clara
Roads and Airports Department
101 Skyport Drive
San Jose, CA 95110
Attention: Mr. Michael Murdter
Director of Roads and Airports

Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118
Attention: Ms. Sue Tippetts
Community Project/Review Unit Manager

9.2.6 Organizations and Individuals

Bay Area Transportation and Land Use Coalition
1922 The Alameda, Suite 213
San Jose, CA 95126
Attention: Ms. Kim Strickland
Coordinator

Greenbelt Alliance
1922 The Alameda, Suite 213
San Jose, CA 95126
Attention: Ms. Autumn Bernstein
South Bay Office Representative

Land Watch
P.O. Box 908
Monterey, CA 93942
Attention: Mr. Gary Patton
Executive Director

SBC
3475 North First Street, Building B, Room 600
San Jose, CA 95134
Attention: Mr. Fred Schnabel
Project Manager/Engineering Department

Eastridge Shopping Center
One Eastridge Mall
San Jose, CA 95122
Attention: Mr. John Patterson
Manager

Franklin McKinley School District
645 Wool Creek Drive
San Jose, CA 95112
Attention: Mr. Larry Aceves
Superintendent

Mount Pleasant School District
3434 Marten Avenue
San Jose, CA 95148
Attention: Ms. Ida Jew
Superintendent

Luther Burbank School District
4 Wabash Avenue
San Jose, CA 95128
Attention: Mr. Richard Rodriguez
Superintendent

Alum Rock Union School District
2930 Gay Avenue
San Jose, CA 95127
Attention: Mr. Alfonso R. Anaya
Superintendent

Evergreen School District
3188 Quimby Road
San Jose, CA 95148
Attention: Mr. Tom Andrade
Superintendent

East Side Union High School District
830 North Capitol Avenue
San Jose, CA 95133
Attention: Dr. Esperanza Zendejas
Superintendent

San Jose Unified School District
855 Lenzen Avenue
San Jose, CA 95126-2736
Attention: Dr. Linda T. Murray
Superintendent

Milpitas Unified School District
1331 Calaveras Boulevard
Milpitas, CA 95035
Attention: Dr. Karl Black
Superintendent

Oak Grove School District
6578 Santa Teresa Boulevard
San Jose, CA 95119
Attention: Mr. Manny Barbara
Superintendent

Evergreen Valley College
3095 Yerba Buena Road
San Jose, CA 95135
Attention: Dr. H. Clay Whitlow
President

The National Hispanic University
14271 Story Road
San Jose, CA 95127-3823
Attention: David P. Lopez
President

Story Road Business Association
1960 Story Road
San Jose, CA 95122
Attention: Mr. John Zamora

Alum Rock Business Association
11466 Chula Vista
San Jose, CA 95127
Attention: Ms. Hope Spargeon

Vietnamese Chamber of Commerce
255 North Market Street #110
San Jose, CA 95110
Attention: Hanh Tran

Japanese-American Chamber of Commerce of Silicon Valley
95 South Market Street, Suite 520
San Jose, CA 95113
Attention: Wayne Doiguchi
Chairman

Silicon Valley/Santa Clara County Black Chamber of Commerce
50 East Saint John Street, Suite 103
San Jose, California 95112-5596
Attention: Joel Wyrick
President/CEO

Portuguese Chamber of Commerce
1115 East Santa Clara Street, Suite 1
San Jose, CA 95116
Attention: Mr. Tony Goulart

Filipino Chamber of Commerce
1046 West Taylor Street, Suite 206
San Jose, CA 95126
Attention: Ms. Elvira de la Vega

Hispanic Chamber of Commerce
1376 North Fourth Street
San Jose, CA 95112
Attention: Marin Arreoia III

Korean American Chamber of Silicon Valley
2345 Harris Way
San Jose, CA 95131
Attention: Tak Chang

Indo-American Chamber of Commerce
3095 Greentree Way
San Jose, CA 95128
Attention: Vimu Rajdev

San Jose Silicon Valley Chamber of Commerce
310 South First Street
San Jose, CA 95113
Attention: Jim Cunneen
President/CEO

Pacific Gas & Electric Company
111 Almaden Avenue
San Jose, CA 95113
Attention: Mr. Darrell Feldman
Project Manager

Santa Clara County Streams for Tomorrow
P.O. Box 1409
San Martin, CA 95046
Attention: Mr. Keith R. Anderson
CEQA Coordinator

Santa Clara Valley Audubon Society
22221 McClellan Road
Cupertino, CA 95014
Attention: Ms. Jenifer Peritz
Environmental Advocate

VEP Community Association
P.O. Box 18111
San Jose, CA 95158
Attention: Mr. David Noel
President

Sierra Club, Loma Prieta Chapter
3921 East Bayshore Road
Palo Alto, CA 94303
Attention: Mr. Dan Kalb
Chapter Director

Silicon Valley Bicycle Coalition
19740 Braemar Drive
Saratoga, CA 95070
Attention: Mr. Jim Stallman
President

Committee for Green Foothills
3921 East Bayshore Road
Palo Alto, CA 94303
Attention: Ms. Denise Dade
Legislative Advocate

9.3 Santa Clara Valley Transportation Authority

9.3.1 Board of Directors

Don Gage, County of Santa Clara, Chairperson
Joe Pirzynski, Town of Los Gatos, Vice Chairperson
Blanca Alvarado, County of Santa Clara
Pete McHugh, County of Santa Clara
Cindy Chavez, City of San Jose
David Cortese, City of San Jose
Pat Dando, City of San Jose
Ron Gonzales, City of San Jose
Forrest Williams, City of San Jose
Ken Yeager, City of San Jose, Alternate
David Casas, City of Los Altos
Breene Kerr, Town of Los Altos Hills, Alternate
John McLemore, City of Santa Clara

Fredrik M. Fowler, City of Sunnyvale
Dolly Sandoval, City of Cupertino, Alternate,
Patricia Dixon, City of Milpitas
Dennis Kennedy, Alternate, City of Morgan Hill
Jim Beall, Metropolitan Transportation Commission, Ex-Officio

9.3.2 Downtown East Valley Project Policy Advisory Board

Blanca Alvarado, County of Santa Clara, Chairperson
Nora Campos, City of San Jose
Cindy Chavez, City of San Jose
David Cortese, City of San Jose
Pete McHugh, County of Santa Clara

Chapter 10.0
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Personal Communications

Cartier, Robert. Principal investigator, Archeological Resources Management, San Jose, CA. June 2002—telephone conversation.

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Chapter 11.0

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11.2 Environmental Consultants

Jones & Stokes

Responsibilities: Project management; biological resources, geology, hydrology, environmental justice, land use, air quality, energy, cultural resources, paleontology, aesthetics/visual quality analyses; noise and vibration peer review and oversight; hazardous materials oversight.

Fee: $700,000.

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Margaret K. Townsley, M.S., Community and Regional Planner	Geology/Soils and Summary of Impacts
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Krista Kline, J.D.	Land Use
Jack Ottaway, M.A.	Electromagnetic Fields, Utilities, Safety and Security
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Parikh Consultants, Inc.

Responsibilities: Geotechnical analysis and hazardous materials investigation.

Fee: $56,000.

Gary Parikh, P.E., G.E.	Geotechnical Report, Hazardous Materials Investigation

Wilson, Ihrig & Associates, Inc.

Responsibilities: Noise and vibration technical support.

Fee: $9,500.

Richard A. Carman, Ph.D, P.E.	Noise and Vibration

11.3 General Engineering Consultants

Korve Engineering

Responsibilities: Transportation analysis and traffic engineering.

Fee: $311,391

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Chapter 12.0
Glossary of Terms

A

Above Grade – The location of a structure or transit guideway above the surface of the ground (also known as elevated or aerial).

Accessible Service – Buses operating in regular service with wheelchair lifts, kneeling functions or other devices that permit disabled passengers to use the service.

Accessibility – (1) The extent to which facilities are barrier free and useable by disabled persons, including wheelchair users. (2) A measure of the ability or ease of all people to travel among various origins and destinations.

Activity Center – An area with high population and concentrated activities which generate a large number of trips (e.g., Central Business District, shopping centers, business or industrial parks, recreational facilities (also known as trip generator).

Alight – To get off a transit vehicle. *Plural: "alightings."*

Alignment – The horizontal and vertical ground plan of a roadway, railroad, transit route or other facility.

Allocation – An administrative distribution of funds, for example, federal funds among the states; used for funds that do not have legislatively mandated distribution formula.

Alternative Fuel – A liquid or gaseous nonpetroleum fuel used to power transit vehicles. Usually refers to alcohol fuels, mineral fuels, natural gas, and hydrogen.

AM Peak – The morning commute period, about two hours, in which the greatest movement of passengers occurs, generally from home to work; the portion of the morning service period where the greatest level of ridership is experienced and service provided.

> *Synonyms: AM Rush, Early Peak, Morning Peak, Morning Rush, Morning Commission, Hour*

AMTRAK (National Railroad Passenger Corporation) – A quasi-public corporation created by the federal Rail Passenger Service Act of 1970 to improve and develop intercity passenger rail service throughout the United States.

Americans with Disabilities Act of 1990 (ADA) – The law passed by Congress in 1990 which makes it illegal to discriminate against people with disabilities in employment, services provided by state and local governments, public and private transportation, public accommodations and telecommunications.

Appropriation – An act of Congress that permits federal agencies to incur obligations and make payments for specific purposes.

Arterial Street – A major thoroughfare, used primarily for through traffic rather than for access to adjacent land, that is characterized by high vehicular capacity and continuity of movement.

At-Grade – The location of a structure or transit guideway at the same level as the ground surface.

Authorization – Basic, substantive federal legislation that established or continues the legal operation of federal program agencies, either indefinitely or for a specific period of time.

Automated Guideway Transit – Guided transit passenger vehicles operating singly or in multi-car trains with a fully automated system (no crew on transit units). Service may be on a fixed schedule or in response to a passenger-activated call button. Automated guideway transit includes personal rapid transit, group rapid transit and people mover systems.

B

Board – To go onto or into a transit vehicle. *Plural: "Boardings."*

Bus –Rubber-tired vehicles operating on fixed routes and schedules on roadways. Buses are powered by diesel, gasoline, battery or alternative fuel engines contained within the vehicle.

Bus Bay – Bus berthing area in a facility such as a transit center or rail station.

Bus Stop – A curbside place where passengers board or alight transit.

Bus Shelter – A structure constructed near a bus stop to provide seating and protection from the weather for the convenience of waiting passengers.

Bus Turnout – Cutout in the roadside to permit a transit vehicle to dwell at a curb.

Busway – A roadway reserved for buses only. It may be a grade separated or controlled access roadway. Also known as "Bus Lane."

C

Capital – Long-term assets, such as property, buildings, roads, rail lines, and vehicles.

Capital Costs – Costs of long-term assets of a public transit system such as property, buildings, vehicles, etc.

Capital Improvement Program – The list of capital projects for a five to seven year programming period.

Capital Project – Construction and/or procurement of district assets, such as transit centers, transit vehicles and track.

Carpool – An arrangement where two or more people share the use and cost of privately owned vehicles in traveling to and from pre-arranged destinations.

Central Business District (CBD) – An area of a city that contains the greatest concentration of commercial activity, the "Downtown". The traditional downtown retail, trade, and commercial area of a city or an area of very high land evaluation, traffic flow, and concentration of retail business offices, theaters, hotels and services.

Commuter Rail – Long-haul rail passenger service operating between metropolitan and suburban areas, whether within or across the geographical boundaries of a state, usually characterized by reduced fares for multiple rides, and commutation tickets for regular, recurring riders. Also know as "regional rail" or "suburban rail".

Corridor – A broad geographical band that follows a general directional flow or connects major sources of trips. It may contain a number of streets and highways and many transit lines and routes.

D

Deadhead – There are two types of deadhead or non-revenue bus travel time: 1) Bus travel to or from the garage and a terminus point where revenue service begins or ends; 2) A bus' travel between the end of service on one route to the beginning of another.

Synonyms: Non-Revenue Time

Deboard – To get off a transit vehicle. (See also *"Alight."*)

Disabled – With respect to an individual, a physical or mental impairment that substantially limits one or more of the major life activities of such an individual; a record of such an impairment; or being regarded as having such an impairment.

Discretionary – Subject to the discretion of legislators or an administrator. The federal Section 5309 New Starts Program is an example of a discretionary program.

E

Express Service – Express service is deployed in one of two general configurations: 1) A service generally connecting residential areas and activity centers via a high speed, non-stop connection, e.g., a freeway, or exclusive right-of-way such as a dedicated busway with limited stops at each end for collection and distribution. Residential collection can be exclusively or partially undertaken using park-and-ride facilities. 2) Service operated non-stop over a portion of an arterial in conjunction with other local services. The need for such service arises where passenger demand between points on a corridor is high enough to separate demand and support dedicated express trips.

Synonyms: Rapids (1 or 2), Commuter Express (1), Flyers (1)

Exclusive Right-of-Way – Roadway or other right-of-way reserved at all times for transit use and/or high occupancy vehicles. The restriction must be sufficiently enforced so that 95 percent of vehicles using the right-of-way are authorized to use it.

F

Fare – Payment in the form of coins, bills, tickets and tokens collected for transit rides.

Farebox – A device that accepts the coins, bills, tickets and tokens given by passengers as payment for rides.

Farebox Recovery Ratio – A measure of the proportion of transit operating expenses covered by passenger fares. It is calculated by dividing a transit operator's fare box revenue by its total operating expenses.

Synonyms: Fare Recovery Ratio

Farebox Revenue – The value of cash, tickets and pass receipts given by passengers as payment for public transit rides.

Fare Box Revenue – Total revenue derived from the payment of passenger fares.

Synonyms: Passenger Revenue

Fare Collection System – The method by which fares are collected and accounted for in a public transportation system.

Fare Elasticity – The extent to which ridership responds to fare increases or decreases.

Fare Structure – The system set up to determine how much is to be paid by various passengers using the system at any given time.

Federal Transit Administration – (FTA, formerly UMTA, Urban Mass Transit Administration) - A part of the U.S. Department of Transportation (DOT) which administers the federal program of financial assistance to public transit.

Feeder Service – Service that picks up and delivers passengers to a regional mode at a rail station, express bus stop, transit center, terminal, Park-and-Ride, or other transfer facility.

Fixed Cost – An indirect cost that remains relatively constant irrespective of the level of operational activity.

Fixed-Guideway – Any public transportation facility utilizing and occupying a separate right-of-way or rails for the exclusive use of public transportation service, including, but not limited to, fixed rail, automated guideway transit, and exclusive facilities for buses and other high-occupancy vehicles; and also means a public transportation facility using a fixed catenary system and right-of-way useable by other forms of transportation.

Fixed Route – Service provided on a repetitive, fixed-schedule basis along a specific route with vehicles stopping to pick up and deliver passengers to specific locations; each fixed-route trip serves the same origins and destinations, unlike demand response. Includes route deviation service, where revenue vehicles deviate from fixed routes on a discretionary basis.

Frequency – The amount of time scheduled between consecutive buses or trains on a given route segment; in other words, how often the bus or train comes (also known as Headway).

Full Funding Grant Agreement (FFGA) – An agreement executed by the federal government with a public transit operator that assures the operator of the federal government's intention to fully fund the federal share of a New Starts project.

FY (Fiscal Year) – A yearly accounting period designated by the calendar year in which it ends (e.g. FY 2000). The fiscal year for the federal government runs from October 1 to September 30. The fiscal year for both the state of California and VTA runs from July 1 to June 30.

G

Garage – The place where revenue vehicles are stored and maintained and from where they are dispatched and recovered for the delivery of scheduled service.

Synonyms: Barn, Base, Depot, District, Division, O/M Facility (ops/maint), Yard

Grade Separated – A crossing of two forms of transportation paths (e.g., light rail tracks and a highway) at different levels to permit unconstrained operation.

H

Headway – The scheduled time interval between any two revenue vehicles operating in the same direction on a route. Headways may be LOAD driven, that is, developed on the basis of demand and loading standards or, POLICY based, i.e., dictated by policy decisions such as service every 30 minutes during the peak periods and every 60 minutes during the base period.

Synonyms: Frequency, Schedule, Vehicle Spacing

Heavy Rail – High-speed, passenger rail cars operating singly or in trains of two or more cars on fixed rails in separate rights-of-way from which all other vehicular and foot traffic are excluded. Also know as “rapid rail”, “subway”, “elevated (railway)” or “metropolitan railway (metro)”.

High Occupancy Vehicle (HOV) – Vehicles that can carry more than two persons. Examples of high occupancy vehicles are a bus, vanpool and carpool.

HOV Facility – An exclusive or controlled access right-of-way which is restricted to high occupancy vehicles at all times or for a set period of time. The designation of a HOV facility is determined by state and/or local officials. Also called “busway”, “transitway”, or “commuter lane”.

I

Intercity Rail – A long distance passenger rail transportation system between at least two central cities that, in California, traditionally has been provided by AMTRAK either directly or through a local Joint Powers Authority.

Interlining – Interlining is used in two ways: Interlining allows the use of the same revenue vehicle and/or operator on more than one route without going back to the garage. Interlining is often considered as a means to minimize vehicle requirements as well as a method to provide transfer enhancement for passengers. For interlining to be feasible, two (or more) routes must share a common terminus or be reasonably proximate to each other (see DEADHEAD).

Synonyms: Through Routes, Interlock Routes, Interlocking

Intermodal – Those issues or activities which involve or affect one mode of transportation, including transportation connections, choices, cooperation and coordination of various modes. Also know as “multimodal.”

Intermodal Facility – A building or site specifically designed to accommodate the meeting of two or more transit modes of travel.

J

Joint Development – Development of land or airspace by a public or private entity at VTA property where the VTA Board has determined that there are excess property rights and the proposed development will not interfere with the existing or planned transit use of the property.

Joint Powers Authority – A group of representatives from several entities that have agreed to undertake a joint operating venture. In the Santa Clara region, the Capitol Corridor JPA administers the Capitols intercity rail passenger service between Sacramento and San Jose.

K

Kiss and Ride Facility – A part of a park and ride facility where commuters who are passengers in non-transit vehicles are dropped off to board a public transportation vehicle.

L

Layover – Layover time serves two major functions: recovery time for the schedule to ensure on-time departure for the next trip and, in some systems, operator rest or break time between trips. Layover time is often determined by labor agreement, requiring “off-duty” time after a certain amount of driving time.

Synonyms: Recovery

Light Rail Transit (LRT) – Lightweight passenger rail cars operating singly (or in short, usually two-car trains) on fixed rails in right-of-way that is not separated from other traffic for much of the way. Light rail vehicles are driven electrically with power being drawn from an overhead electric line via a trolley or a pantograph. Also known as “streetcar”, “tramway”, or “trolley car”.

Light Rail Vehicle (LRV) – Modern-day term for a streetcar type of transit vehicle, e.g., tram or trolley car.

Limited Service – Higher speed train or bus service where designated vehicles stop only at transfer points or major activity centers, usually about every 1/2 mile. Limited stop service is usually provided on major trunk lines operating during a certain part of the day or in a specified area in addition to local service that makes all stops. As opposed to express service, there is not usually a significant stretch of non-stop operation.

Linked Passenger Trips – A linked passenger trip is a trip from origin to destination on the transit system. Even if a passenger must make several transfers during a one way journey, the trip is counted as one linked trip on the system. Unlinked passenger trips count each boarding as a separate trip regardless of transfers.

Load Factor – The ratio of passengers actually carried versus the total passenger seating capacity of a vehicle. A load factor of greater than 1.0 indicates that there are standees on that vehicle.

Local Service – A type of operation that involves frequent stops and consequent low speeds, the purpose of which is to deliver and pick up transit passengers as close to their destinations or origins as possible.

M

Mass Transit – Another name for “Mass Transportation” or “Public Transportation”.

Mass Transportation – Transportation by bus, or rail, or other conveyance, either publicly or privately owned, providing to the public general or special service (but not including school buses or charter or sightseeing service) on a regular and continuing basis. Also know as “mass transit”, “public transportation”, and “transit”.

Maximum Load Point – The location(s) along a route where the vehicle passenger load is the greatest. The maximum load point(s) generally differ by direction and may also be unique to each of the daily operating periods. Long or complex routes may have multiple maximum load points.

Measure A – The Santa Clara Valley Transportation Authority (VTA) Board of Directors on August 9, 2000 voted to place a half-cent transit sales tax on the November 7, 2000 General Election ballot allowing Santa Clara County voters the opportunity to vote on transportation improvements in the county. Voters approved 2000 Measure A by more than 70%. The Capitol Expressway Light Rail Project was included in Measure A. Other projects include a BART extension to San Jose and increased bus service.

Measure B – Refers to the half-cent sales tax that was approved by voters in Santa Clara County in 1996. Projects in this Improvement Program include, light rail extensions in the Tasman East/Capitol and Vasona corridors, studies and commuter rail service improvements in the Fremont/South Bay Corridor, improvements to Caltrain peninsula commuter rail service, various highway projects, and the purchase of low-floor light rail vehicles.

Metropolitan Transportation Commission (MTC) – The regional transportation planning agency covering the 9-county San Francisco Bay Area. MTC is responsible for reviewing applications and distributing federal and state transportation grants and allocation of certain transportation monies.

Missed Trip – A schedule trip that did not operate for a variety of reasons including operator absence, vehicle failure, dispatch error, traffic, accident or other unforeseen reason.

Mode – A transportation system category characterized by specific right-of-way, technological and operational features.

Mode Split – The proportion of people that use each of the various modes of transportation. Also describes the process of allocating the proportion of people using modes. Frequently used to describe the percentage of people using private automobiles as opposed to the percentage using public transportation.

Model – An analytical tool (often mathematical) used by transportation planners to assist in making forecasts of land use, economic activity, and travel activity.

Monthly Pass – A prepaid farecard or ticket, valid for unlimited riding within certain designated zones for one-month period.

Multidestinational Network – A bus route network that is designed to make it easy to travel by transit between any two points in the service area.

Multimodal - Another name for “intermodal”.

N

Network – The configuration of streets or transit routes and stops that constitutes the total system.

New Starts – Federal funding granted under Section 5309 (B) of the United States Code. These discretionary funds are made available for the construction of new fixed guideway systems or extensions of existing fixed guideway systems.

O

Off-Peak – Non-rush periods of the day when travel activity is generally lower and less transit service is scheduled.

Operating – Maintaining the ongoing functions of an agency or service. “Operating expenses” include wages, benefits, supplies, and services. “Operating assistance” is used to pay for the costs of providing public transit service.

Operating Cost – The total costs to operate and maintain a transit system including labor, fuel, maintenance, wages and salaries, employee benefits, taxes, etc.

Operating Expense – Monies paid in salaries and wages; settlement of claims, maintenance of equipment and buildings, and rentals of equipment and facilities.

Operating Ratio – A measure of transit system expense recovery obtained by dividing total operating revenues by total operating expenses.

Operating Revenue – Revenue derived from passenger fares. See also Farebox Revenue.

Operating Speed – The rate of speed at which a vehicle is safely operated under prevailing traffic and environmental conditions.

Operator – An employee of a transit system who spends his or her working day in the operation of a vehicle, e.g., bus driver, streetcar motorman, trolley coach operator, cablecar gripman, rapid transit train motorman, conductor, etc.

Origin – The location of the beginning of a trip or the zone in which a trip begins. Also known as a "Trip End".

Origin-Destination Study – A study of the origins and destinations of trips made by vehicles or passengers.

Owl – Service that operates during the late night/early morning hours or all night service, usually between 10:00 p.m. and 6:00 a.m.

P

Paratransit – Transportation service required by ADA for individuals with disabilities who are unable to use fixed-route transit systems. The service must be comparable to the fixed-route service.

Park-and-Ride Facility – A parking garage and/or pavement used for parking passengers' automobiles, either free or for a fee, while they use transit agency facilities. Park-and-ride facilities are generally established as collector sites for rail or bus service. Park-and-ride facilities may also serve as collector sites for vanpools and carpools, and as transit centers.

Pass – A means of transit prepayment, usually a card that carries some identification that is displayed to the driver or conductor in place of paying a cash fare.

Passenger – A person who rides a transportation vehicle, excluding the driver.

Passenger Miles – A measure of service utilization which represents the cumulative sum of the distances ridden by each passenger. It is normally calculated by summing the passenger load multiplied by the distance between individual bus stops. For example, ten passengers riding in a transit vehicle for two miles equals 20 passenger miles.

Peak Hour/Peak Period – The period with the highest ridership during the entire service day, generally referring to either the peak hour or peak several hours (peak period).

Synonyms: Commission Hour

Program – (1) verb, to assign funds to a project; (2) assign funds to a project; (2) implementing transportation projects or policies.

R

Radial Service – Local or express service designed primarily to connect the Central Business District with outlying areas.

Revenue – Receipts derived from or for the operation of transit service including farebox revenue, revenue from other commercial sources, and operating assistance from governments. Farebox revenue includes all fare, transfer charges, and zone charges paid by transit passengers.

Recovery Time – Recovery time is distinct from layover, although they are usually combined together. Recovery time is a planned time allowance between the arrival time of a just completed trip and the departure time of the next trip in order to allow the route to return to schedule if traffic, loading, or other conditions have made the trip arrive late. Recovery time is considered as reserve running time and typically, the operator will remain on duty during the recovery period.

Revenue Service – When a revenue vehicle is in operation over a route and is available to the public for transport.

Reverse Commute – Movement in a direction opposite to the main flow of travel, such as from the Central City to a suburb during the morning commute hour.

Ridesharing – A form of transportation, other than public transit, in which more than one person shares in the use of the vehicle, such as a van or car, to make a trip.

Ridership – The number of rides taken by people using a public transportation system in a given time period.

Right-of-Way (ROW, R/W) – The land over which a public road or rail line is built. An exclusive right-of-way is a road, lane, or other right-of-way designated exclusively for a specific purpose or for a particular group of users, such as light rail vehicles or buses.

Rolling Stock – The vehicles used in a transit system, including buses and rail cars.

Synonyms: Fleet

Route – A specified path taken by a transit vehicle usually designated by a number or a name, along which passengers are picked up or discharged.

Synonyms: Line

Route Miles – The total number of miles included in a fixed route transit system network.

Running Time – The time assigned for the movement of a revenue vehicle over a route, usually done on a [route] segment basis by various time of day.

Synonyms: Travel Time

S

Schedule – From the transit agency (not the public timetable), a document that, at a minimum, shows the time of each revenue trip through the designated time points. Many properties include additional information such as route descriptions, deadhead times and amounts, interline information, run numbers, block numbers, etc.

Synonyms: Headway, Master Schedule, Timetable, Operating Schedule, Recap/ Supervisor's Guide

Scheduling – The planning of vehicle arrivals and departures and the operators for these vehicles to meet consumer demand along specified routes.

Service Area – A geographic area which is provided with transit services. Service area is now defined consistent with ADA requirements.

Service Span – The span of hours over which service is operated, e.g., 6 a.m. to 10 p.m. or 24 hr (owl). Service span often varies by weekday, Saturday, or Sunday.

Synonyms: Span of Service, Service Day

Service Standards – A benchmark by which service operations performance is evaluated. These standards are provided in the Short Range Transit Plan.

Station – A public transportation passenger facility.

Subsidy – Funds granted by federal, state or local government.

T

Timed Transfer – A point or location where two or more routes come together at the same time to provide positive transfer connections. A short layover may be provided at the timed transfer point to enhance the connection. Timed transfers have had increasing application as service frequencies have been reduced below 15 to 20 minutes and hub-and-spoke network deployment has grown.

Synonyms: Pulse Transfer, Positive Transfer

Transfer – A slip of paper issued to a passenger that gives him or her the right to change from one transit vehicle to another according to specified limitations.

Transit Center – A fixed location where passengers transfer from one route or vehicle to another that has significant infrastructure, such as a waiting room, benches, restrooms, sales outlet, ticket or pass vending machines, and/or other services.

Transit Corridor – A broad geographic band that follows a general route alignment such as a roadway of rail right-of-way and includes a service area within that band that would be accessible to the transit system.

Transfer Passenger – A passenger who transfers to a line after paying a fare on another line.

Transit Dependent – Someone who must use public transportation for his/her travel.

Transit Priority – A means by which transit vehicles are given an advantage over other traffic, e.g., preemption of traffic signals or transit priority lanes.

Transit Priority Lane – See Bus Lane

Transportation Equity Act for the 21st Century (TEA-21) – The 1998 law that reauthorizes federal surface transportation programs for six years (FY 1998 to FY 2003). TEA-21 preserves much of the basic programmatic structure of its predecessor, the Intermodal Surface Transportation Efficiency Act (ISTEA).

Travel Time – The time allowed for an operator to travel between the garage and a remote relief point.

Synonyms: Relief Time, Travel Allowance

Trip – The one-way operation of a revenue vehicle between two terminal points on a route. Trips are generally noted as inbound, outbound, eastbound, westbound, etc. to identify directionality when being discussed or printed.

Synonyms: Journey, One-Way Trip

Total Miles – The total miles includes revenue, deadhead, and yard (maintenance and servicing) miles.

U

Unlinked Passenger Trips – The total number of passengers who board public transit vehicles. A passenger is counted each time he/she boards a revenue vehicle even though the boarding may be the result of a transfer from another route to complete the same one-way journey. Where linked or unlinked is not designated, unlinked is assumed.

Synonyms: Passengers, Passenger Trips

Unlinked Trip – A trip taken by an individual on one specific mode. A linked trip may involve two or more unlinked trips.

Urban Mass Transportation Administration – See Federal Transit Administration

V

Vehicle Hours – The hours a vehicle travels while in revenue service (vehicle revenue hours) plus deadhead hours. For rail vehicles, vehicle hours refer to passenger car hours. Vehicle hours exclude hours for charter services, school bus service, operating training and maintenance testing.

Vehicle Miles – The miles a vehicle travels while in revenue service (vehicle revenue miles) plus deadhead miles. For rail vehicles, vehicle miles refer to passenger car miles. Vehicle miles exclude miles for charter services, school bus service, operator training and maintenance testing.

W

Wheelchair Lift – A device used to raise and lower a platform in a transit vehicle for accessibility by handicapped individuals.

Y

Yard – An area in a system used for maintenance, storing or holding trains.

References

American Public Transportation Association, *Public Transportation Fact Book*, 52nd Edition, March 2001.

Santa Clara Valley Transportation Authority, *Short-Range Transit Plan FY 2002-2011*, October 2001.

Acronyms and Abbreviations

µg/m^3	micrograms per cubic meter
2000 CAP	2000 Clean Air Plan
2001 OAP	2001 Ozone Attainment Plan
ABAG	Association of Bay Area Governments
ABS	automatic block signaling
AC	alternating current
ACE	Altamont Commuter Express
ACGIH	American Conference of Governmental Industrial Hygienists
ADA	Americans with Disabilities Act
APE	area of potential effects
AST	Aboveground Petroleum Storage Tank Facilities
ATSC	auto-tensioned simple catenary
AWP	Annual Workplan Sites
BAAQMD	Bay Area Air Quality Management District
BART	San Francisco Bay Area Rapid Transit District
BMP	best management practice
BRT	bus rapid transit
BTU	British thermal units
CA BOND EXP. PLAN	Bond Expenditure Plan
CA FID UST	Facility Inventory Database
CA WDS	Waste Discharge System
CAA	Clean Air Act
CAAQS	California ambient air quality standards
CAFE	Corporate Average Fuel Economy
CAL SLIC	Spills, Leaks, Investigation and Cleanup Cost Recovery Listing
Cal-ISO	California Independent System Operator
CAL-SITES	Cal Sites Databases
CARB	California Air Resources Board
CCR	California Code of Regulations
CCTV	closed-circuit television
CDFG	California Department of Fish and Game
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response Compensation, and Liability Information System
CERCLIS: NFRAP	CERCLIS No Further Remedial Action Planned
CFR	Code of Federal Regulations
CHMIRS	California Hazardous Material Incident Report System

City	City of San Jose
CLEANERS	Cleaner Facilities
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CO	carbon monoxide
CODE	community oriented design enhancements
CONSENT	Consent Decrees
Corps	U.S. Army Corps of Engineers
CORRACTS	Corrective Action Report
County	Santa Clara County
CPUC	California Public Utilities Commission
CTS	California tiger salamander
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibels
DC	direct current
DDT	dichlorodiphenyltrichloroethane
DEED	List of Deed Restrictions
DOT	U.S. Department of Transportation
DTSC	California Department of Toxic Substances Control
EDR	Environmental Data Resources
EIS/EIR	environmental impact statement/environmental impact report
ELS	enhanced limited-stop
EMF	electromagnetic field
EPA	U.S. Environmental Protection Agency
ERNS	Emergency Response Notification System
ESU	evolutionary significant unit
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FINDS	Facility Index System/Facility Identification Initiative Program Summary Report
FR	Federal Register
FTA	Federal Transit Administration
FTTS	FIFRA/TSCA Tracking System
g	acceleration due to gravity
GWh	gigawatt-hours
HAZNET	Hazardous Waste Information System
HCP	habitat conservation plan
HIST UST	Hazardous Substance Storage Container Database
HMIRS	Hazardous Material Reporting System
HOV	high-occupancy vehicle
HSP	health and safety plan
I-#	Interstate #
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
L_{dn}	day-night level
L_{eq}	equivalent sound level
LOS	level of service
LRT	light rail transit
LUST	Leaking Underground Storage Tank Information System
LWCF Act	Land and Water Conservation Fund Act
MCE	maximum credible earthquake
mG	milligauss
MINES	Mines Master Index File
MIS	Major Investment Study
MLTS	Material Licensing Tracking System

MOS	Minimum Operating System
mpg	miles per gallon
mph	miles per hour
mT	microTesla
MTBE	methyl tertiary butyl ether
MTC’s	Metropolitan Transportation Commission’s
MW	megawatts
NAAQS	national ambient air quality standards
NAHC	Native American Heritage Commission
NCCP	natural community conservation plan
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NOI	notice of intent
NOP	notice of preparation
NOTIFY 65	Proposition 65 Records
NO_X	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPL	National Priority List
NRHP	National Register of Historic Places
OCS	overhead contact system
OHWM	ordinary high water mark
PAB	Advisory Board
PADS	PCB Activity Database System
PCB	polychlorinated biphenyl
PCE	perchloroethylene
PCWQCA	Porter-Cologne Water Quality Control Act of 1969

PG&E	Pacific Gas & Electric Company
PM10	particulate matter less than or equal to 10 microns in diameter
ppm	parts per million
PPV	peak particle velocity
PRC	Public Resources Code
PX	Power Exchange
RCRA	Resource Conservation and Recovery Act of 1976
RCRIS-TSD	Resource Conservation and Recovery Information System treatment, storage disposal facility
rms	root mean square
ROD	record of decision
ROG	reactive organic gases
RTP	regional transportation plan
RWQCB	Regional Water Quality Control Board
SAA	streambed alteration agreement
SARA	Superfund Amendments and Reauthorization Act
SCE	Southern California Edison
SCVWD	Santa Clara Valley Water District
Section 106	National Historic Preservation Act of 1966, as amended
SFBAAB	San Francisco Bay Area Air Basin
SIPs	state implementation plans
SJFD	San Jose Fire Department
SJIA	Norman Y. Mineta San Jose International Airport
SJPD	San Jose Police Department
SMWP	soil management work plan
SNI	Strong Neighborhoods Initiative

SO_2	sulfur dioxide
SPCC	spill prevention, containment, and clean-up
SR #	State Route #
SRA	shaded riverine aquatic
SSTS	Section 7 Tracking System
SWPPP	storm water pollution prevention plan
SWRCB	State Water Resources Control Board
T2010	Transportation 2010
TES	traction electrification system
TIP	transportation improvement program
TOXIC PITS	Toxic Pits Cleanup Act Sites
TPSS	traction power substation
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substance Control Act
TSM	transportation system management
U.S. #	U.S. Highway #
USC	U.S. Government Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Active Underground Storage Tank Facilities
V/m	volts per meter
VdB	velocity level in decibels
VTA	Santa Clara Valley Transportation Authority
WMUDS/SWAT	Waste Management Unit Database
WQC	water quality certification