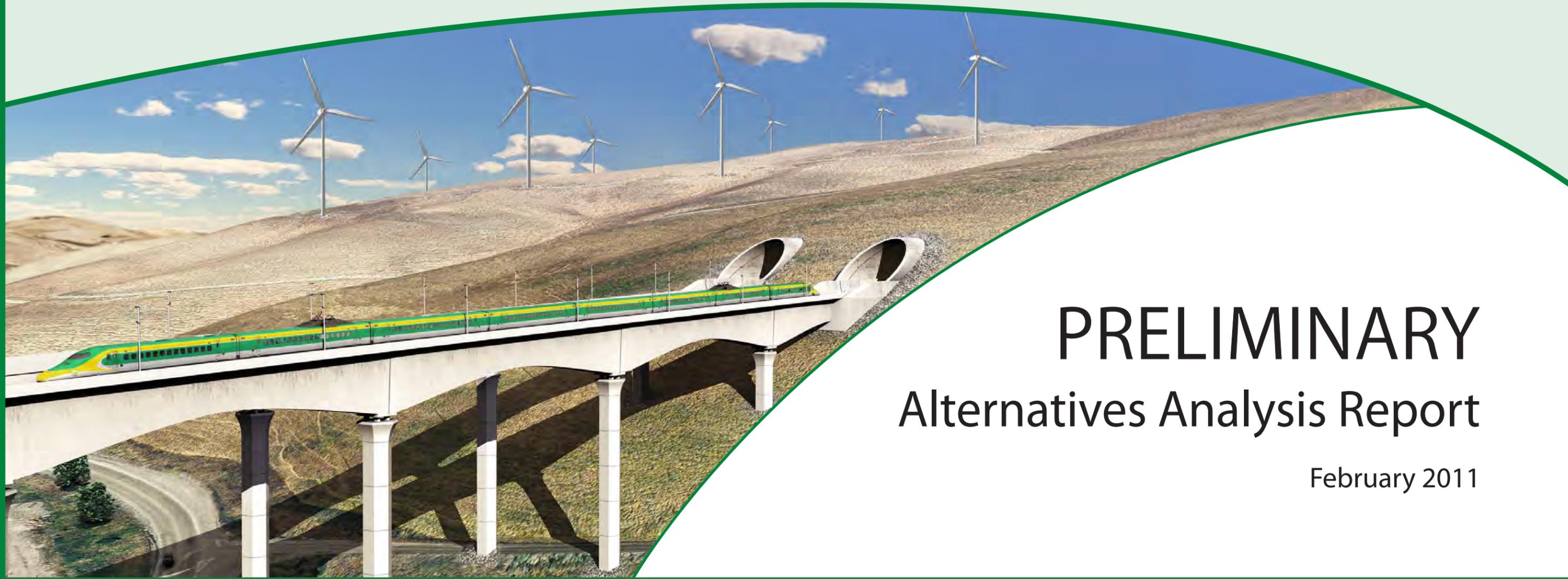


ALTAMONT CORRIDOR RAIL PROJECT

Project Environmental Impact Report/Environmental Impact Statement



PRELIMINARY Alternatives Analysis Report

February 2011



U.S. Department of Transportation
Federal Railroad Administration



CALIFORNIA
High-Speed Rail Authority



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S.0 SUMMARY

The California High-Speed Rail Authority (the Authority) and the Federal Railroad Administration (FRA) are studying alternative alignments and stations for a regional intercity and commuter passenger rail project between Stockton and San José. This report documents the evaluation of these alternatives and identifies feasible and practicable alternatives to carry forward for environmental review and evaluation in the *Altamont Corridor Rail Project Environmental Impact Report/Environmental Impact Statement* (EIR/EIS) under the California Environmental Quality Act (CEQA) and the National Environmental Protection Act (NEPA).

S.1 ALTAMONT CORRIDOR PROJECT BACKGROUND

The Altamont Corridor was studied by the Authority and identified as a candidate route to the San Francisco Bay Area in the *Statewide High Speed Train (HST) System Program EIR/EIS*. The Authority and the FRA further examined the corridor in the *2008 Bay Area to Central Valley HST Program EIR/EIS* and the *2010 Revised Bay Area to Central Valley HST Program EIR/EIS*, and selected the Pacheco Pass via Gilroy as the preferred route for the California HST System between the Bay Area and the Central Valley for a number of reasons, including the ability to serve San Francisco without requiring a water crossing of San Francisco Bay, and providing operational benefits and the lowest travel times between the Bay Area and southern California. However, the 2008 and 2010 versions of the *Bay Area to Central Valley HST Program EIR/EIS* note that the Pacheco Pass route would not provide faster travel times to the Bay Area for those Central Valley communities located north of Merced. The Altamont Corridor Rail Project has the potential to serve the populous in the Interstate 580 (I-580) corridor and reduce traffic along I-580 and Interstate 205 (I-205), which are the Altamont Corridor's main east-west arteries. Accordingly, the Authority has identified improving the Altamont Corridor as a complementary regional corridor to the California HST System.

The Authority has worked under agreement with a regional partner, the San Joaquin Regional Rail Commission (SJRRC), to plan a joint-use rail line through the Altamont Pass that would support new regional intercity and commuter passenger rail services operating in northern California between Stockton and San José as well as eastern and southern Alameda County. The Authority and the SJRRC are proposing to develop a new joint-use rail line to improve connectivity and accessibility between the northern San Joaquin Valley and the Bay Area. The rail line would be designed and equipped to accommodate electrified lightweight passenger trains and could be used by HST-compatible equipment.

The development of the Altamont Corridor Rail Project as a complement to the California HST System is consistent with the Metropolitan Transportation Commission's (MTC's) *Bay Area Regional Rail Plan*, which identified the Altamont Corridor as a key future northern California regional rail route and also noted that development of this corridor in conjunction with implementation of the California HST System could provide greater benefits to the state and region. The *Altamont Corridor Rail Project EIR/EIS* will build upon the *Bay Area Regional Rail Plan* and upon relevant decisions made with the *Statewide HST System Program EIR/EIS* and the *Bay Area to Central Valley HST Program EIR/EIS*.

To initiate project planning, the Altamont Corridor Partnership Working Group (the Working Group) was established by the Authority to bring together local partners for the purpose of identifying goals, objectives, and key features of a joint-use regional rail improvement in the Altamont Corridor. Members include the San Joaquin Council of Governments, California Partnership for the San Joaquin Valley, Great Valley Center, Tri-Valley Policy Advisory Committee, Alameda County Congestion Management Agency, MTC, and Sacramento Area Council of Governments, along with service providers including the Altamont Commuter Express (ACE), San Francisco Bay Area Rapid Transit District (BART), San Mateo County Transit (SamTrans), Amtrak Capitol Corridor, and Caltrain. The Working Group recognizes the importance of the Altamont Corridor for regional transportation needs and has reached consensus on the corridor limits (Stockton to San José); principal features, including key intermodal connections; and project goals and objectives, which include improving ACE service in the near term and developing capability to accommodate connections to the California HST System and HST-compatible equipment. The Working Group participated actively during the alternatives analysis evaluation providing feedback from their specific areas of expertise and authority. The Working Group will continue to support the project as it moves forward in the planning and implementation process.

S.2 RESULTS FROM THE PRELIMINARY ALTERNATIVES ANALYSIS

This alternatives analysis report (AA Report) incorporates conceptual engineering information and identifies feasible and practicable alternatives to carry forward for environmental review and evaluation in the *Altamont Corridor Rail Project EIR/EIS*.

To facilitate the analysis of potential alignment alternatives and station location and design options across the more than 85-mile-long Altamont Corridor, the overall alignment was divided into eight geographical areas:

- San José to Fremont (Area 1.1).
- Fremont to I-680/State Route (SR) 84 (Area 1.2).
- Union City to I-680/SR 84 (Area 1.3).
- Tri-Valley (Area 2).
- Altamont Pass (Area 3).
- Tracy (Area 4.1).
- San Joaquin River to Stockton (Area 4.2).
- San Joaquin River to Ripon/Escalon Vicinity (Area 4.3).

The Authority and the FRA, in addition to performing engineering and environmental analysis, have engaged the agencies, public, and communities throughout the Altamont Corridor under many forums that include: meetings, field inspections, project team input and review, qualitative and engineering assessment of issues, and use of geographic information systems (GIS); they continue to incorporate their input. Identification of alternatives and their evaluation in this report has benefitted from the contributions of all of these parties. The observations below outline some of the key highlights from the work and input received to date:

- This document recommends not carrying forward any alignments through the Don Edwards San Francisco Bay National Wildlife Refuge. An alignment through the refuge would incur substantial environmental impacts to a number of threatened and endangered species and could create obstacles to future restoration of the former salt ponds to tidal marsh and open water habitats. It would be highly difficult to reach approval for design and permitting of such an alignment from the U.S. Fish and Wildlife Service and other state and federal resource agencies.
- Connections to Oakland, Oakland International Airport, and San Francisco can be made through connections to BART in Livermore and/or Fremont.
- Although some parties have urged an alignment through the Tri-Valley area along I-580 and I-680 as a means to minimize noise and visual environmental quality impacts and natural resource impacts, this evaluation found such a freeway alternative to be impracticable as a result of substantial constructability issues and risk due to extensive construction in and around the freeways and due to the need to accommodate a future planned BART extension.
- There are notable tradeoffs in the Tri-Valley area among downtown alignments, and south-of-Pleasanton/Livermore alignments in terms of travel time, ridership/revenue potential, noise and visual environmental quality impacts, and natural resource impacts. City of Pleasanton representatives have expressed their opposition to an alignment through downtown Pleasanton, whether at-grade, aerial, or tunnel, and City of Livermore representatives expressed concern about an aerial alignment through downtown Livermore.
- For the south-of-Livermore alignment (which bypasses downtown Pleasanton and Livermore), representatives of the Livermore Area Recreation and Park District (LARPD) and the East Bay Regional Park District (EBRPD) urged the avoidance of Sycamore Grove Park and Arroyo Del Valle Regional Park. The alignment recommended to be carried forward crosses Sycamore Grove Park in tunnel to avoid disruption to the park itself.
- There are tradeoffs in Tracy between a downtown alignment and station with greater noise and visual environmental quality impact but greater transit-oriented development (TOD) potential, and a southern alignment with less noise and visual environmental quality impact and less TOD potential. It is recommended that both alternatives be carried forward for further analysis.

- There are a number of phasing options to implement the project in discrete phases. There are also options, should funding ultimately be a limiting factor, to improve regional and intercity service by building one or more of the phases without necessarily completing the entire project from Stockton to San José. Preliminarily identified phasing options include improvements from Stockton to Livermore, from Livermore to Fremont, and from Livermore to Union City as well as incremental improvements to the ACE service.

Figure S-1 shows the alignment alternatives recommended to be carried forward for evaluation in the *Altamont Corridor Rail Project EIR/EIS*. Figures S-2a through S-2c show both the alignment alternatives recommended to be carried forward and those recommended to be withdrawn from further analysis. Table S-1 at the end of this section summarizes by alignment alternative within each area the proposed decisions and rationale regarding the withdrawal or carrying forward of the alignment into the *Altamont Corridor Rail Project EIR/EIS*.

Alignment and station alternatives recommended for continued study are listed below:

- San José to Fremont:
 - *Alignments:* Adjacent to the UP Coast Subdivision, SR 237, and I-880 (Alternative EB-4); adjacent to the UP Coast Subdivision, on Trimble Road, and I-880 (Alternative EB-5); adjacent to the UP Coast Subdivision, on Trimble Road, and adjacent to the UP Warm Springs Subdivision (Alternative EB-6).
 - *Stations:* San José Diridon, Santa Clara, Great America, First Street/Trimble, Tasman/I-880, Fremont Centerville ACE, Tasman/Great Mall, Warm Springs BART.
- Fremont to I-680/SR 84:
 - *Alignments:* Parallel to I-680 from Warm Springs BART to near I-680/SR 84 (Alternative EBWS-1); adjacent to UP Warm Springs Subdivision, and tunnel south of Niles Canyon (Alternative EBWS-2).
 - *Stations:* Warm Springs BART, I-680/SR 84.
- Union City to I-680/SR 84:
 - *Alignments:* In UP Oakland Subdivision, Niles Junction, and Niles Tunnel (Alternative EBUC-1).
 - *Stations:* Union City BART, I-680/SR 84.
- Tri-Valley:
 - *Alignments:* Along I-680, in former Southern Pacific Railroad (SP) in downtown Pleasanton on aerial, adjacent to UP on aerial in downtown Livermore, and adjacent to UP at grade east of downtown Livermore (Alternative TV-2a); along I-680, in former SP in downtown Pleasanton in tunnel, Railroad Avenue in downtown Livermore in tunnel, and former SP east of downtown Livermore (Alternative TV-2b); along SR 84, south of Livermore, east of Vasco Road, and adjacent to UP east of Vasco Road (Alternative TV-4).
 - *Stations:* Downtown Pleasanton (SP), Downtown Pleasanton (UP), Downtown Livermore, Vasco Road (UP), Vasco Road (SP).
- Altamont Pass:
 - *Alignments:* Northern alignment near I-580 (Alternative ALT-1); southern alignment through Patterson Pass (Alternative ALT-2).
 - *Stations:* none
- Tracy:
 - *Alignments:* Downtown Tracy (Alternative T-1); south of Tracy (Alternative T-2).
 - *Stations:* Downtown Tracy, South Tracy.
- San Joaquin River to Stockton:
 - *Alignments:* Former SP, I-5, former SP, UP through rail yards and in downtown Stockton (Alternative TS-1); adjacent to and east of UP, adjacent to UP, UP in downtown Stockton (Alternative TS-3); adjacent to and east of UP, along Airport Way, UP in downtown Stockton (Alternative TS-4).
 - *Stations:* Lathrop/I-5, Lathrop/Manteca ACE (West Yosemite Avenue), Downtown Stockton (Cabral).

- San Joaquin River to Ripon/Escalon Vicinity:
 - *Alignments:* Adjacent to UP, turn back, adjacent to UP through Manteca, adjacent to UP south to Modesto (Alternative TM-1b); adjacent to UP, SR 120 and SR 120 plan line, adjacent to BNSF to Modesto (Alternative TM-2a); SR 120, adjacent to UP south to Modesto (Alternative TM-2b).
 - *Stations:* Lathrop/Manteca ACE (West Yosemite Avenue), Manteca/SR 120.

S.3 ALTERNATIVES ANALYSIS EVALUATION MEASURES

The alignment alternatives and station location and design options carried forward for detailed evaluation in this AA Report were assessed for each of the project goals and objectives and evaluation measures. This information was then used to determine which alternatives are feasible and practicable and should be carried forward into preliminary engineering design and environmental review as part of the *Altamont Corridor Rail Project EIR/EIS*. The primary evaluation measures are listed below:

- Design objectives (including travel time, length, intermodal connections and cost).
- Land use (including consistency with land use and general plans, need for temporary construction easements, and state highway encroachment).
- Constructability (including potential rail conflicts, utilities, residential and business displacement, and business access impacts).
- Community impacts (including residential access, traffic congestion around stations, and traffic effects at at-grade crossings).
- Natural resources (including impacts on wetlands/streams, natural areas, designated critical habitat and threatened and endangered species habitat, parklands and important farmlands).
- Environmental quality (including noise/vibration impacts, scenic roadways and vistas, geologic and soils constraints, and hazardous materials).

S.4 PUBLIC AND AGENCY OUTREACH EFFORTS

In October and November 2009, formal scoping was conducted in accordance with NEPA and CEQA. Four scoping meetings (in Stockton, Livermore, Fremont, and San José) were held. Scoping comments were received verbally in person, in writing, and via email. In addition to the formal scoping meetings, numerous other meetings and presentations were conducted with stakeholders, agencies, and community organizations. A scoping report was prepared that presented all input provided by local, state, and federal agencies; stakeholders; and members of the general public.

A project website (http://www.cahighspeedrail.ca.gov/lib_Altamont_Corridor.aspx) was created and includes a project overview; timeline; library of important documents; and opportunities to submit feedback, join the mailing list, or ask questions about the project.

With input from the scoping process, preliminary alignment alternatives and station locations were identified and presented at the Authority's board meeting on May 6, 2010. Presentations were also made to a variety of business and community groups, and telephone conversations were held with individuals including neighbors in one portion of Livermore.

The preliminary alternatives were developed with input and guidance from numerous city and county government agencies and transportation agencies in 2010, including:

- Altamont Corridor Partnership Working Group (monthly meetings throughout 2010).
- Technical Working Group meetings (in March and August 2010) with staff-level participants from cities, counties, and transit/transportation agencies in the four-county study area.
- Meetings with the Livermore Area Recreation and Park District, City of Santa Clara Transportation Department, and Alameda County Supervisor Scott Haggerty.

Meetings were also held with environmental resource agencies on August 19, 2010 in Stockton and on August 20, 2010 in Fremont. In attendance were the U.S. Fish and Wildlife Service and the U.S. Environmental Protection Agency.

The next major phase of outreach and public meetings will occur in March 2011 to provide opportunities for the public to review the information in this AA Report and offer feedback and suggestions. Public input is encouraged now, at this critical stage in the planning process, so that it may be included in the supplemental AA Report and considered during preparation of the *Altamont Corridor Rail Project EIR/EIS*, which will be prepared in 2011–2013.

S.5 NEXT STEPS

This AA Report informs the project description for the *Altamont Corridor Rail Project EIR/EIS*. It also sets parameters for the next level of design and environmental analysis. This ongoing work will provide the Authority, the FRA, and the communities in the Altamont Corridor more details and a fuller picture of the design options in each area and a comprehensive vision of the entire corridor.

As the engineering and environmental work continues, the Authority and SJRCC will continue to meet and engage the Working Group, local cities, counties, and resources agencies in the corridor in a discussion about the various alternatives. If deemed necessary by the lead agencies, a supplemental AA Report will consider feedback received on this preliminary AA Report and will discuss how the AA will inform the detailed engineering, environmental, and outreach activities on the Altamont Corridor. At the conclusion of this process, the alternatives that are determined feasible will be evaluated in the *Altamont Corridor Rail Project EIR/EIS*, which is currently scheduled for public comment in 2013.

Figure S-1
Alignment and Station Alternatives Carried Forward for Evaluation in the EIR/EIS

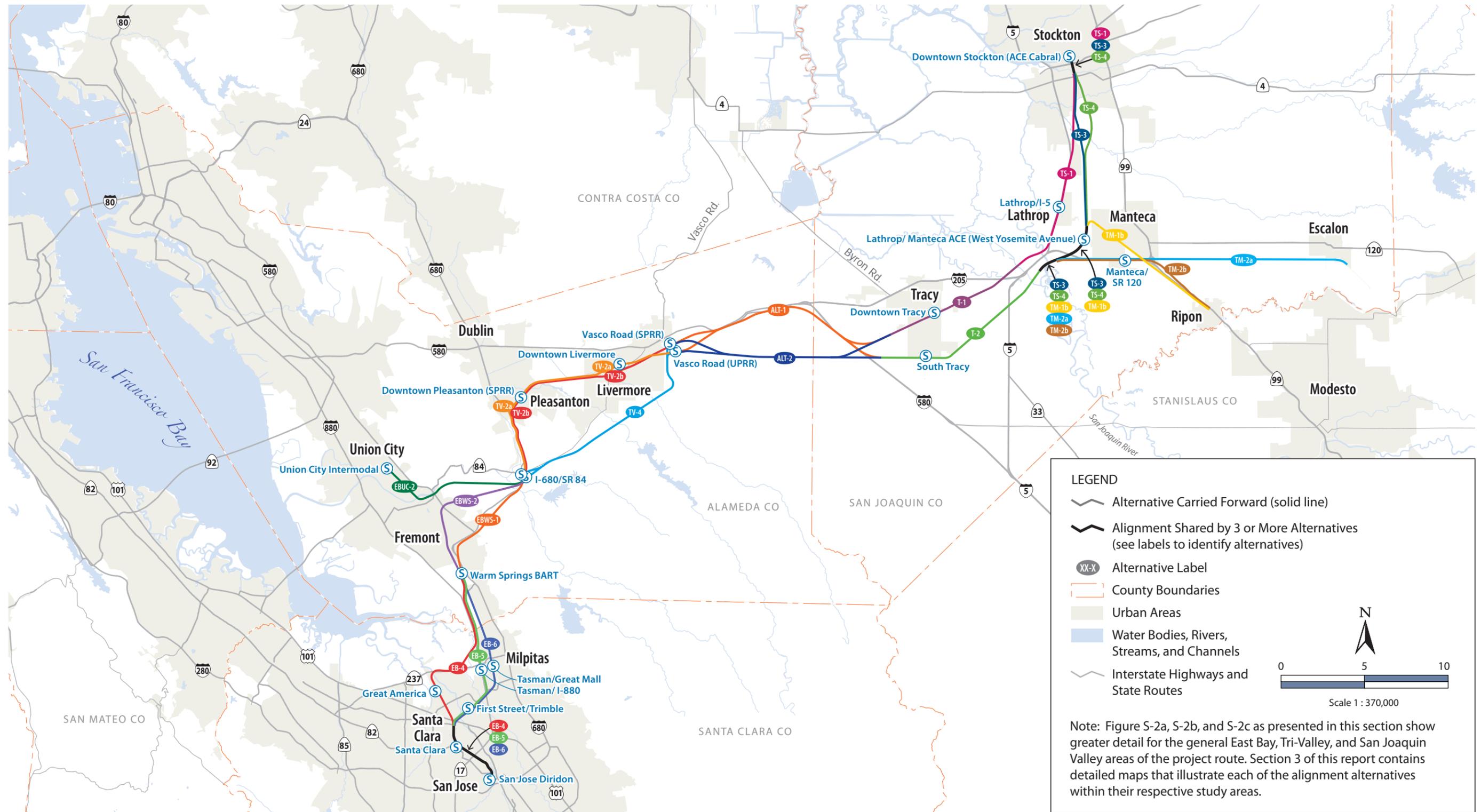


Figure S-2a
Alignment and Station Alternatives Withdrawn or Carried Forward for Further Evaluation in the EIR/EIS

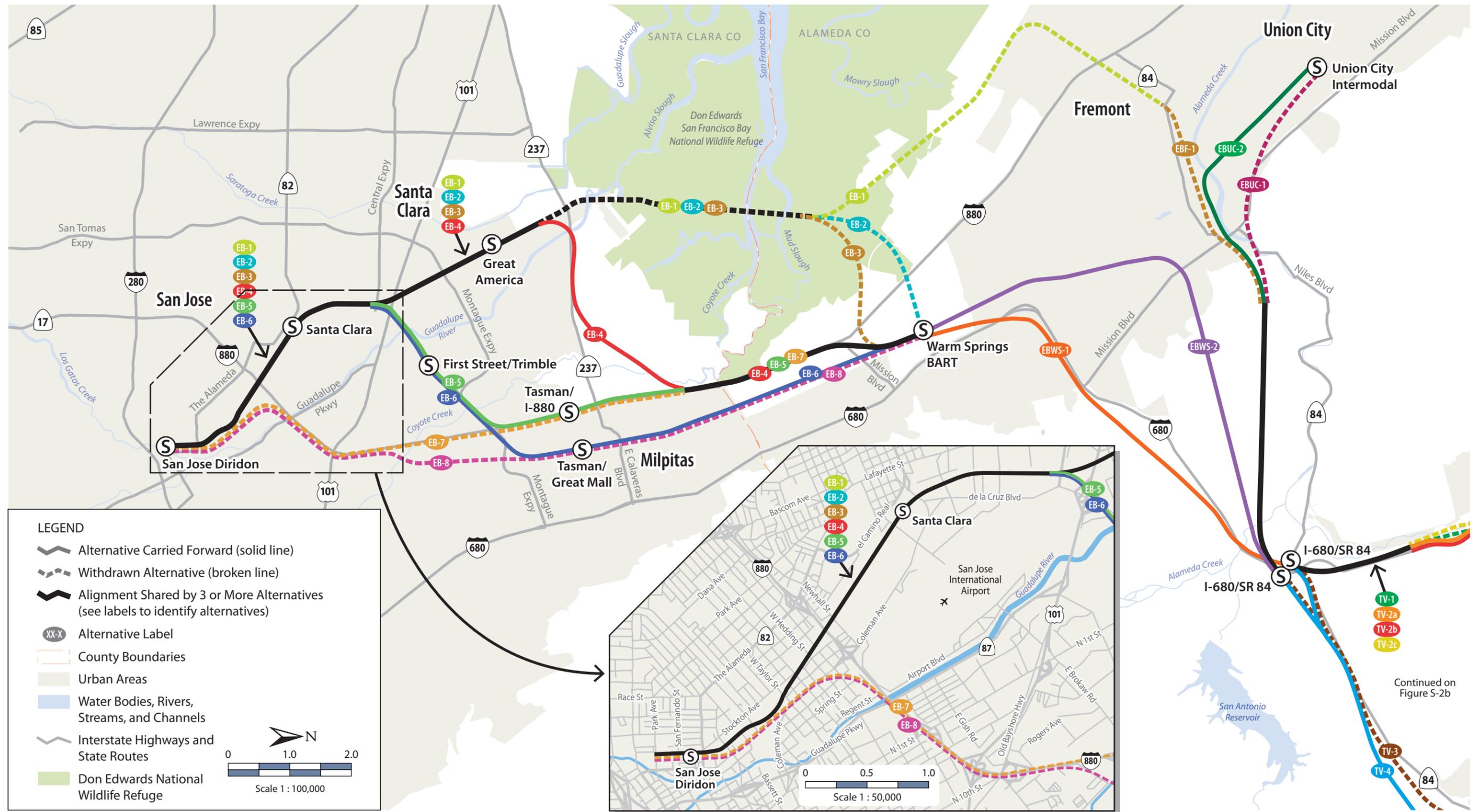


Figure S-2b Alignment and Station Alternatives Withdrawn or Carried Forward for Further Evaluation in the EIR/EIS

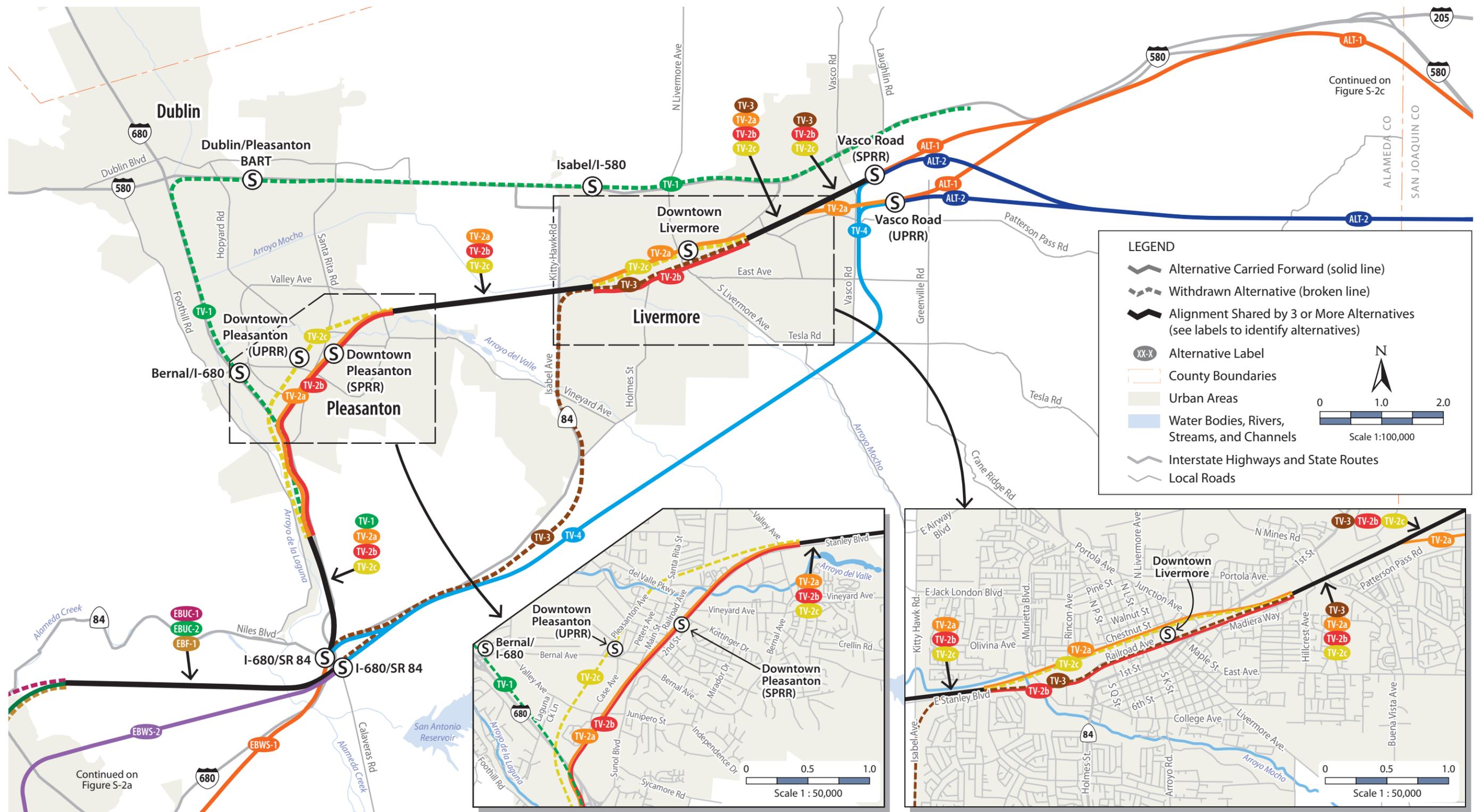
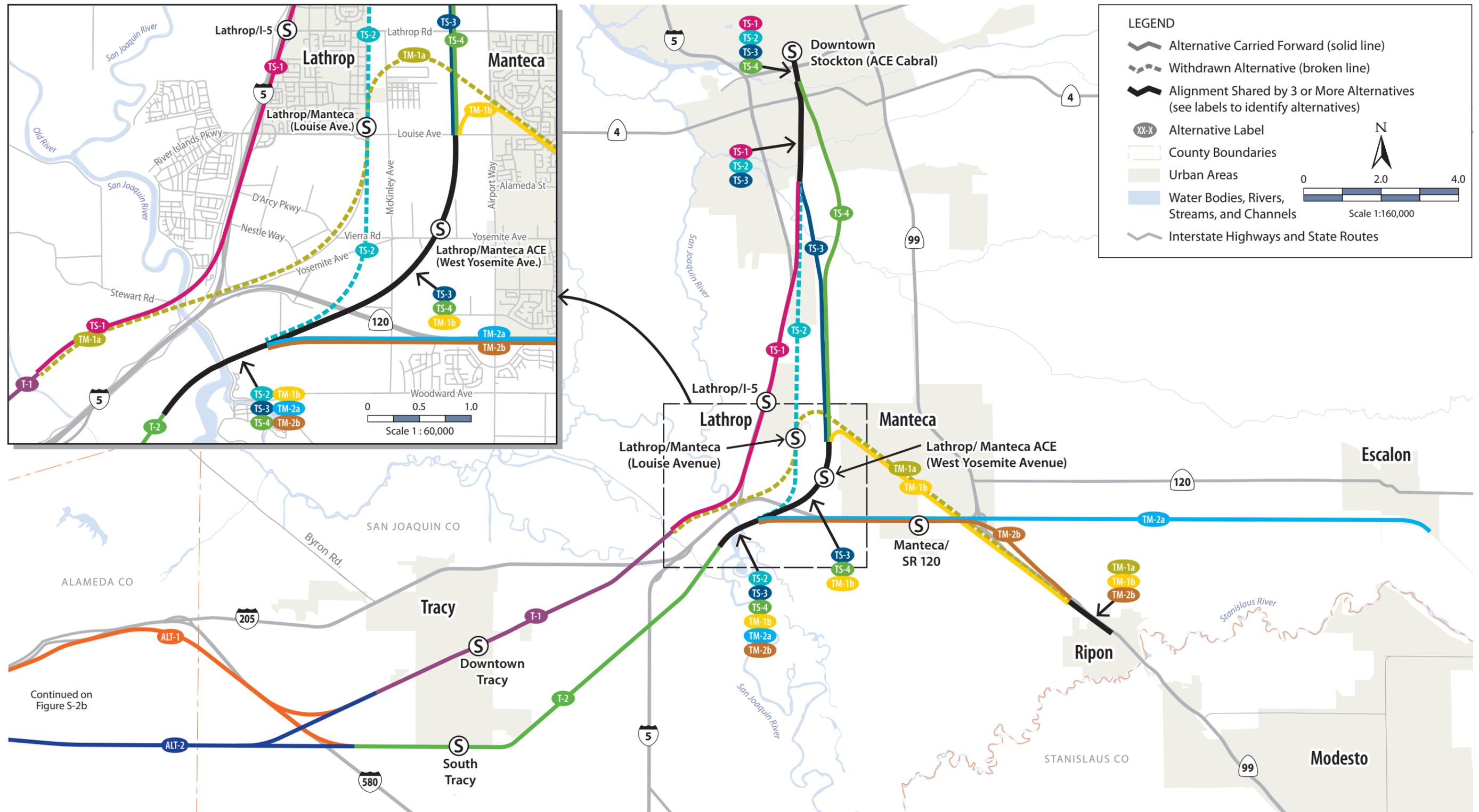


Figure S-2c
Alignment and Station Alternatives Withdrawn or Carried Forward for Further Evaluation in the EIR/EIS



**Table S-1
Alignment Alternatives and Station Location Options Carried Forward to EIR/EIS and those Withdrawn**

Altamont Corridor Rail Project Alignment Alternatives and Station Location Screening Results ¹												
Alternative	Description		Decision		Rationale to Carry Forward or Withdraw Alternative (P = Primary reason for withdrawal; S = Secondary reason for withdrawal)							
	Alignment	Stations	Carried Forward	Withdrawn	Meets Purpose and Need?	Design Objectives—Operating and Capital Cost	Design Objective—Connectivity/Accessibility	Design Objective—Ridership/Revenue Potential	Land Use—Land Use Compatibility	Constructability—Construction Difficulty/Right-of-Way Acquisition Risk	Natural Resources and/or Environmental Quality	
San Jose to Fremont												
EB-1	In Caltrain right-of-way, adjacent to UP Coast Subdivision, Adjacent to UP Centerville Line	San José Diridon Santa Clara Great America Fremont Centerville		X	Yes			S	S	S	P	Greater natural resource impacts due to crossing of Don Edwards San Francisco Bay National Wildlife Refuge. Impracticable due to constructability risks resulting from extensive property acquisition requirements particularly in the Fremont Centerville and due to the slowest service time of alternatives in area. Greater residential displacement and noise and visual environmental quality impact in the Fremont Centerville Area (in combination with Alternative EBF-1) than other alternatives.
EB-2	In Caltrain right-of-way, adjacent to UP Coast Subdivision, south of Grimmer	San José Diridon Santa Clara Great America Warm Springs BART		X	Yes				S		P	Greater natural resource impacts due to crossing of Don Edwards San Francisco Bay National Wildlife Refuge and the Pacific Commons vernal pool mitigation complex.
EB-3	In Caltrain right-of-way, adjacent to UP Coast Subdivision, south of Cushing, Adjacent to UP Warm Springs Subdivision	San José Diridon Santa Clara Great America Warm Springs BART		X	Yes				S		P	Greater natural resource impacts due to crossing of Don Edwards San Francisco Bay National Wildlife Refuge and the Pacific Commons vernal pool mitigation complex.
EB-4	In Caltrain right-of-way, adjacent to UP Coast Subdivision, SR 237, I-880	San José Diridon Santa Clara Great America Warm Springs BART	X		Yes							Opportunities for multiple stations and connections to other transit services, access to the Great America station (with favorable ridership/revenue potential), avoidance of natural resource impacts due to elimination of refuge crossing and lowest costs of the alternatives that do not cross the refuge.
EB-5	In Caltrain right-of-way, adjacent to UP Coast Subdivision, Trimble, I-880	San José Diridon Santa Clara First Street/Trimble Tasman/I-880 Warm Springs BART	X		Yes							Provides service to a different commercial area (First Street/Trimble Road) than Alternative EB-4, has lower noise and visual environmental quality impacts than other alternatives while avoiding the natural resource impacts associated with refuge crossing.
EB-6	In Caltrain right-of-way, adjacent to UP Coast Subdivision, Trimble, Adjacent to UP Warm Springs Subdivision	San José Diridon Santa Clara First Street/Trimble Tasman/Great Mall Warm Springs BART	X		Yes							Multiple opportunities for connectivity and service in high employment centers and regional destinations. Moderate costs among all area alternatives.

¹ As described in Chapter 2, all evaluation criteria were evaluated for each alternative. This table only mentions those that ultimately proved to be a rationale to carry an alternative forward or withdraw an alternative. For example, all alternatives were evaluation for community impacts (in terms of property access disruption and traffic effects), but there were no alternatives that were recommended for withdrawal due to these evaluation criteria.

Altamont Corridor Rail Project Alignment Alternatives and Station Location Screening Results ¹												
Alternative	Description		Decision		Rationale to Carry Forward or Withdraw Alternative (P = Primary reason for withdrawal; S = Secondary reason for withdrawal)							
	Alignment	Stations	Carried Forward	Withdrawn	Meets Purpose and Need?	Design Objectives—Operating and Capital Cost	Design Objective—Connectivity/Accessibility	Design Objective—Ridership/Revenue Potential	Land Use—Land Use Compatibility	Constructability—Construction Difficulty/Right-of-Way Acquisition Risk	Natural Resources and/or Environmental Quality	
EB-7	I-880 (south of airport), I-880	San José Diridon Tasman/I-880 Warm Springs BART		X	No	S	P	P	S			Does not meet project purpose and need as it has only limited service to centers of employment with only one station between Fremont and San Jose. Impracticable due to highest relative cost among all area alternatives.
EB-8	I-880 (south of airport), Adjacent to UP Warm Springs Subdivision	San José Diridon Tasman/Great Mall Warm Springs BART		X	No		P		S	P	S	Does not meet project purpose and need as it has only limited service to centers of employment with only one station between Fremont and San Jose. Impracticable due to high constructability/right-of-way risk as a result of need for extensive residential/commercial property acquisition adjacent to UP Warm Springs Subdivision. Greatest noise and visual environmental quality impacts in residential areas adjacent to the UP Warm Springs Subdivision among alternatives that do not cross the refuge.
Fremont to I-680/SR 84												
EBWS-1	I-680 to near I-680/SR 84	Warm Springs BART I-680/SR 84	X		Yes							Least cost and most direct and fastest route among the area alternatives.
EBWS-2	Adjacent to UP Warm Springs Subdivision, tunnel south of Niles Canyon	Warm Springs BART I-680/SR 84	X		Yes							Alternative to an I-680 route.
EBF-1	Adjacent to UP Centerville line, Niles Junction, Niles Tunnel	Fremont Centerville I-680/SR 84		X	Yes			S	P	S	P	In combination with Alternative EB-1, would have greater impacts to the natural environment (due to impact on Don Edwards San Francisco bay National Wildlife Refuge) and greater noise and visual environmental quality impacts (in Fremont Centerville area). Impracticable as would be slowest of all alternatives to reach San Jose and would require substantial property acquisition, particularly in Fremont Centerville area (in combination with EB-1).
Union City to I-680/SR 84												
EBUC-1	Adjacent to UP Niles Subdivision, Niles Tunnel	Union City I-680/SR 84		X	Partial		S		S	P	S	Impracticable due to constructability/right-of-way risk because of need for extensive residential property acquisition adjacent to UP Niles Subdivision. Only partially meets purpose and need due to lack of direct connection at Union City Intermodal Station. Would result in greater level of noise and visual environmental quality impacts and land use incompatibility due to location in residential areas
EBUC-2	In UP Oakland Subdivision, Niles Junction, Niles Tunnel	Union City I-680/SR 84	X		Yes							Provides direct connection to Union City Intermodal Station. Relatively lower constructability risk than Alternative EBUC-1 as it would be located in a lesser-used UP right-of-way that is proposed for acquisition for the Dumbarton Rail Corridor Project and is a priority for Capitol Corridor and the City of Union City.
Tri-Valley												
TV-1	I-680, I-580	I-680/SR 84 Bernal/I-680 Dublin/Pleasanton BART Isabel/I-580		X	Yes					P		Impracticable due to high constructability risk due to extensive construction in and around the freeways and due to the need to accommodate a future BART extension. Constructability and right of way risks high along I-580 where parallel to proposed BART extension to Livermore due to limited median and/or need to route outside freeway right of way in commercial or residential areas.

Altamont Corridor Rail Project Alignment Alternatives and Station Location Screening Results ¹												
Alternative	Description		Decision		Rationale to Carry Forward or Withdraw Alternative (P = Primary reason for withdrawal; S = Secondary reason for withdrawal)							
	Alignment	Stations	Carried Forward	Withdrawn	Meets Purpose and Need?	Design Objectives—Operating and Capital Cost	Design Objective—Connectivity/Accessibility	Design Objective—Ridership/Revenue Potential	Land Use—Land Use Compatibility	Constructability—Construction Difficulty/Right-of-Way Acquisition Risk	Natural Resources and/or Environmental Quality	
TV-2a	I-680, in former SP right-of-way in Pleasanton (aerial), along Railroad Avenue in downtown Livermore (aerial), adjacent to UP east of downtown Livermore	I-680/SR 84 Downtown Pleasanton (SP) Downtown Livermore Vasco Road (UP)	X		Yes							Lowest cost of all alternatives in this area with highest favorable connectivity/accessibility (with connections to two existing ACE stations and two future BART transit connections) and favorable revenue/ridership potential. Pleasanton opposes downtown Pleasanton alignment. Livermore concerned about aerial alignment through downtown Livermore.
TV-2b	I-680, in former SP right-of-way in Pleasanton (tunnel), Railroad Ave (tunnel), in former SP right-of-way east of downtown Livermore	I-680/SR 84 Downtown Pleasanton (SP) Vasco Road (SP)	X		Yes							Provides a downtown alternative to TV-2a that would ameliorate some of the noise and visual environmental quality impacts of Alternative TV-2a through use of tunnels in downtown areas. Pleasanton opposes downtown Pleasanton alignment.
TV-2c	I-680, in UP right-of-way in Pleasanton (tunnel), adjacent to UP right-of-way in Livermore (tunnel), in former SP right-of-way east of downtown Livermore	I-680/SR 84 Downtown Pleasanton (UP) Vasco Road (SP)		X	No	S				P		Does not meet purpose and need of providing for an independent right of way. Impracticable because this is highest cost of all alternatives in this area. Impracticable due to high construction/right-of-way risks associated with need for cooperative agreement with UP or acquisition of right-of-way from UP for active freight line through Pleasanton. Pleasanton opposes downtown Pleasanton alignment.
TV-3	SR 84, Isabel Ave, Railroad Ave, in former SP right-of-way east of downtown Livermore	I-680/SR 84 Vasco Road (SP)		X	Yes					P	S	Impracticable due to high constructability/right-of-way risk because of the need for acquisition of extensive area of private quarry land containing state-designated significant (MRZ-2) mineral resource. Highest level of impact to wetlands and farmlands of alternatives in the area.
TV-4	SR 84, south of Livermore, Vasco, adjacent to UP right-of-way east of downtown Livermore	I-680/SR 84 Vasco Road (UP)	X		Yes							Shortest and fastest route. Avoids community disruption in downtown areas.
Altamont												
A-1	Northern Alignment near I-580		X		Yes							Along an existing transportation corridor (I-580), and less impact on natural resources compared to Alternative A-2.
A-2	Southern Alignment through Patterson Pass		X		Yes							Lower costs and shorter, faster route compared to Alternative A-1.
Tracy												
T-1	Downtown Tracy	Downtown Tracy	X		Yes							Favorable connectivity/accessibility, revenue/ridership potential, and TOD potential because of the downtown station.
T-2	South of Tracy	South Tracy	X		Yes							Opportunities for reduced residential impacts, lower cost, and shorter service times compared to Alternative T-1, although with a tradeoff of potentially fewer TOD opportunities, potentially higher commercial property acquisition, and lower ridership/revenue potential.
San Joaquin River to Stockton												
TS-1	Adjacent to former SP right-of-way west of San Joaquin River, I-5, in former SP right-of-way near French Camp, in UP right-of-way (w/ 2 rail yards) near downtown Stockton	Lathrop/I-5 Downtown Stockton (Cabral)	X		Yes							Direct route from Tracy to Stockton with the fastest service time, viable freeway intercept station in Lathrop, opportunity for shared alignment with HST.

Altamont Corridor Rail Project Alignment Alternatives and Station Location Screening Results ¹													
Alternative	Description		Decision		Rationale to Carry Forward or Withdraw Alternative (P = Primary reason for withdrawal; S = Secondary reason for withdrawal)								
	Alignment	Stations	Carried Forward	Withdrawn	Meets Purpose and Need?	Design Objectives—Operating and Capital Cost	Design Objective—Connectivity/Accessibility	Design Objective—Ridership/Revenue Potential	Land Use—Land Use Compatibility	Constructability—Construction Difficulty/Right-of-Way Acquisition Risk	Natural Resources and/or Environmental Quality		
TS-2	Adjacent to UP right-of-way west of San Joaquin River, in former SP right-of-way in Lathrop, in UP right-of-way (w/ 2 rail yards) near downtown Stockton	Lathrop/Manteca (Louise Avenue) Downtown Stockton (Cabral)		X	Yes	S						P	Would require approximately 7-mile redundant HST alignment with associated environmental impacts. Secondly, this alternative would be impracticable because it would be substantially more expensive than other alignments in this area due to the capital and operational costs of the redundant section.
TS-3	Adjacent to UP right-of-way, East of UP right-of-way in Lathrop/Manteca area, in UP right-of-way(w/ 2 rail yards) near downtown Stockton	Lathrop/Manteca (West Yosemite Avenue) Downtown Stockton (Cabral)	X		Yes								Provides combined Lathrop/Manteca station for both Altamont Corridor Rail Project services (San José to Stockton and San José to Modesto), avoids need for redundant HST and Altamont Corridor Rail Project lines in the Lathrop/Manteca area, and has potentially lower noise and visual environmental quality impacts than other alternatives in the area.
TS-4	Adjacent to UP right-of-way west of San Joaquin River, East of UP right-of-way in Lathrop/Manteca area, along Airport Ave., in UP right-of-way near Stockton Cabral station	Lathrop/Manteca (West Yosemite Avenue) Downtown Stockton (Cabral)	X		Yes								Provides combined Lathrop/Manteca station for both Altamont Corridor Rail Project services (San José to Stockton and San José to Modesto), avoids need for redundant HST and Altamont Corridor Rail Project lines in the Lathrop/Manteca area, and avoids constructability risks associated with the two rail yards near downtown Stockton by routing along Airport Way.
San Joaquin River to Ripon/Escalon													
TM-1a	In former SP right-of-way in Lathrop area, turn back, Adjacent to UP Fresno Subdivision to Modesto	Lathrop/Manteca (Louise Avenue)		X	Yes	S						P	Would require approximately 7-mile redundant HST alignment with associated environmental impacts. Secondly, this alternative would be impracticable because it would be substantially more expensive than other alignments in this area due to the capital and operational costs of the redundant section.
TM-1b	Adjacent to UP right-of-way in Lathrop area, turn back, adjacent to UP Fresno Subdivision to Modesto	Lathrop/Manteca (West Yosemite Avenue)	X		Yes								Provides combined station for both Altamont Corridor Rail Project services (San José to Stockton and San José to Modesto) and avoids redundant project and HST alignments.
TM-2a	UP, SR 120, BNSF to E of SR 99 or BNSF to Modesto	Manteca/SR 120	X		Yes								Only alternative that would connect to the north-south Sacramento to Merced HST Section BNSF alignment (if selected). If the BNSF alignment is not carried forward in the HST evaluation process, then this alternative would be dismissed from further consideration.
TM-2b	SR 120, UP to Modesto	Manteca/SR 120	X		Yes								Most direct route to Modesto of all area alternatives with associated shorter service times, and would minimize property acquisition by being located within SR 120 right-of-way in the Manteca area.

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1.0 INTRODUCTION

The California High-Speed Rail Authority (the Authority) is studying alignment alternatives for a regional rail corridor through the Altamont Pass and the Tri-Valley area that is capable of supporting intercity and commuter rail passenger services between Stockton and San José. This alternatives analysis (AA) incorporates conceptual engineering information and identifies feasible and practicable alternatives to carry forward for environmental review and evaluation in the *Altamont Corridor Rail Project Environmental Impact Report/Environmental Impact Statement* (EIR/EIS) to be prepared in compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

Additionally, the Authority and the Federal Railroad Administration (FRA) will enter into a memorandum of understanding (MOU) with the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE) to integrate the NEPA process with the Clean Water Act (CWA) Section 404(b)(1) process. The Authority and the FRA already have entered into similar MOUs with the EPA and the USACE for the main line sections of the HST program. The Section 404(b)(1) process includes an AA; therefore, an additional objective of this AA is for the EPA and the USACE to reach concurrence with the Authority and the FRA on the alternatives to be carried forward into the Altamont Corridor Rail Project EIR/EIS.

1.1 ALTAMONT CORRIDOR RAIL PROJECT EIR/EIS BACKGROUND

The Altamont Corridor was studied by the Authority and identified as a candidate route to the San Francisco Bay Area in the *Statewide High Speed Train (HST) System Program EIR/EIS*. The Authority and the FRA further examined the corridor in the 2008 *Bay Area to Central Valley HST Program EIR/EIS* and selected the Pacheco Pass via Gilroy as the preferred route for the California HST System between the Bay Area and the Central Valley for a number of reasons; it would serve San Francisco without requiring a water crossing of San Francisco Bay, would provide operational benefits, and would have the lowest travel times between the Bay Area and southern California. However, in the *Bay Area to Central Valley HST Program EIR/EIS*, the Authority also indicated that it would pursue a regional joint-use rail project in the Altamont Corridor as an independent project to meet a purpose and need (described in Sections 2.2 and 2.3) separate from the proposed California HST System, which might provide both HST-compatible infrastructure and connection(s) to the California HST System.

Subsequently, the Authority began to work with a regional partnership, the San Joaquin Regional Rail Commission (SJRRRC), to plan a joint-use rail line through the Altamont Pass that would support new regional intercity and commuter passenger rail services operating in northern California between Stockton and San José and would be capable of accommodating HST-compatible equipment. In accordance with an MOU signed by both parties, the Authority and the SJRRRC are proposing to develop a new regional rail line from Stockton to San José through the Altamont Pass, as well as eastern and southern Alameda County, to provide both regional intercity and commuter passenger rail service that would improve connectivity and accessibility between the northern San Joaquin Valley and the Bay Area. The corridor would be developed as a separate line from the existing Union Pacific Railroad (UP) route, wherever feasible, over which Altamont Commuter Express (ACE) service is provided by the SJRRRC. The new rail route is intended to provide incremental improvements to ACE service in the near term. However, the ultimate facility would be designed and equipped to accommodate electrified lightweight passenger trains and could be used by HST-compatible equipment.

The development of the Altamont Corridor Rail Project as a complement to the California HST System is consistent with the Metropolitan Transportation Commission's (MTC's) *Bay Area Regional Rail Plan*, which identifies the Altamont Corridor as a key future northern California regional rail route and also notes that development of this corridor in conjunction with implementation of the California HST System could provide greater benefits to the state and region. The *Altamont Corridor Rail Project EIR/EIS* will build upon the *Bay Area Regional Rail Plan* and upon relevant decisions made with the *Statewide HST System Program EIR/EIS* and the *Bay Area to Central Valley HST Program EIR/EIS*.

To initiate project planning, the Altamont Corridor Partnership Working Group (the Working Group) was established by the Authority to bring together local partners for the purpose of identifying goals, objectives, and key features of a joint-use regional rail improvement in the corridor. Members include the San Joaquin Council of Governments (SJCOG), California Partnership for the San Joaquin Valley, Tri-Valley Policy Advisory Committee, Alameda County

Congestion Management Agency, MTC, Sacramento Area Council of Governments, and Stanislaus Council of Governments, along with service providers including ACE/SJRRRC, the San Francisco Bay Area Rapid Transit District (BART), the San Mateo County Transit District (SamTrans)/Caltrain, and the Capitol Corridor Joint Powers Authority.



The Working Group recognizes the importance of the corridor for regional transportation needs and has reached consensus on the corridor limits (Stockton to San José); principal features, including key intermodal connections; and goals and objectives (described in Section 3.2), which include improving ACE service in the near term and developing capability to accommodate HSTs through connections to the California HST System and HST-compatible equipment. The Working Group will continue to support the Altamont Corridor Rail Project as it moves forward in the planning and implementation process.

1.2 STUDY AREAS

The Altamont Corridor Rail Project study area is more than 85 miles¹ long. The limits are Stockton to San José. This includes a branch east of Tracy that will connect to the north-south California HST System main line in the Central Valley to allow operation of trains between the inner Bay Area and Modesto, as well as points beyond to the north and south, including Sacramento. Figure 1.2-1 illustrates the general study area for the Altamont Corridor. For the purposes of the AA, the study area was divided into eight distinct geographic areas, which are further defined in Section 3.

1.3 PURPOSE OF STUDY

This AA Report uses preliminary planning, environmental, and conceptual engineering information to identify feasible and practicable alternatives to carry forward for environmental review and preliminary engineering design in the *Altamont Corridor Rail Project EIR/EIS*. This report is intended to identify the range of potentially feasible alternatives

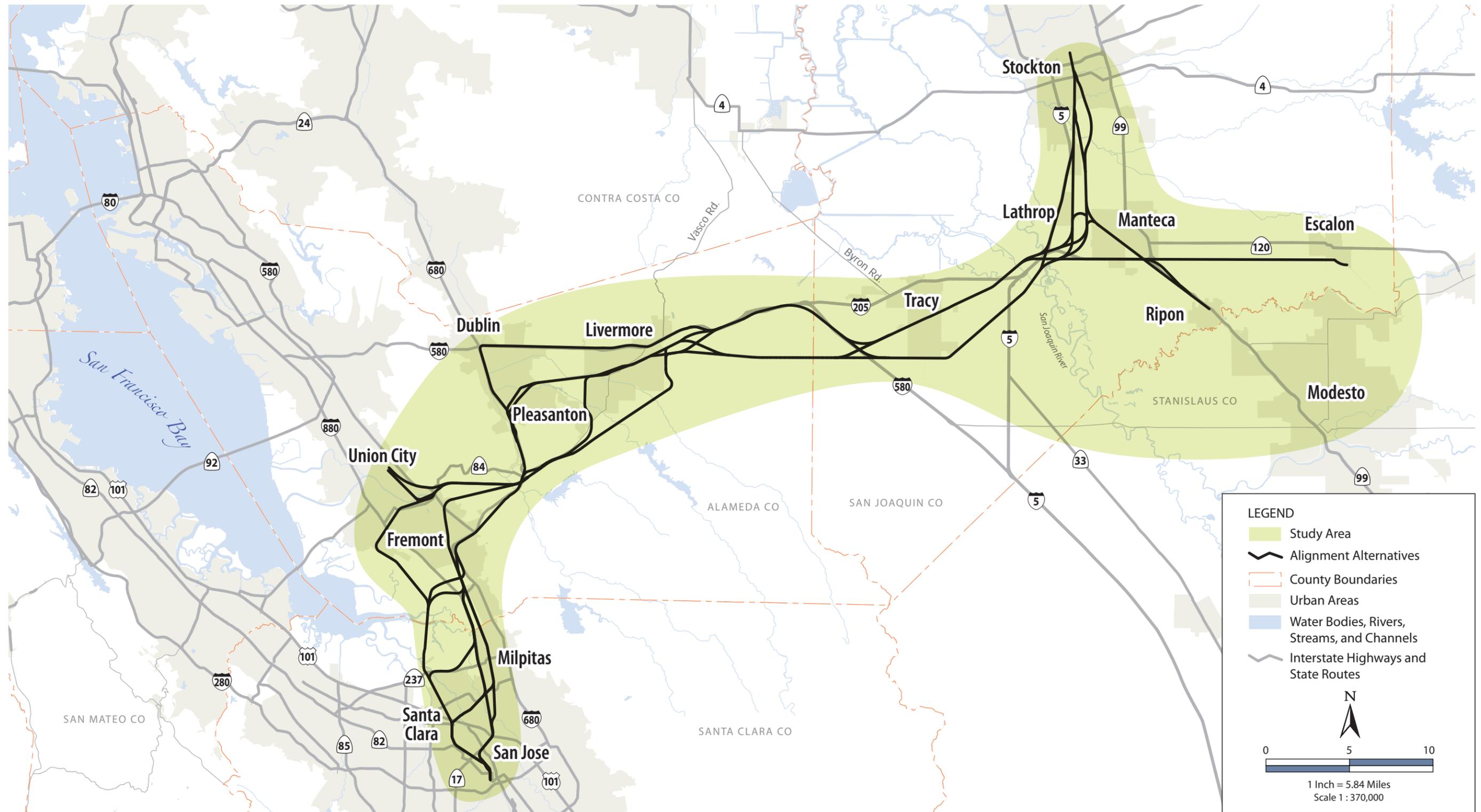
¹ The existing ACE route between Stockton and San José is 86 miles long; the Altamont Rail Corridor includes a branch southeast of Manteca to connect to Modesto, which adds 2 to 12 miles depending upon the location of the selected alignment for the Merced-Sacramento HST service

to analyze in the EIR/EIS. It documents the preliminary evaluation of alternatives, indicating how each alternative meets the purpose of and need for the project, how evaluation criteria were applied and used to determine which alternatives to carry forward for detailed environmental analysis, and which alternatives should not be carried forward for further analysis.

The analysis begins by discussing the alignment corridors selected as a result of public and agency comments received during the Altamont Corridor Rail Project scoping period (October–December 2009) and ongoing Working Group coordination meetings (January 2009–May 2010), which were compiled to identify potential alignment alternatives for the Altamont Corridor Rail Project. An Initial Development of Alternatives (IDA) Memorandum was prepared to summarize the recommended alignment corridors and presented to the Authority's board of directors on May 6, 2010. Following the completion of the IDA and subsequent identification of initial alignment alternatives, conceptual engineering plans were developed based on the recommendations of the IDA; these plans form the basis of the alignments studied in this AA Report.

Section 2 describes the evaluation measures used for the AA process. Each of the initial alignment alternatives is described in detail in Section 3. Section 4 evaluates the alternatives, and Section 5 summarizes the results of the AA analysis.

Figure 1.2-1
Alternatives Analysis Study Area



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2.0 ALTERNATIVES DEVELOPMENT PROCESS

The creation and refinement of alternatives were directed by the Authority through a combination of public comment opportunities; meetings with stakeholder jurisdictions; Working Group discussions and analyses; and Project Team data collection, engineering design and review, and alternatives screening. This study follows a defined AA process, as described in the Authority's *Technical Memo Alternatives Analysis Methods for Project EIR/EIS* (October 2009). This process was designed for use in evaluation of the HST system segments, but is equally appropriate for use for the Altamont Corridor Rail Project and provides a consistent method for the public, stakeholders, and the Authority and FRA. The evaluation uses both qualitative and quantitative measures that reflect a mixture of applicable policy and technical considerations.

The techniques used to gather information and to develop and compare alternatives are described below:

- **Project scoping meetings:** The Project Team conducted a series of four scoping meetings throughout the Altamont Corridor shortly after the project goals and objectives and its preliminary purpose and need (see Sections 2.2 and 2.3 for the current definition of the project purpose and need) were confirmed by the Authority, the FRA, the SJRRC, and the Working Group. Comments received at the scoping meetings identified a wide range of alternatives.
- **Field inspections of corridors:** Planners, engineers, and analysts with experience in railroad operations conducted field inspections of the potential alignment, right-of-way, and station locations to identify conditions and factors that may not be visible in aerial photos or on maps. Over the course of the study, as the alternatives were refined by the planning and engineering work, field inspections became progressively more detailed.
- **Project team input and review:** The Project Team conducted team meetings to discuss alternatives and local issues that potentially affect alignments. Project Team reviews included a preliminary evaluation of potential alignment and station alternatives identified as a result of the scoping process, which led to the delineation of the IDA that was presented to the Authority's board and made public in May 2010.
- **Qualitative assessment:** A number of the qualitative measures used to describe the alignment alternatives were developed by Project Team members with experience in construction and operation of HST and other transportation systems. These measures included constructability, accessibility, operations, maintenance, right-of-way, public infrastructure impacts, railway infrastructure impacts, and environmental impacts.
- **Engineering assessment:** Engineering assessments were provided for a number of measures that could be readily quantified at this stage of project development. The engineering assessments provided information on project length, travel time, and configuration of key features of the alignment, such as the presence of existing infrastructure.
- **Geographic information system (GIS) analysis:** The bulk of the assessment was performed using GIS data, which enabled depictions of the project's interactions with a variety of measurable geographic features, both natural and built. GIS data were used to assess impacts on farmland, water resources, floodplains, wetlands, threatened and endangered species, cultural resources, current urban development, and infrastructure.

2.1 PROJECT GOALS AND OBJECTIVES

In early 2009, before the initiation of the alternatives analysis process and the subsequent completion of this AA Report, the Project Team initiated a planning process to develop and define the Altamont Corridor Rail Project. The project definition is articulated by project goals and objectives and the project purpose and need. A detailed description of these elements is provided below.

2.1.1 PROJECT GOALS AND OBJECTIVES

The Altamont Corridor Rail Project is being planned with the support of the Working Group, whose members represent key transportation planning entities and transit providers within the project area. The Working Group developed a series of project goals and has prepared a general project description to guide the development of specific project elements. The goals identified for the Altamont Corridor Rail Project include the following:

- Develop a regional intercity and commuter passenger rail service in the Altamont Corridor linking the northern San Joaquin Valley with the Bay Area that provides dedicated trackage separate from existing lines shared with Class 1 freight operations where feasible.
- Transform the ACE service into a "world-class" intra-regional and commuter service with frequent trains operating in both directions all day long.
- Provide connectivity and accessibility to Oakland and Oakland International Airport (OAK) from the northern San Joaquin Valley.
- Connect to all regional intercity and commuter passenger rail lines crossing the Altamont Corridor and maximize intermodal connections.
- Offer a travel alternative that is competitive with the travel time and costs of auto, intercity bus, and regional air modes.
- Offer a travel alternative that avoids or minimizes new impacts on the environment by using multi-purpose infrastructure.
- Develop passenger train station locations that serve existing and planned population and employment centers in the South Bay, East Bay, Tri-Valley and northern San Joaquin Valley for consideration by host communities.

2.1.2 SUMMARY PROJECT DESCRIPTION

The Altamont Corridor Rail Project would extend from Stockton to San José. The project would include a branch east of Tracy that would connect to the north-south California HST System main line in the Central Valley to allow operation of trains between the Bay Area and Modesto, as well as points beyond to the north and south, including Sacramento and Merced. Potential station locations include Stockton, Lathrop, Manteca, Modesto, Tracy, Livermore, Pleasanton, Fremont/Union City, Milpitas, and San José. Multimodal opportunities would be pursued at stations in Stockton, Modesto, Livermore, Fremont, Milpitas, and San José to connect with the California HST System main line, BART, Caltrain, and Santa Clara Valley Transportation Authority (VTA).

2.1.3 REGIONAL CONNECTIVITY

Figure 2.1-1 shows the Altamont Corridor in relation to the existing and proposed public transportation network in northern California, highlighting principal connectivity opportunities.

As planned, the Altamont Corridor Rail Project would provide intermodal connections to BART to serve OAK, Oakland, San Francisco, and other East Bay locations. Intermodal connections to BART would be provided in the Livermore vicinity, should BART's Dublin/Pleasanton line be extended, as well as in the Fremont/Union City vicinity, either meeting BART's existing Fremont line or its Warm Springs and Silicon Valley extensions.

The project may also accommodate a future connection to the Dumbarton Rail service in the Fremont/Union City vicinity and an intermodal connection to the VTA light rail network in Santa Clara County.

The project would accommodate feeder and connecting bus services that provide access to proximate market areas and interface with regional bus links where appropriate.

2.1.4 SYNERGY WITH CALIFORNIA HST SYSTEM

Figure 2.1-2 shows the Altamont Corridor in relation to the statewide HST network. The corridor is geographically situated to serve as a feeder to the California HST System through intermodal connections in the Bay Area (San José) and through connections to the Central Valley lines (Stockton and Modesto). In addition, once improved to be fully grade-separated and electrified, with appropriate signaling and train control systems, the Altamont Corridor could support operation of California HST System trains and lightweight multiple-unit passenger equipment compatible with those trains. As such, the Altamont Corridor could allow selected California HST System trains to serve regional stops within the Altamont Corridor and to allow regional trains operating within the Altamont Corridor to reach additional destinations within the California HST System (e.g., Sacramento or Merced). The Altamont Corridor Rail Project has the ability to leverage the investment made in the California HST System, and would serve the important goal of integrating the HST service with existing and expanded regional intercity and commuter passenger rail service (California Public Utilities Code 185030).

2.1.5 PHASING AND UTILITY

It is anticipated that rail improvements under the Altamont Corridor Rail Project will be phased in a manner such that near-term infrastructure investments would be suitable to support existing ACE operations and equipment, and that long-term infrastructure would support operation of lightweight electric-powered trains compatible with the California HST System.

The phased implementation of the project in the Altamont Corridor would have immediate utility for improving rail travel times between the San Joaquin Valley and the Bay Area. In the longer term, the improvements in the Altamont Corridor would provide new regional intercity and commuter passenger rail services, which could consist of operation of regional or limited service (express) regional intercity and commuter passenger trains between stops along the Altamont Corridor and other Central Valley points (including Sacramento, Modesto, and Merced), and would possibly support increased long-distance HST service into the Bay Area after future study by the Authority.

**Figure 2.1-2
Altamont Corridor and Statewide HST Mainline**



Map based on preferred alignments and station locations in 2005 and 2008* program EIR/Ss.
 * Authority rescinded 2008 Pancho Pass selection to comply with *Atherton* judgment. Board will make new decision after revising Bay Area to Central Valley PEIR. New decision could change depicted alignment connecting Bay Area and Central Valley.

2.2 PROJECT PURPOSE

The purpose of the Altamont Corridor Rail Project is to develop a joint-use regional rail corridor for intercity and commuter passenger rail service between Stockton and San José via the Altamont Pass and the Tri-Valley area, providing connecting links with the California HST System. The transportation improvements under this project are necessary to facilitate regional intercity and local travel and connectivity through the Altamont Pass gateway between the Bay Area and the northern San Joaquin Valley. It would provide important regional links to the California HST System and replace the existing ACE service with new, faster, more frequent intercity and commuter passenger rail service that have more trains per day and extended hours of operation. This is consistent with the key project goals of providing improved travel times and expanded service both to address the regional need for an intercity and commuter passenger rail mobility option in the I-580/I-205 corridor, and to provide a feeder to the California HST System.

2.2.1 IMPROVE REGIONAL TRAVEL AND CONNECTIVITY

Potential exists for the Altamont Corridor to support major improvements in connectivity between the Central Valley and the Bay Area. Improvements in the Altamont Corridor are needed to accommodate trips between the Central Valley/Tri-Valley area and the Bay Area/Silicon Valley, which are anticipated to increase substantially in the future. Existing roadways and transit services will become increasingly congested and unable to accommodate the travel demand between these areas without future improvement within the Altamont Corridor. Improvement in regional intercity and commuter passenger rail service in the Altamont Corridor, combined with potential service extensions from other providers, could greatly increase connectivity and reduce travel time between these two regions. This would include connections between the northern Central Valley; the Tri-Valley communities; and Oakland, OAK, San Francisco, and San José, as shown in Figure 2.1-1. Increased connectivity would benefit all potential users of the regional intercity and commuter passenger rail service in the Altamont Corridor.

Improvement to existing ACE service in the near term would reduce travel time from Stockton to San José, allow for expansion of ACE operations, and encourage a higher level of regional intercity and commuter passenger rail usage that would help reduce congestion on the existing highway network. These improvements would help to satisfy all of the project goals.

2.2.2 SERVE AS REGIONAL COMPLEMENT TO HIGH SPEED NETWORK

The Altamont Corridor will remain a regional intercity and commuter passenger rail service corridor for the purpose of providing connections for passengers from the communities of the Central Valley and Tri-Valley area to and from employment centers in the Bay Area and Silicon Valley. This railroad infrastructure is being planned to be compatible with lightweight electrified HST equipment.

The Altamont Corridor is separate and distinct from the California HST System and will maintain its own independent utility whether or not the California HST System is constructed as planned. Nevertheless, it is important that the Altamont Corridor is able to accommodate operation of HST equipment to provide for the highest level of operational flexibility and the highest level of potential service in the future (Figure 2.1-2).

As stated in the *Statewide HST System Program EIR/EIS*, the purpose of the California HST System is to provide a reliable mode of travel that links the major metropolitan areas of the state and delivers predictable and consistent travel times. An additional objective is to provide an interface with commercial airports, local transit, and the highway network; relieve capacity constraints of the existing transportation system; and meet increases in intercity travel demand in a manner sensitive to and protective of California's unique natural resources.

The *Bay Area to Central Valley HST Program EIR/EIS* identifies the Pacheco Pass route as the preferred route for the California HST System between the Bay Area and the Central Valley for a number of reasons, including the ability to serve San Francisco without requiring a water crossing of San Francisco Bay, and providing operational benefits and the lowest travel times between the Bay Area and southern California. However, it notes that the Pacheco Pass route would not provide faster travel times to the Bay Area for those Central Valley communities located north of Merced. The Altamont Corridor Rail Project has the potential to serve the populous I-580 corridor and reduce traffic along I-

580 and I-205, the Altamont Corridor's main east-west arteries. Accordingly, the Authority has identified improving the Altamont Corridor as a complementary regional corridor to the California HST System.

REGIONAL SERVICES TO SACRAMENTO AND MERCED

The study area for the Altamont Corridor extends from San Jose to Stockton and San Jose to Ripon and Escalon. The project includes provision of regional connections to Sacramento (to the north) and Modesto and beyond (in the south). The area from Merced to Sacramento is covered by the *Merced to Sacramento HST Preliminary Alternatives Analysis*. Although the build alternatives identified and evaluated in this AA Report terminate at Stockton (to the north) or at a connection to the north-south California HST System main line in the San Joaquin Valley in the vicinity of Escalon (if the north-south main line is developed parallel to the Burlington Northern Santa Fe Railroad [BNSF]) or just southeast of Manteca (if the north-south main line is developed parallel to State Route [SR] 99/UP), Altamont Corridor trains would potentially operate through to the Sacramento terminus north of Stockton or to a Merced terminus south of Modesto.

Current planning assumptions consider the possible operation of three distinct "regional" services, two of which would operate along the Altamont Corridor (Figure 2.2-1):

- Altamont Pass San José to Sacramento Service (via Stockton)
- Altamont Pass San José to Merced Service (via Modesto)
- San Joaquin Valley Regional Service (Merced to Sacramento)

Whereas the *Altamont Corridor Rail Project EIR/EIS* will consider the impacts of regional train operations between San José, Sacramento, and Merced, this AA Report is limited to the Altamont Corridor Rail Project "build" line segments between San José, Stockton, and the connection with the California HST System mainline southeast of Manteca or southeast of Escalon (depending on whether the eastern or western route is selected for California HST System service between Merced and Sacramento).

Figure 2.2-1
High Speed Train and Regional Services



2.2.3 IMPROVE ACE TO SERVE AS REGIONAL RAIL PROVIDER

As it presently operates, ACE provides a limited rail option for populations in need of transportation alternatives to drive-alone automobile transport in the I-580 corridor. The existing ACE service operates on a secondary freight line, severe performance limitations including:

- Limited-capacity single track for much of the route.
- Slow average operating speeds.
- Reliance on dispatching by a third party.
- Service limitations.
- A shared passenger and freight railroad right-of-way.

All of these factors combine to severely limit the ridership potential of ACE. Recent ACE rider surveys also underscore the need for expanded regional intercity and commuter passenger rail service in the Altamont Corridor that operates on dedicated rights-of-way and has a more robust schedule, including service outside commute periods.

This project provides opportunities to make incremental to wholesale improvements to ACE service as part of early phases of the Altamont Corridor Rail Project. Options for incremental changes will be identified during the EIR/EIS analysis process to reduce operational conflicts with freight railroads and improve ACE travel time between Stockton and San Jose.

2.2.4 IMPLEMENT SOLUTION CONSISTENT WITH LONG-RANGE REGIONAL RAIL PLANNING

In September 2007, the MTC approved the *Bay Area Regional Rail Plan (2007)* as its vision for the region's rail network for the 2050 horizon. The *Bay Area Regional Rail Plan* recognizes the MTC's Resolution 3434 as the region's base investment in rail over the next 25 years, including it as part of its "base case" network. Resolution 3434 identifies specific bus, rail, and ferry projects as priority for transit expansion, including increased ACE service. The study effort documented in the *Bay Area Regional Rail Plan* focused on defining options for rail improvements and expansions beyond Resolution 3434. Since adoption of the *Bay Area Regional Rail Plan*, the projects included in Resolution 3434 have remained unchanged, while a financial plan to deliver them has been in development.

With respect to HST service, the *Bay Area Regional Rail Plan* recognizes opportunities to operate regional "overlay" services on HST lines. Evaluation of several alternative configurations resulted in selection of a preferred option, placing the California HST System alignment from Bay Area to the Central Valley over the Pacheco Pass to San José and San Francisco, while including a regional rail improvement through the Altamont Corridor.

The *Bay Area Regional Rail Plan* recognized the Altamont Corridor as a key transportation corridor linking the Bay Area and the northern San Joaquin Valley and recommended improvements to the Altamont Corridor in conjunction with the HST system through the Pacheco Pass. Implementation of regional and intercity rail along the Altamont Corridor (as a supplement to HST service through Pacheco Pass) would allow both the HST and the regional rail systems to operate as two-track systems in constrained corridors, would allow HST services from the Central Valley or Southern California to access the East Bay through the regional system, and would potentially provide faster travel times between Sacramento and San José along the regional corridor.

2.3 PROJECT NEED

The need for the Altamont Corridor Rail Project stems from the social and economic ties and travel demand that bind together the northern San Joaquin Valley, the Tri-Valley area, and the South Bay, as well as high levels of existing population and future anticipated growth, travel demand, and congestion that will cause environmental degradation and higher risks to safety if they are not addressed. The detailed project need in relationship to these socioeconomic constraints is described below.

2.3.1 INTERACTION BETWEEN CENTRAL VALLEY AND BAY AREA

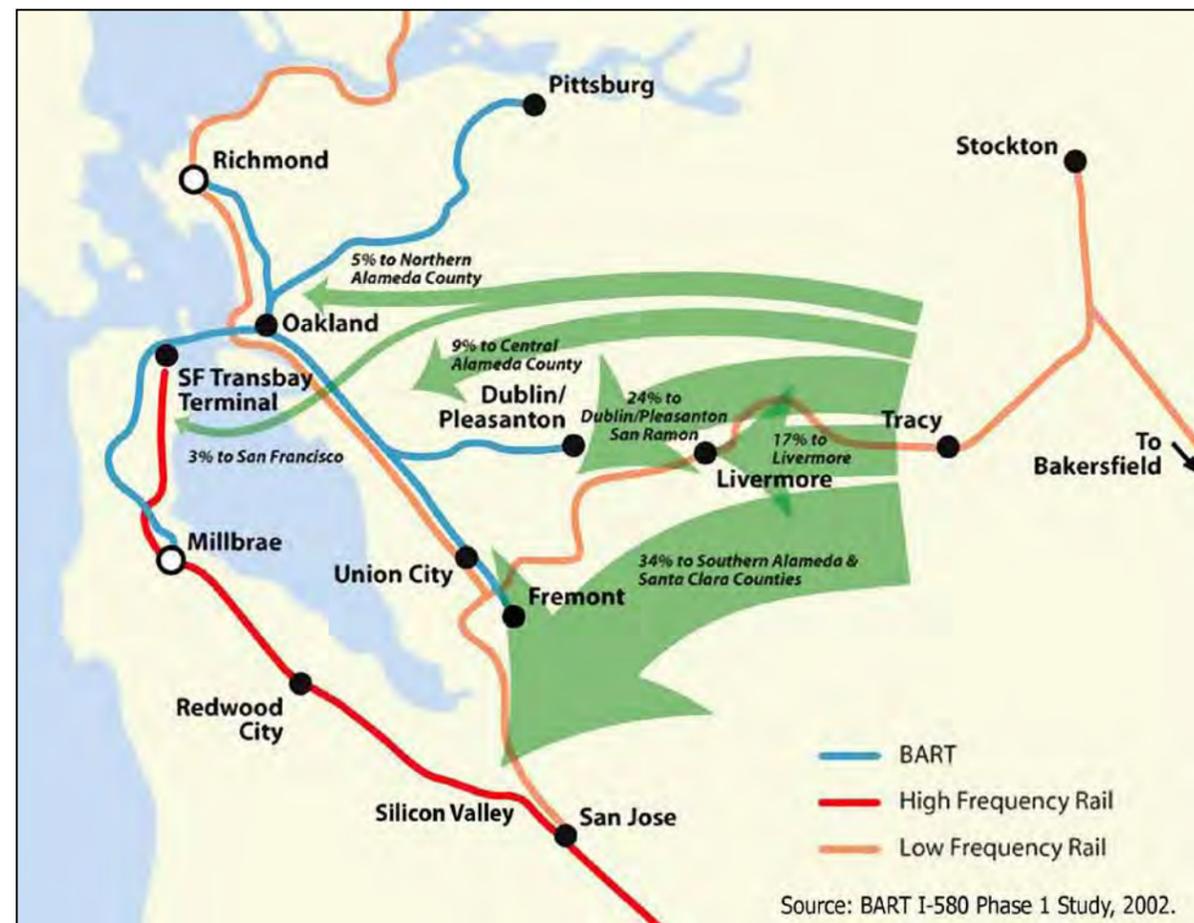
San Francisco, the financial center of northern California, and Silicon Valley, (which includes San José and adjacent communities, the southern part of the San Francisco Peninsula, and the southern part of the East Bay—see Figure

2.3-1), the country's leading high-tech hub, anchor two ends of the Bay Area. This dynamic metropolitan region contains institutions of higher learning; health care facilities; and other institutions of regional, statewide, and national significance. Neighboring regions are attracted to the Bay Area's established and comprehensive array of services and educational, cultural, and social offerings. These services may be more limited or not available in surrounding areas, creating strong travel demand along interregional transportation corridors.

The northern San Joaquin Valley (including Stanislaus and San Joaquin counties) is the most proximate regional neighbor to the major Bay Area population and employment centers. The market for travel between these areas and the Bay Area, in particular between the northern San Joaquin Valley, the Tri-Valley area (including Livermore, Pleasanton, and Dublin), and Silicon Valley, is not only robust but growing rapidly (Figure 2.3-1). Travel growth is spurred by the Central Valley's greater population growth, relatively lower housing prices, and employment deficit relative to the Bay Area. More than one-tenth of employed residents in both San Joaquin and Stanislaus counties travel west to the Bay Area and north to the Sacramento area for work and other activities.

The *Bay Area Regional Rail Plan* notes that the number of San Joaquin Valley residents traveling daily to the Bay Area is projected to more than double by 2030, to more than 60,000. Commute patterns provide some insight into the travel distribution; future projections show that 41 percent of the trips over the Altamont Pass will be bound for destinations in the Tri-Valley area, and 34 percent will be bound for destinations in southern Alameda and Santa Clara counties.

Figure 2.3-1
2020 Trip Distribution: East of Altamont/Bay Area



2.3.2 REGIONAL GROWTH AND DEMOGRAPHICS

Today, approximately 1.2 million residents live in San Joaquin and Stanislaus counties adjacent to the Bay Area, which reached an estimated population of 7.4 million by 2009. The San Joaquin Valley is California's fastest-growing region, and more than 2.5 million new residents are expected by 2030, many of whom will have workplaces far from their homes.

The Census 2000 and estimated 2010 populations of Stanislaus and San Joaquin counties and the cities in the two counties with more than 20,000 residents are provided in Table 2.3-1, along with the corresponding annual growth rates.

Table 2.3-1
San Joaquin and Stanislaus County Population Figures

County or City	Population (to Nearest Thousand)		Average Annual Growth Rate (2000–2008)
	2000 Census	2010 Estimate	
San Joaquin County	564,000	694,000	2.3%
Stockton	244,000	292,000	2.0%
Tracy	57,000	82,000	4.4%
Manteca	49,000	69,000	4.1%
Lodi	57,000	64,000	1.2%
Stanislaus County	447,000	531,000	1.9%
Modesto	189,000	212,000	1.2%
Turlock	56,000	71,000	2.7%
Ceres	35,000	43,000	2.3%
Riverbank	16,000	22,000	3.8%
Patterson	12,000	21,000	7.5%

Source: California Department of Finance, 2010

2.3.3 REGIONAL CONGESTION

According to the *Bay Area Regional Rail Plan*, the annual economic cost of congestion throughout the Bay Area has reached \$2.6 billion and is expected to continue growing. The limited number of highway routes between the Central Valley and the Bay Area, combined with the anticipated increase in future travel demand, results in a bottleneck situation for regional inter-county travelers. Travel between San Joaquin, Stanislaus, and Merced counties and the central Bay Area funnels through the Altamont Pass and Tri-Valley area via I-580. In the Altamont Corridor, peak-period highway congestion follows from the primary commute patterns between moderate-cost housing in the San Joaquin Valley and job centers in the Tri-Valley area and South Bay, but the congestion extends over many hours each day, affecting goods movement, business trips, and social/recreational trips as well.

As documented in the *Bay Area Regional Rail Plan*, a 112% increase in peak-direction travel demand is anticipated between the San Joaquin Valley and the Bay Area between 2000 and 2030. Reverse commuters are anticipated to increase by more than 50% over the same period. Daily traffic volumes across the pass are currently (2008 data) about 140,000 vehicles and approaching 175,000 vehicles in the Tri-Valley area east of I-680. These volumes are projected to increase more than 50% to 210,000 and 290,000, respectively, by 2035. No new general-purpose travel lanes are planned for the main highways that serve this important gateway. Consequently, average weekday daily vehicle hours of delay are anticipated to increase by 267% in Alameda County by 2030.

High-occupancy vehicle (HOV) lanes are planned along I-580 in Alameda County and are under construction along I-205 in San Joaquin County. Once these lanes are implemented, these facilities will be built out and there will be no additional general-purpose through lanes. The presence of high percentages of heavy trucks on both I-580 and I-205 further exacerbates congestion because trucks, especially on grades, utilize much more roadway capacity than autos

and light trucks. In particular, conflict points are created where the paths of trucks and faster-moving auto traffic cross, as occurs at the I-205/I-580 interchange. Because goods movements are projected to increase, and because trucks are the principal carrier in the Altamont Corridor, it is expected that the highway capacity constraint will continue to grow in the future.

Providing high-quality regional intercity and commuter passenger rail service in the Altamont Corridor is desired by northern California travelers. Ridership surveys conducted by ACE in 2009 found that the top reasons for riding ACE are “reduce stress” (80%), “save on auto expenses” (62%), “prefer the ‘train’ experience to commuting by car” (40%), and “wanted an alternative to auto travel” (40%). Each of these reasons relates to a desire to avoid negative aspects of driving. Accordingly, the survey found that 77% of riders had traveled alone by car before riding ACE.

2.3.4 TRAVEL TIME

The existing ACE service is subject to delay caused by freight operations on a route that includes considerable sections of single-track line. In addition, the alignment across the Altamont Pass has numerous tight curves to maintain a flat slope, which is required for heavy freight traffic. Speed restrictions as low as 35 miles per hour (mph) around curves, in combination with grades, result in travel times that are longer than uncongested highway travel times from end to end. As shown in Table 2.3-2, the current ACE scheduled time from Stockton to San José exceeds the congested driving time under typical conditions. (It should be noted that both ACE and highway travel times can fluctuate substantially based on day-to-day conditions.) The current uncongested highway time is lower than the existing ACE service, but most ACE trains operate during periods when the highway is congested.

**Table 2.3-2
Current and Potential Travel Times (Stockton to San José)**

Existing Conditions			Potential Rail Times	
Current ACE	Congested Highway	Uncongested Highway	Improved ACE	Altamont Corridor Rail Project
2:10	2:00+	1:30	1:40	0:55 to 1:15

Source: ACE Rail Passenger Survey 2007, *Bay Area Regional Rail Plan*, and AECOM study for this project

The *Bay Area Regional Rail Plan* identified an improved conventional service for regional rail service in the I-580 corridor, which includes double-tracking the line and straightening some curves to deliver an approximately 48-mph average speed (with stops). The *Bay Area Regional Rail Plan* also identified a new electrified service alternative, which has been studied in the evaluation of the Altamont Corridor Rail Project to have an average speed of 70 to 90-mph (including stops). In the event these improvements are provided, the potential ACE train could cover the same territory in 0:55 to 1:40, which would match or beat any of the times that could be provided by highway travel on a city center-to-city center basis. Substantial commensurate increases in ridership were projected by the *Bay Area Regional Rail Plan*.

2.3.5 SAFETY

The projected growth in passenger and freight travel in the Bay Area over the next 25 years calls for improved travel safety. With rising highway volumes, the potential for accidents increases. In 2004, California experienced a fatality rate of 1.25 per 100 million vehicle miles traveled (VMT). A much lower fatality rate, of 0.08 per 100 million miles, was recorded on passenger railroad operations nationwide in 2005, including both intercity and commuter railroad services. Despite this safety superiority, recent accidents on southern California’s Metrolink commuter rail system have underscored the need for a fully grade-separated system and a state-of-the-art signaling system. Recognizing the growth potential for higher speed rail service, the FRA has begun developing plans for state of the art signaling systems, automatic train control and phasing of grade separations. The Altamont Corridor Rail Project will include improved safety, signaling, and automated train control systems compliant with the new FRA process.

2.3.6 AIR QUALITY AND PROTECTION OF NATURAL RESOURCES

Automobiles account for half of the Bay Area’s greenhouse gas emissions. Automobile trips potentially can be replaced by transit trips, which generate much lower levels of emissions per trip. Although transit carries a robust percentage of commute trips where frequent service to centralized employment centers is provided, this proportion is much smaller in the fringes of the Bay Area. Census estimates show that three-quarters of commuters in the San Joaquin Valley travel to work alone in a private vehicle. Only 3% and 1% of San Joaquin County and Stanislaus County residents who work outside their home county, respectively, take transit to their jobs. The Altamont Corridor Rail Project will increase transit’s attractiveness by allowing for more frequent and faster service, and providing more direct connections to major employment centers. Therefore, the project has the potential to improve and maintain the region’s air quality.

Another critical need is to protect and preserve natural resources by limiting potential impacts related to expanding transportation systems. Key resources include wetlands and waterways, habitat areas for sensitive species of plants and animals, wildlife migration corridors, and agricultural lands. These natural resources have been subject to both direct and indirect impacts as the Bay Area population has increased and the region’s commuting area has expanded deeper into the Central Valley. The Altamont Corridor Rail Project has the potential to help focus growth in more compact transit-oriented development (TOD) around rail stations, which could otherwise occur in a decentralized fashion and encroach on sensitive natural resources.

2.4 IDENTIFICATION OF ALTERNATIVES TO BE CARRIED FORWARD

The aim of this report is to document the evaluation process and to identify alternatives that should be carried forward through the environmental process and engineering design. Significant issues that would qualify an alternative to be carried forward for further consideration are listed below:

- Alternative meets the project goals and objectives and project purpose and need in providing an improved and competitive regional intercity and commuter passenger rail service that maximizes intermodal connections between the Northern San Joaquin Valley and Bay Area and that complements the high speed train system.
- Alternative has no environmental or engineering issues that would make approvals infeasible.
- Alternative is feasible or practical to construct.
- Alternative reduces or avoids adverse environmental impacts.

2.5 DESIGN OBJECTIVES

To determine each alternative’s ability to meet the project purpose and need, the alternatives are evaluated using performance criteria that address design differences and qualities in the alignments and station locations. These objectives and measures are summarized in Table 2.5-1.

**Table 2.5-1
Alignment and Station Performance Objectives and Evaluation Measures**

Design Objectives	Criteria
Maximize ridership/revenue potential	Travel time
	Route length
Maximize connectivity and accessibility	Intermodal connections
Minimize operating and capital costs	Operating costs
	Capital costs

2.6 COMPARISON OF PROJECT ALTERNATIVES

In addition to the project goals and objectives, project purpose and need, and evaluation measures presented in Sections 2.1 to 2.3, five additional measures are used to evaluate and compare the alternatives: land use,

constructability, community impacts, natural resources, and environmental quality. These five additional measures are discussed below.

Land Use: Alternatives and station locations are evaluated to determine whether surrounding land uses support transit use; whether they are consistent with existing adopted local, regional, and state plans; whether they would require temporary construction easements; and whether they are supported by existing or future growth areas (Table 2.6-1).

**Table 2.6-1
Land Use Evaluation Measures**

Land Use		
Measurement	Method	Source
Development potential for TOD within 0.5 mile of station location	Identify existing and proposed land uses within 0.5 mile of station locations. Identify whether there are TOD districts, TOD overlay zones, or mixed-use designations, or whether local jurisdictions have identified station areas for redevelopment or economic development.	Regional and local transportation and planning documents, and AA maps.
Qualitative assessment of consistency	Qualitative—consistency analysis of applicable planning and policy documents.	Local planning documents, existing and future land use maps, and zoning maps.
Need for temporary construction easements	Make a preliminary determination of the locations where temporary construction easements would be required near or within existing transportation rights-of-way. Also identify any specific unique construction methods that would require unique contractor abilities and/or equipment. Identify whether an alternative or segment is constructible using typical standard methods and equipment.	Conceptual design plans and maps, horizontal/vertical alignment, and location of existing transportation rights-of-way.
Identify state highways affected through right-of-way use or crossing	Identify through existing mapping and horizontal/vertical layout of alternatives the number of state highways that would be crossed with structure, have their right-of-way used for the project, or be relocated for each alternative.	Conceptual design plans and maps.

Constructability: Alternatives are evaluated to determine whether construction of the alternative is feasible in terms of complexity of construction and right-of-way constraints (Table 2.6-2).

**Table 2.6-2
Constructability Evaluation Measures**

Constructability		
Measurement	Method	Source
Identify major freight rail and other rail service connections	Identify any conflicts with existing freight rail and potential connections to other rail services such as BART or Amtrak Capitol Corridor. Determine what level of disruption would be required to construct.	Conceptual design plans and maps
Identify major utilities requiring relocations	Identify through existing data and/or field observation the locations of existing major utilities and the potential for conflict with these utilities for each alternative.	GIS layer/field observations.
Potential impact on residential properties from ultimate right-of-way requirements and grade separations	If possible, number of properties by land use type that would be displaced. Otherwise acres of land within the right-of-way/station footprint by type of land use (e.g., retail/commercial, industrial).	Conceptual design plans and maps, GIS, aerial photographs, zoning maps, and land use maps.
Potential impact on business properties from ultimate right-of-way requirements and grade separations	Identify potential locations along the alignments or at station locations where access would be affected.	Conceptual design plans and maps, GIS, aerial photographs, zoning maps, and land use maps.

Community Impacts: Alternatives and station locations are evaluated for their ability to minimize disruption to neighborhoods and communities. They are measured by the extent to which they minimize right-of-way acquisitions, division of established communities, and conflicts with community resources (Table 2.6-3).

**Table 2.6-3
Community Impacts Evaluation Measures**

Community Impacts		
Measurement	Method	Source
Properties with access disrupted	Identify potential locations along the alignments or at station locations where access would be affected.	Conceptual design plans and maps, GIS, and parcel data.
Local traffic effects around stations	Identify roadway links/access roads that would be affected by placement of a station at a particular site. Provide a rating of access road's ability to handle additional traffic, as well as the freeway and/or arterial access available within a 1-mile radius of specific station locations.	Conceptual design plans and maps, roadway maps, and land use maps.
Local traffic effects at grade separations	Identify grade crossings that will and will not be grade-separated as part of the interim and ultimate project configurations. Report the benefits to be realized as a result of grade separation, as well as the potential negative effects of grade crossings to remain in place.	Conceptual design plans and maps.

Natural Resources: Alternatives are evaluated for their ability to minimize impacts on natural resources (Table 2.6-4).

**Table 2.6-4
Natural Resources Evaluation Measures**

Natural Resources		
Measurement	Method	Source
Waterways and wetlands	Identify new crossings; rough estimate of acres of wetlands, linear feet (or miles) of waterways.	GIS (1:4,800) and biologists' aerial photography assessment.
Natural preserves or biologically sensitive habitat	Identify (1) acres of critical habitat; (2) threatened and endangered species habitat—using California Wildlife Habitat Relationships (CWHR); (3) vernal pool complexes; and (4) national and state wildlife preserve/refuge.	GIS (1:4,800); California Natural Diversity Database, U.S. Fish and Wildlife Service, and California Native Plant Society database searches by applicable quad area; and biologists' aerial photography assessment.
Cultural resources	Conduct records search to identify properties/sites listed or eligible for listing on the National Register of Historic Places (NRHP) and any state-qualified listing for entire route. Identify locations of NRHP- or California Historic Resources Information System (CHRIS)—listed properties. For archaeological resources, identify sensitivity due to presence of previously recorded and not previously recorded archaeological sites in the study area.	Record search; research at local registers and inventories; historian field reconnaissance (where accessible); and aerial/parcel map assessment.
Parklands	Identify number and acres of parks that could be directly or indirectly affected, including major trails that would be crossed.	GIS (1:250,000), Google Earth, and planning documents.
Agricultural lands	Identify acres of prime farmland, farmland of statewide importance, unique farmland, and farmland of local importance within preliminary limits of disturbance. Identify acres of Williamson Act lands within preliminary limits of disturbance.	GIS (1:250,000); Farmland Mapping and Monitoring Program or county assessor records; and planning documents.

Environmental Quality: Alternatives are evaluated for their ability to minimize impacts on environmental quality within the study area (Table 2.6-5).

**Table 2.6-5
Environmental Quality Evaluation Measures**

Environmental Quality		
Measurement	Method	Source
Noise and vibration impacts on sensitive receivers	Identify types of land use activities that would be affected by train pass-by noise and would result in ground vibration.	GIS, and review of aerial maps and local planning documents
Change in visual/scenic resources	Identify scenic/visual resources that could be affected by aerial structures and changes in viewscape of scenic areas and shadows on sensitive resources (parks). Identify number of local and scenic roadways that would be affected by project.	GIS, Google Earth, local planning documents, AA maps, and state list of scenic highways and state routes.
Maximize avoidance of areas with geological and soils constraints	Identify number of crossings of known seismic faults, acres of encroachment into fault rupture hazard zones, and acres of encroachment into areas with high landslide susceptibility.	GIS, and soils and geological hazards mapping from planning documents.
Maximize avoidance of areas with potential hazardous materials	Identify land uses (e.g., industrial, agricultural) with potential to have hazardous materials and known hazardous materials using Environmental Data Research (EDR) search.	GIS, EDR search, and local planning documents.

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3.0 PROJECT ALTERNATIVES

The evaluation of alternatives is based on the key differentiators among the alternatives. This section describes the No Project Alternative, initial range of alternatives reviewed, and alternatives carried forward for detailed evaluation in the AA Report.

3.1 NO PROJECT ALTERNATIVE

The No Project Alternative represents the conditions of the Altamont Corridor as it exists today, and as it would exist in the future based on future development projects and improvements to the intercity transportation system that are programmed and funded for construction. The No Project Alternative is the basis for comparison of the Altamont Corridor build alternatives. It satisfies the CEQA and NEPA statutory requirements for an alternative that does not include any new action or project beyond what is already committed. The No Project Alternative represents the state's transportation system (highway, air, and conventional rail) as it currently exists, and as it would exist after implementation of funded programs or projects currently projected in applicable financially constrained regional transportation plans (RTPs) and expected to be in place by 2035. The No Project Alternative addresses the geographic area that serves the major destination markets for intercity travel (which may include the San José to Merced and Merced to Sacramento HST Sections) and that would be served by the Altamont Corridor alternatives. This area extends from San José to the northern San Joaquin Valley through the Altamont Pass.

The No Project Alternative includes programs and projects identified in the following sources:

- *State Transportation Improvement Plan (STIP)* (California Transportation Commission 2010).
- *Transportation 2035 Plan for the San Francisco Bay Area* (Metropolitan Transportation Commission 2009).
- *Valley Transportation Plan 2035* (Santa Clara Valley Transportation Authority 2009).
- *Countywide Transportation Plan 2008* (Alameda County Congestion Management Agency 2008).
- *2011 Regional Transportation Plan* (San Joaquin Council of Governments 2010).
- *2011 Regional Transportation Plan* (Stanislaus Council of Governments 2010).
- *Sacramento Region Metropolitan Transportation Plan for 2035* (Sacramento Area Council of Governments 2008).
- Airport plans (including the *Airport Master Plan: Norman Y. Mineta San José International Airport*).

The No Project Alternative includes highway, aviation, conventional passenger, and transit elements, as discussed below.

3.1.1 HIGHWAY ELEMENT

The No Project Alternative highway system includes the existing roadways that serve the intercity travel market in the area that would be served by the Altamont Corridor alternatives, as identified in Table 3.1-1.

**Table 3.1-1
Existing California Intercity Highway System**

Interstate Highways	State Routes
I-5	SR 84
I-205	SR 99
I-580	SR 120
I-680	SR 237
I-880	

The No Project Alternative includes the existing highway system, and funded and programmed improvements on the intercity highway network based on financially constrained RTPs developed by regional transportation planning agencies. Intercity highway improvements included as part of the No Project Alternative include infrastructure projects, intelligent transportation systems (ITSs), and other potential system improvements programmed to be in

operation by 2035. Improvements consist primarily of individual interchange improvements and roadway widening projects on limited segments of the highway network. As this list is extensive, the reader is directed to the regional transportation plans listed above in Section 3.1 for a detailed description of planned improvements. Despite planned improvements along the I-205, I-580, and I-680 corridors between the northern San Joaquin Valley and Silicon Valley, the various regional transportation plans all predict increasing traffic congestion along the major roadways in the Altamont Corridor.

3.1.2 AVIATION ELEMENT

The existing air transportation system evaluated under the No Project Alternative consists of three airports that provide commercial service in the area proposed to be served by the Altamont Corridor alternatives and two general aviation airports without regular commercial service. The airports do not provide commercial service between the same intercity markets that would be served by the Altamont Corridor Rail Project. The primary commercial airport serving the Altamont Corridor is Norman Y. Mineta San José International Airport (SJC). Stockton Metropolitan Airport (SCK) and Modesto City-County Airport (MOD) have limited commercial service. Livermore Municipal Airport (LVK) and Tracy Municipal Airport (TCY) are both general aviation airports in the study area but do not have regular commercial service.

Flight operations at SJC currently consist of an average of 259 commercial flights per day and 27,000 passengers daily. Commercial service routes to and from southern California include Los Angeles, Orange County, Burbank, Ontario, Long Beach, and San Diego. Service to Sacramento is also provided. The *Airport Master Plan for the San Jose International Airport* consists of a program of facility improvements designed to fully accommodate commercial aviation demand (passengers and cargo) projected for 2027. Although some of the improvements are already in place, some are under construction, and a few that are currently unfunded may be implemented in the future. Two new runways (each 11,000 feet in length) have been constructed. Other key elements of this plan include up to 49 air carrier gates provided through construction of new and remodeled terminal buildings. Projected annual demand could grow from 10.7 million passengers in 2005 to 17.6 million passengers and 184,000 aircraft operations in 2027 (Norman Y. Mineta San José International Airport 2010).

Occupying 1,449 acres, SCK is the largest publicly owned airport in San Joaquin County. Facilities include two parallel runways, high-speed taxiways, aircraft parking and storage facilities, a passenger terminal, automobile parking, and commercial and industrial areas. Limited commercial passenger service is available; at present commercial service is only available to Las Vegas (San Joaquin County 2010).

MOD is located east of SR 99 and south of SR 132 near the Tuolumne River in Modesto. MOD's primary activity is general aviation, and it is home base for approximately 175 general aviation aircraft, including corporate jets, twin- and single-engine aircraft, helicopters, and ultra-lights. The airport carries up to 10 commercial flights a day connecting to San Francisco International Airport (SFO) (Stanislaus Council of Governments 2010).

LVK is a general aviation airport with two parallel runways serving private, business, and corporate tenants. The airport is located approximately 3 miles northwest of Livermore on 644 acres. The airport is the base location for approximately 600 aircraft (City of Livermore 2010).

TCY is a general aviation airport located in southern Tracy and has 166 acres used for aircraft parking, taxiways, and runway space serving private, business, and corporate tenants. TCY has two active runways and other services, including hangar rentals, tiedowns, and aviation and jet fuel sales. Future development includes construction of 42 new hangers in the South Hangar Area (City of Tracy 2010).

3.1.3 CONVENTIONAL PASSENGER RAIL ELEMENT

Existing regional intercity and commuter passenger rail service in California is provided by Amtrak on four principal corridors covering more than 1,300 linear miles and spanning most of the state. Two of Amtrak's existing passenger routes run in the vicinity of the Altamont Corridor study area: San Joaquin and Capitol Corridor.

The Amtrak San Joaquin route travels on BNSF-owned tracks north and south through the San Joaquin Valley, passing through the eastern end of the study area with stops in Stockton. North of Stockton, the primary westerly branch provides service to Oakland, and a secondary northerly branch terminates in Sacramento. Heading south, the

route stops in Modesto and terminates in Bakersfield. The San Joaquin route stops at the existing downtown Stockton ACE Station located in the study area. The San Joaquin route includes four trips daily in each direction between Oakland and Bakersfield (stopping at the BNSF station south of downtown Stockton) and two trips daily in each direction from Sacramento to Bakersfield (stopping at the Downtown Stockton (Cabral) Station), for a total of six daily round trips serving Stockton. The intercity route carried more than 819,000 riders in 2007, with an on-time performance of 67.9%. The scheduled running time between Bakersfield and Oakland averages 6 hours, 9 minutes, at an average speed of 51.3 mph. The maximum speed on the route is 79 mph (California Department of Transportation 2008).

The Amtrak Capitol Corridor route travels on UP-owned tracks and provides service between Auburn and the Bay Area, stopping in Sacramento and multiple points in the East Bay and South Bay before terminating in San José. The Capitol Corridor route includes seven weekday round trips between Oakland and San José, 16 weekday round trips between Sacramento and Oakland, and one daily round trip between Auburn and Sacramento. The scheduled running time between Sacramento and Oakland averages 1 hour, 48 minutes, at an average speed of 50 mph. The scheduled running time between Oakland and San José averages 1 hour, 3 minutes, at an average speed of 43 mph (California Department of Transportation 2008). Amtrak is proposing to add four additional Capitol Corridor round trips to the San José Diridon Station, which is envisioned to begin around 2015.

The San Mateo County Transportation Authority is pursuing the Dumbarton Rail Corridor Project, including a South Bay crossing utilizing the Dumbarton Rail Bridge between Redwood City and Union City. The service would connect Caltrain, ACE, Amtrak Capitol Corridor, and BART service. It also would connect with East Bay bus systems and would include purchase of the UP Oakland Subdivision to provide access to a new intermodal station in Union City. This project is partly funded and is included in the Metropolitan Transportation Commission's current Regional Transportation Plan.

Commuter rail services in the Altamont Corridor are provided by ACE, which runs on UP tracks. Currently, six ACE trains per day provide service connecting cities in the Central Valley and Tri-Valley area with San José. ACE runs four commuter trains in the morning and four in the evening, stopping at Stockton, Lathrop/Manteca, Tracy, Vasco Road (Livermore), Livermore (Downtown), Pleasanton, Fremont, Great America (Santa Clara), and San José. Scheduled travel time between Stockton and San José is 2 hours, 8 minutes, in the morning and 2 hours, 10 minutes, in the evening. With only four trains in each direction per day and an average speed of approximately 37 mph, the existing ACE service provides the best service possible because of the limitations of shared track with UP freight operations.

Caltrain regional rail service runs from San Francisco to Gilroy, through San Mateo and Santa Clara counties. Caltrain trains stop at 32 stations in 19 cities between San Francisco and Gilroy in San Francisco, San Mateo, and Santa Clara counties. Caltrain operates 96 trains on weekdays between San Francisco and San José. Of the 96 trains, 22 are "Baby Bullet" express trains serving 12 stations. Scheduled weekday trains run on 30-minute headways at major stations and 1-hour headways at minor stations (Caltrain 2010).

Regional intercity and commuter passenger rail system improvements identified in the STIP and the California Department of Transportation's (Caltrans') *California State Rail Plan 2007/2008–2017/2018* for implementation before 2020 are included in the No Project Alternative and identified in Table 3.1-2. To increase levels of passenger service, the improvements consist of additional track capacity, new rolling stock, grade-crossing improvements, track and signal improvements, and expanded or upgraded passenger stations.

**Table 3.1-2
Programmed Improvements in 2008 California State Rail Plan**

Project Title	Route	Lead Agency	Project Description
Union City Intermodal BART	Amtrak Capitol Corridor	BART	Union City Intermodal BART, Phase 2—Station improvements in anticipation of future expansions and to establish a pedestrian connection with the City's TOD development.
San José 4th Track	Amtrak Capitol Corridor	Caltrans	Allows increased capacity.
Stockton ACE Station	Amtrak San Joaquin	Caltrans	Renovate former SP station for use by ACE and Amtrak San Joaquin route trains, upgrade platforms and station tracks.
Stockton BNSF Station	Amtrak San Joaquin	Caltrans	Design, environmental documentation for new station, purchase right-of-way, and construct new station.
Stockton Northwest Quadrant Track Connections	Amtrak San Joaquin	Caltrans	Construction of track connection—would connect services at Stockton.

Source: California Department of Transportation 2008.

3.1.4 TRANSIT ELEMENT

Transit in the Altamont Corridor is provided by regional transit providers in Santa Clara, Alameda, and San Joaquin counties. Connections between rail and other transit services are made at the regional transit hub at the San José Diridon Station and at other stations located in various parts of the study area, as described below.

TRANSIT SERVICES

VTA provides bus and light rail services in Santa Clara County and provides service in San José, Santa Clara, and Milpitas in the study area. Major connection points to VTA service in the study area are at the San José Diridon, Santa Clara, Great America, and Great Mall stations. VTA is also currently studying the feasibility of constructing a people-mover line that would provide a rail connection from SJC to the Caltrain and future BART stations at the Santa Clara Transit Center and the VTA light rail station on North First Street.

BART operates in the East Bay, traversing the western portion of the study area with stations in Union City, Fremont, and Dublin/Pleasanton within the study area. BART routes connect the study area with cities in Alameda and Contra Costa counties, as well as with San Francisco and SFO through a tunnel under San Francisco Bay. BART is planning to extend service from Dublin/Pleasanton east to Livermore, which could provide an interface between BART and regional rail service in Livermore. BART's Warm Springs Extension Project proposes to add 5.4 miles of new track from the existing Fremont BART Station south to a new station in the Warm Springs district of Fremont. BART has begun construction of the eBART project, which would connect eastern communities in Contra Costa County with its current Pittsburg/Bay Point Station and then points south and west on BART's existing system. Under the BART to Silicon Valley project, the BART line in the South Bay would extend the system for an additional 16 miles to San José, Milpitas, and Santa Clara. The extension will travel along the existing UP alignment south of the future Warm Springs Station in Fremont and end at the Santa Clara Transit Center via downtown San José. Construction of the first phase of this project is expected to commence in 2012.

Alameda-Contra Costa Transit (AC Transit) provides bus service in western Alameda County and serves Union City and Fremont in the study area. Major connection points to this service in the study area are at the Union City Intermodal Station, Fremont ACE Station, and Fremont BART Station.

The Livermore Amador Valley Transportation Authority (LAVTA/Wheels) provides bus service to Pleasanton, Livermore, and Dublin. Major connection points to this service in the study area are at the Livermore Transit Centre and the Dublin/Pleasanton BART Station. County Connection provides connecting bus service to Contra Costa County

from the Tri-Valley, and Tri-Delta Transit provides connecting bus service to eastern Contra Costa County from the Tri-Valley.

The San Joaquin Regional Transit District (RTD) provides bus service in San Joaquin County and connections outside San Joaquin County. The San Joaquin RTD provides service to the Stockton metropolitan area as well as Lodi, Escalon, Tracy, Manteca, Ripon, Lathrop, Sacramento, Thornton, Woodbridge, French Camp, Morada, and Linden. The San Joaquin RTD also operates commuter bus service connecting San Joaquin County to Sacramento, the Bay Area, and BART. Major connection points to this service within the study area are at the Stockton ACE Station and the Stockton Downtown Transit Center.

The Sacramento Regional Transit District (RT) operates approximately 91 bus routes and 37.5 miles of light rail covering a 418-square-mile service area. The light rail line links both the eastern and northeastern suburbs of Sacramento with downtown and south Sacramento. Sacramento RT's Gold Line, also called the Amtrak/Folsom Corridor, connects light rail with Amtrak intercity and Capitol Corridor rail service as well as local commuter buses.

Modesto Area Express (MAX) provides bus service in Modesto and surrounding areas. MAX also provides an express bus service three times a day to the Lathrop-Manteca ACE Station.

TRANSIT STATIONS

The San José Diridon Station is the South Bay hub for rail and bus service. It is a stop for every Caltrain train, local and express, providing connections north to San Francisco and south to Morgan Hill and Gilroy. It is the southern terminal for ACE trains from Stockton. It is also the terminal for seven round trips of Amtrak Capitol Corridor trains that serve the East Bay and I-80 corridor as far as Sacramento and Auburn. The VTA light rail system's Mountain View–Winchester line and 10 VTA bus lines serve the station. Other connecting bus services include lines to Santa Cruz, Monterey/Salinas, and Amtrak San Joaquin buses connecting to ACE stations, Amtrak San Joaquin trains in the Central Valley, and Pacific Surfliner trains in San Luis Obispo.

Other Santa Clara County transit stations within the study area include: (1) the Santa Clara Transit Center, which provides connections between Caltrain and VTA bus service; (2) the Great America Station, which provides connections among ACE, Amtrak Capitol Corridor, and VTA light rail and bus service; and (3) the Great Mall/Main Transit Center, which provides connections between VTA light rail and bus service.

Transit stations in the Fremont/Union City area within the study area include the following: (1) the Union City Intermodal Station, which provides connections among BART, AC Transit, VTA/Dumbarton Express, and Union City Transit (as noted above, there are proposals to route Amtrak Capitol Corridor and Dumbarton Rail service to this station in the future); (2) the Fremont-Centerville Station, which provides connections among ACE, Amtrak Capitol Corridor, and AC Transit; and (3) the Fremont BART Station, which provides connections among BART, AC Transit, and VTA.

Transit stations in the Tri-Valley area within the study area include: (1) the Livermore Transit Centre, which provides connections among ACE, LAVTA/Wheels, Amtrak connector buses, and Greyhound bus service; (2) the Dublin/Pleasanton BART Station, which provides connections among BART, LAVTA/Wheels, County Connection (CCCTA), San Joaquin RTD, and Tri-Delta Transit; (3) the Vasco ACE Station, which provides connections between ACE and private Lawrence Livermore National Laboratory shuttles; and (4) the Pleasanton ACE Station, which provides connections among ACE, LAVTA/Wheels, and CCCTA.

Transit stations in San Joaquin County within the study area south of Stockton include: (1) the Tracy ACE Station, which provides connections only to ACE; (2) the Tracy Transit Station, which provides connections to the San Joaquin RTD and the City of Tracy's Tracer bus service; and (3) the Lathrop-Manteca ACE Station, which provides connections between ACE and MAX.

The Downtown Stockton (Cabral) is the northern ACE terminal and provides connection to local public transportation service provided by the San Joaquin RTD and Amtrak.

3.1.5 RELATED STUDIES

Over the last decade, future passenger service in the Altamont Corridor in San Joaquin, Alameda, and Santa Clara counties has been analyzed in various reports and studies conducted by numerous local organizations and transportation service providers. Since the mid-1990s, studies of the Altamont Corridor have been undertaken by planning organizations (e.g., congestion management and transportation agencies, associations, and councils of governments), transportation service providers and planners (e.g., BART, Caltrain, SJRRC), and research institutions. These studies focused on a range of issues fundamental to transportation in the corridor, including funding, travel demand, congestion, safety, management of existing service and proposed new service, and the overall long-range vision for transportation in the region. A few of the key studies that were previously conducted are listed below. A detailed description of all previous studies and reports is included as Appendix A.

- **Metropolitan Transportation Commission, *Bay Area Regional Rail Plan (2007)*:** This report presents a long-range vision for improving and expanding the Bay Area's passenger rail system to serve future travel demand.
- **San Joaquin Council of Governments, *2011 Regional Transportation Plan*:** This plan presents goals, policies, objectives, and performance indicators for San Joaquin County's future transportation system.
- **Stanislaus Council of Governments, *2011 Stanislaus County Regional Transportation Plan*:** All major transportation projects to be undertaken within the region through 2030 are identified.
- **Alameda County Congestion Management Agency and San Francisco Bay Area Rapid Transit District, *I-580/BART to Livermore Study Final Report (2002)*:** This study evaluates a variety of alternatives for improving transit services in the I-580 corridor between Pleasanton and Livermore.
- **California High Speed Rail Authority and Federal Railroad Administration, *Bay Area to Central Valley HST Program EIR/EIS (2008/2010)*:** These reports consider, describe, and summarize the environmental impacts—at a program level of analysis—of the proposed California HST System within the broad corridor between and including the Altamont Pass and Pacheco Pass.
- **San Joaquin Regional Rail Commission, *ACE Service Expansion Study, Corridor Analysis Study (2007)*:** The expansion study examines the prospects, possibilities, and potential benefits of expanding the existing ACE system from Merced through Stockton to Sacramento. The corridor analysis study examines opportunities for improvement of ACE's existing corridor from Stockton to San José and the development of three action plans: a short-term action plan, with a 6-year horizon; a long-term action plan, with a 10-year horizon; and a connections action plan.

3.2 INITIAL DEVELOPMENT OF PROJECT ALTERNATIVES

In the *Bay Area to Central Valley HST Program EIR/EIS* (2008 and 2010), the Authority indicated it would pursue a regional joint-use rail project in the Altamont Corridor as an independent project to meet a purpose and need separate from the California HST System, to provide both HST-compatible infrastructure and connections to the California HST System.

The Working Group, which represents numerous regional stakeholders interested in advancing the corridor, has worked with the Authority to initiate project development activities, including the identification of project goals and objectives and key elements.

Goals and objectives affirmed by the Working Group include the following:

- Develop a regional intercity and commuter passenger rail service in the Altamont Corridor linking the northern San Joaquin Valley with the Bay Area that provides dedicated trackage separate from existing lines shared with Class 1 freight operations where feasible.
- Transform the ACE corridor into a "world-class" intra-regional service with frequent trains operating in both directions all day long.
- Provide connectivity and accessibility to Oakland and OAK from the northern San Joaquin Valley.
- The tracks will be fully separated from the UP and developed outside the UP right-of-way where feasible.

- Connect to all regional intercity and commuter passenger rail lines crossing the Altamont Corridor and maximize intermodal connections.
- Offer a travel alternative that is competitive with the travel time and costs of auto, intercity bus, and regional air modes.
- Offer a travel alternative that avoids or minimizes new impacts on the environment by using multi-purpose infrastructure.
- Develop passenger train station locations that serve existing and planned population and employment centers in the South Bay, East Bay, Tri-Valley, and the northern San Joaquin Valley for consideration by host communities.

The Working Group affirmed the following key elements of the Altamont Corridor Rail Project:

- Branch east of Tracy connecting to the high-speed system Central Valley main line to allow operation of trains to both Stockton, as well as Modesto and points beyond (from Merced to Sacramento).
- Intermodal connection to a future extension of the Dublin/Pleasanton BART line in the Tri-Valley area.
- Intermodal connection to BART in the Fremont/Union City vicinity.
- Accommodate a future connection to the Dumbarton rail service in the Fremont/Union City vicinity.

These key elements were incorporated into the project definition. Project scoping was completed in late 2009, and numerous alternatives were suggested. Alternatives suggested in scoping were considered in the IDA, which was completed in May 2010. Additional alternatives were developed subsequent to the IDA when constructability or operational concerns were raised during the preliminary analysis of alternatives.

The following section describes the alternatives suggested in scoping, initial alignments identified in the IDA, and alternatives analyzed in this preliminary analysis.

3.3 ALTERNATIVES DESCRIPTION

To facilitate the analysis of potential alignment and station alternatives across the 85-mile¹ Altamont Corridor project route, the overall route was divided into eight areas. The approximate geographic limits for each area were chosen at points where the alignment alternatives for each area meet, such that alignment alternatives may be “mixed and matched” with those from each adjacent area. The variance in each area’s approximate distances reflects the range in distance of the different alignment alternatives. The eight areas, from south (west) to north (east), are described below and shown in Figure 3.3-1.

SAN JOSÉ TO FREMONT (AREA 1.1)

This study area extends approximately 13–19 miles from the existing San José Diridon Station (currently served by Caltrain, Amtrak, and local transit service, as well as a future planned HST station) northeasterly to the Centerville district or Warm Springs district of Fremont. Potential alignments in this area cross through residential, commercial, and industrial areas, as well as undeveloped areas along existing transportation corridors. The primary environmental concerns for alignments through urban areas concern community disruption. However, several alternatives would cross the Don Edwards San Francisco Bay National Wildlife Refuge and therefore would also have associated biological resource impacts.

FREMONT TO I-680/SR 84 (AREA 1.2)

This study area extends approximately 8–11 miles from either the Centerville area or the planned Warm Springs BART Station to the vicinity of the I-680/ SR 84 interchange. Potential alignments in this area cross through residential, commercial, and industrial areas along existing and new transportation corridors in Fremont and then transition to undeveloped ranch and park lands east of Fremont.

UNION CITY TO I-680/SR 84 (AREA 1.3)

This study area extends approximately 9 miles from the existing Union City BART Station to the vicinity of the I-680/SR 84 interchange. Potential alignments in this area cross through residential and industrial areas along existing transportation corridors in Union City and Fremont and then transition to undeveloped ranch and park lands east of Fremont. Potential development of this area would result in service ending at Union City rather than proceeding on to San José due to the location of Union City well north of more direct routes to San José.

TRI-VALLEY (AREA 2)

This study area extends approximately 13–21 miles from the vicinity of the I-680/SR 84 interchange to Greenville Road in the eastern part of Livermore. Various alignments have been identified, including alignments that follow freeways, alignments that traverse downtown Pleasanton and Livermore, and alignments that are south of Pleasanton and Livermore. There are notable tradeoffs among alignments with more urban surrounding land uses (and attendant community disruption impacts) and those with more rural surrounding land uses (and attendant biological resource, park, and farmland impacts).

ALTAMONT PASS (AREA 3)

This study area extends approximately 12–14 miles from Greenville Road in east Livermore across the Altamont Pass to the vicinity of I-580 near the California Aqueduct west of Tracy. Potential alignments cross through open space land used for grazing and wind power and an area proposed for habitat mitigation. The primary environmental concern in this area is in regard to biological resources.

TRACY (AREA 4.1)

This study area extends approximately 9–11 miles from unincorporated lands in the vicinity of I-580 west of Tracy across the city to unincorporated lands east of Tracy near the San Joaquin River. Potential alignments cross adjacent to residential, commercial, and industrial areas in Tracy along existing transportation corridors. Potential alignments also cross prime farmland east of Tracy.

SAN JOAQUIN RIVER TO STOCKTON (AREA 4.2)

This study area extends approximately 14–15 miles from the San Joaquin River to downtown Stockton. Potential alignments cross adjacent to residential, commercial, and industrial areas in Lathrop, Manteca, and Stockton along existing transportation corridors.

SAN JOAQUIN RIVER TO RIPON/ESCALON VICINITY (AREA 4.3)

This study area extends approximately 10–22 miles from the San Joaquin River to south or east of Manteca. Potential alignments cross adjacent to residential, commercial, and industrial areas in Manteca along existing transportation corridors. In the event that Merced to Sacramento HST service is provided parallel to the BNSF, this area includes extension to the vicinity of Escalon (adjacent to SR 120), which would cross farmlands east of Manteca.

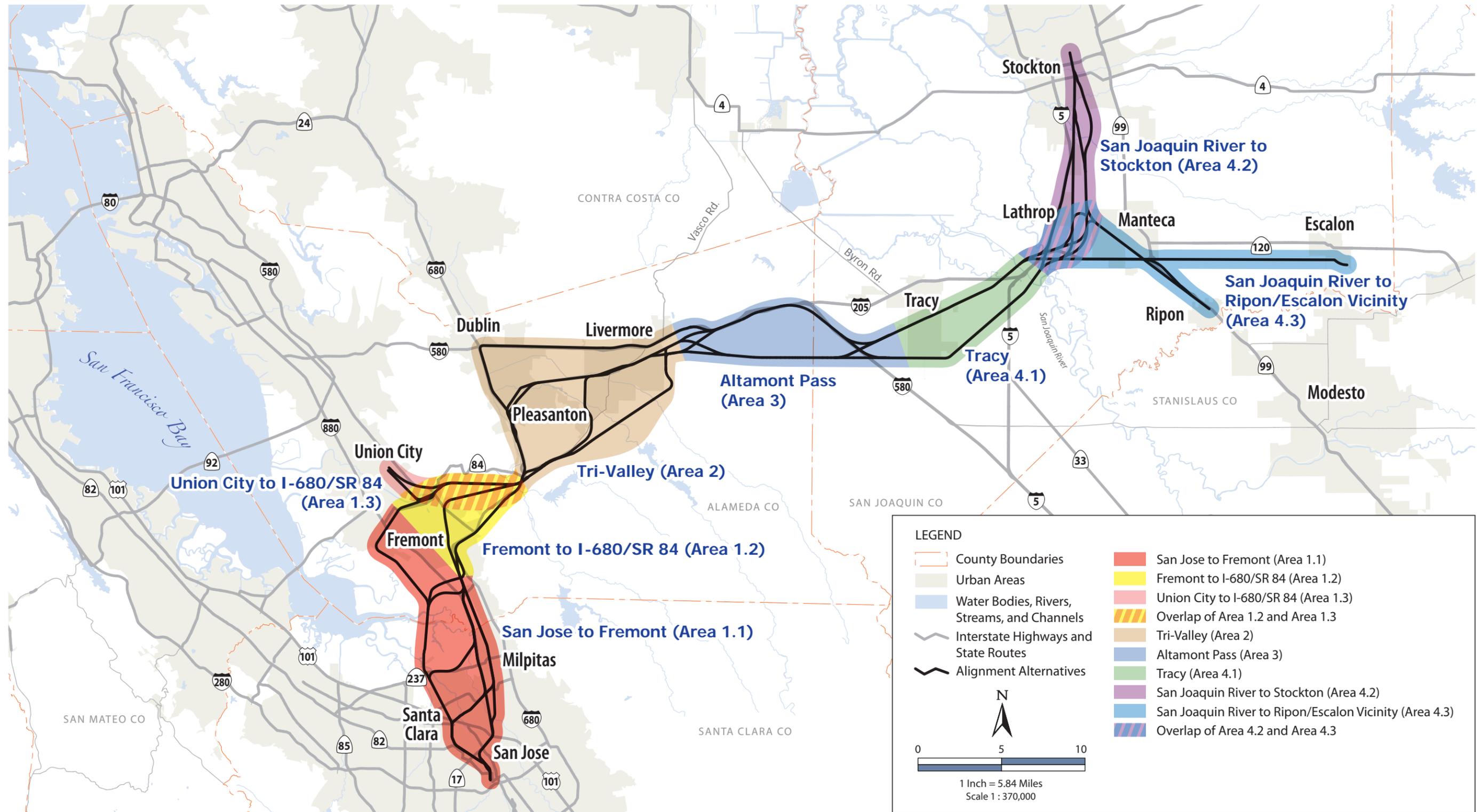
The description of the alternatives considered for each of the areas that follow are listed in geographic order, starting in San José, running through the Tri-Valley area and Altamont Pass, and ending in either Stockton or Modesto.

The alignment alternatives were formed using a chain of segments within each area; each segment was considered as a specific “option” to facilitate the overall identification of alternatives using the “mix and match” method, which were then carried into the analysis completed for this report. The chain of segments used to form the alignments are summarized in Table B-1 and illustrated in Figure B-1, which are included in Appendix B.

Additionally, detailed conceptual engineering maps of each alignment alternative are provided in Appendix C.

¹ The existing ACE route between Stockton and San José is 86 miles long; the Altamont Corridor includes a branch southeast of Manteca to connect to Modesto, which adds 2 to 12 miles, depending on the location of the selected alignment for the Merced to Sacramento HST Section.

Figure 3.3-1
Alignment Areas Identified in the Project Description



3.3.1 VERTICAL DESIGN OPTIONS AND STATION CONCEPTS

Each alignment alternative would have varying profiles relative to grade, including at-grade, subway, open cut, and aerial components, which are described below and illustrated in Figure 3.3-2 through Figure 3.3-4. It is important to note that the transitions between these various vertical options (from at-grade profile to an elevated profile, for example) may require the use of short sections of retained cut and retained fill to complete the transition. These transition areas will be better defined in the *Altamont Corridor Rail Project EIR/EIS*.

- **Aerial:** A raised, continuous embankment or a concrete “viaduct” structure supported by columns. Typically, an embankment is constructed as a “retained fill” with vertical sides of precast concrete panels or as a non-retained conventional fill with sloped sides. The embankment is usually appropriate for structures up to about 10 feet above grade, above which the concrete viaduct is more typical.
- **At grade:** A trackway at or near the level of the surrounding ground surface, but may be minimally elevated or depressed (similar to retained fill or open trench) to accommodate variations in topography. At-grade trackways are typically elevated minimally for purposes of drainage.
- **Cut:** A depressed, open trench with vertical sides, deep enough for a cross street to pass over the tracks without raising the elevation of the street. Typically, the trench is constructed with vertical sides of “retained” precast concrete panels or cast-in-place concrete walls or with sloped earthen sides where right-of-way width allows. The trench also may be bridged or wholly or partially covered where surface access across the trackway is required.
- **Subway:** A tunnel, either constructed by “cut and cover” (similar to the covered trench), or boring or blasting through earth or rock. Typically, cut and cover is applied to shallow, shorter sections of tunnel where it is more cost-effective than boring and blasting. Boring and blasting is generally required for longer, deeper tunnels.

As the project design process progresses and as site constraints and opportunities are defined more specifically, the proposed vertical options of any of the proposed alignment alternatives may subsequently be revised to account for any variations in vertical design.

In accordance with the purpose and need for the Altamont Corridor Rail Project, the station concepts are primarily based upon planning requirements provided by the SJRRC, which intends to operate a northern California intercity service along the route with a secondary consideration for accommodating California HST System trains, which may also operate on portions of the corridor. Key features of the regional stations along the Altamont Corridor include:

- Stations will be placed “in line” along the two-track alignment (e.g., there will not be provisions for “express tracks” or “station by-pass tracks” in station areas because it is intended that all trains will make all stops).
- A prototypical station will either consist of a single center platform located between the two regional tracks with loading from the center both sides for the two directions of travel, or will be developed as dual side platforms placed outside the regional tracks. The choice of center vs. side platforms will be made based upon site-specific issues.
- The length of a station platform will be 1,000 feet, but the regional tracks will be tangent (not curved) for a minimum of 200 feet beyond the loading area.
- Platform widths will be sized to accommodate long-term projected passenger loadings; in anticipation that center platforms may be as wide as 32 feet or that side platforms may be as wide as 20 feet, for planning purposes, an overall width of 75 feet (minimum) will be assumed.
- Platform access will be fully grade-separated from active tracks, which can be provided by access from a ground-level plaza for elevated or depressed stations or by a bridge or underpass for at-grade stations.

Where Altamont services “interline” (i.e., share trackage) with the California HST System main line between Merced and Sacramento, the regional service stations will need to conform to the California HST System planning criteria with respect to those elements that affect HST through service. (These criteria pertain to the Altamont stops in Lathrop and Manteca.) Although the regional platforms on the portions of line that would be shared in the San Joaquin Valley with HST do not necessarily need to be longer than 1,000 feet, they will need to provide station tracks extending 3,000 feet from the center of platform, thus resulting in placement of the regional platforms along a 3,000-foot four-track section. Also, the preferred configuration is to have outside platforms with the four-track section in between. A typical station platform concept is shown in Figure 3.3-5. Detailed station layouts are provided in Appendix D.

For the purposes of the preliminary AA, stations are represented by a “box” based on the prototypical station platform dimensions. Other areas associated with stations, such as waiting rooms, access roadways, parking lots (or garages), and potential TOD, are not shown.

3.3.2 PHASING OPTIONS

As noted in Section 2.1.5, it is anticipated that rail improvements in the Altamont Corridor Rail Project will be phased. While the alternatives below describe options to extend service from Stockton and Modesto all the way to San José, it is probable that the project would be built in phases to leverage available funding over time while achieving interim service improvements. There are myriad ways in which phased improvements could be made to upgrade service.

Some phasing concepts that have been mentioned in scoping and considered during the AA process include the following:

- **Stockton to Livermore:** Provision of a new right-of-way separate from existing UP freight operations from the east to Livermore, particularly with a more direct route through the Altamont Pass, would improve service times from Stockton into the Bay Area. From Livermore, ACE service would continue west along its existing route. This could be a possible first phase of the project.
- **Livermore to Fremont:** Provision of a new right-of-way from Livermore to the Fremont area would bypass the existing section through Niles Canyon, resulting in improved service times. From the Fremont area, connections could either be made at BART or continued ACE service to San José south along its existing route. Improvements from Livermore to Fremont could be a possible second phase of the project.
- **Livermore to Union City:** Provision of a new right-of-way and improved routing from Livermore to Union City would be an alternative approach (rather than a true phasing option) to servicing San José and Silicon Valley, by connecting to existing BART and Amtrak Capitol Corridor service, and future Dumbarton rail service. If a Union City terminus were selected, then this could be an alternative second phase of the project (after improvements from Stockton to Livermore)
- **Fremont to San José:** Provision of a new right-of-way and improved routing from Fremont to San José could be a possible third phase of the project and would result in improved service times by bypassing slow existing transit in the Fremont Centerville area and providing a more direct route.
- **Modesto to Lathrop/Manteca:** Bay Area to Modesto commuter rail service is not currently provided. Connections from Modesto to Lathrop-Manteca would be implemented by the Merced to Sacramento HST service and would likely be a separate phase from other potential Altamont phases.

These phasing options are only conceptual in nature at this time, and there are other options for phasing than the broad phases described above. As the project design is advanced, phasing concepts and options will be developed in greater detail. Depending on funding and independent utility of phasing improvements, the project could also ultimately reach its completion after implementing one or more phases without necessarily completing an entirely new route from Stockton and Modesto all the way to San José. For example, the project could, in concept, only be implemented between Stockton and Livermore, or Stockton and Union City, or Stockton to Fremont.

Phasing options could also include incremental improvements to ACE. Options for incremental improvements will be identified during the EIR/EIS analysis process to reduce operational conflicts with freight railroads and improve ACE travel time between Stockton and San Jose. One example of an incremental improvement would be an independent and more direct right of way over the Altamont Pass that could shorten service time between Tracy and Livermore.

3.3.3 UNION PACIFIC RIGHTS-OF-WAY

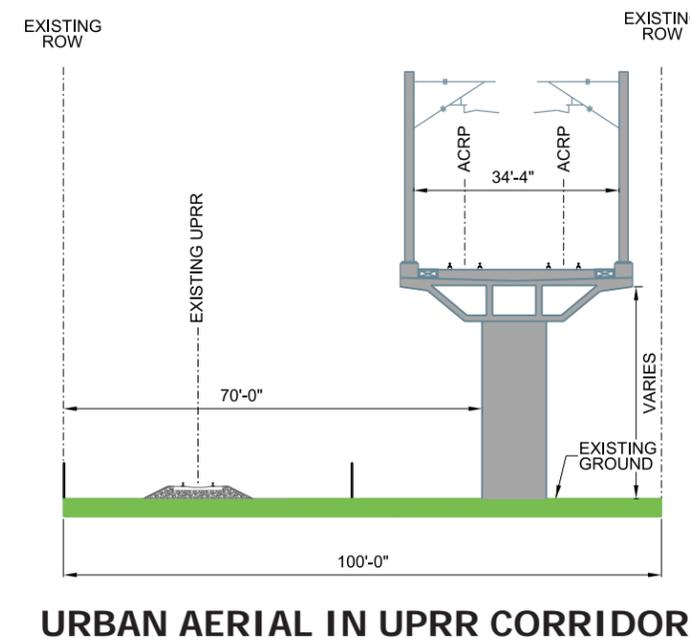
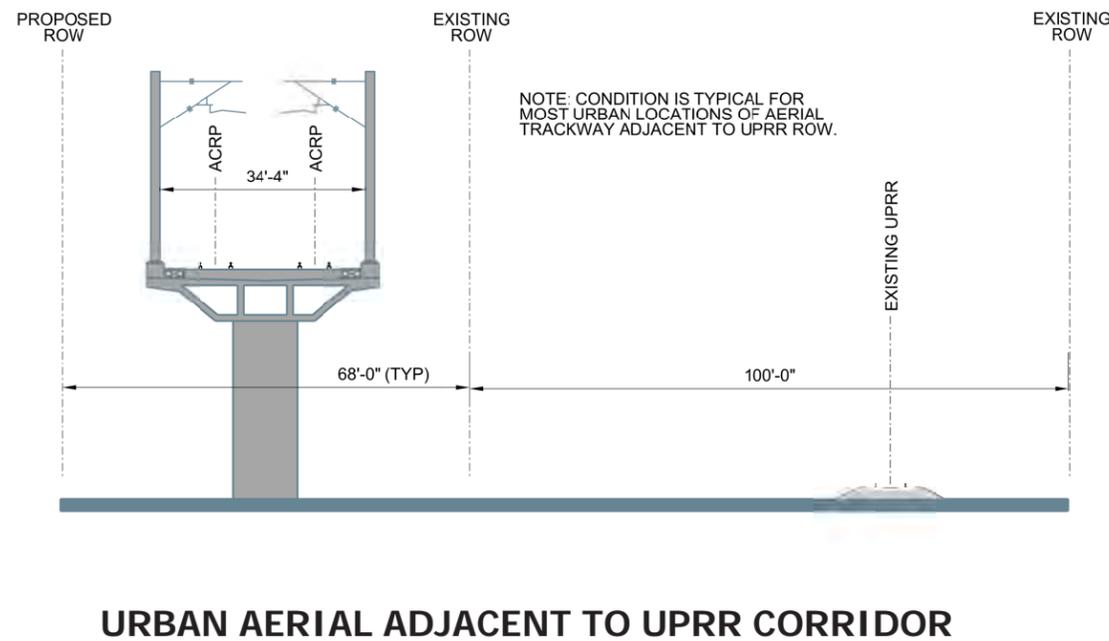
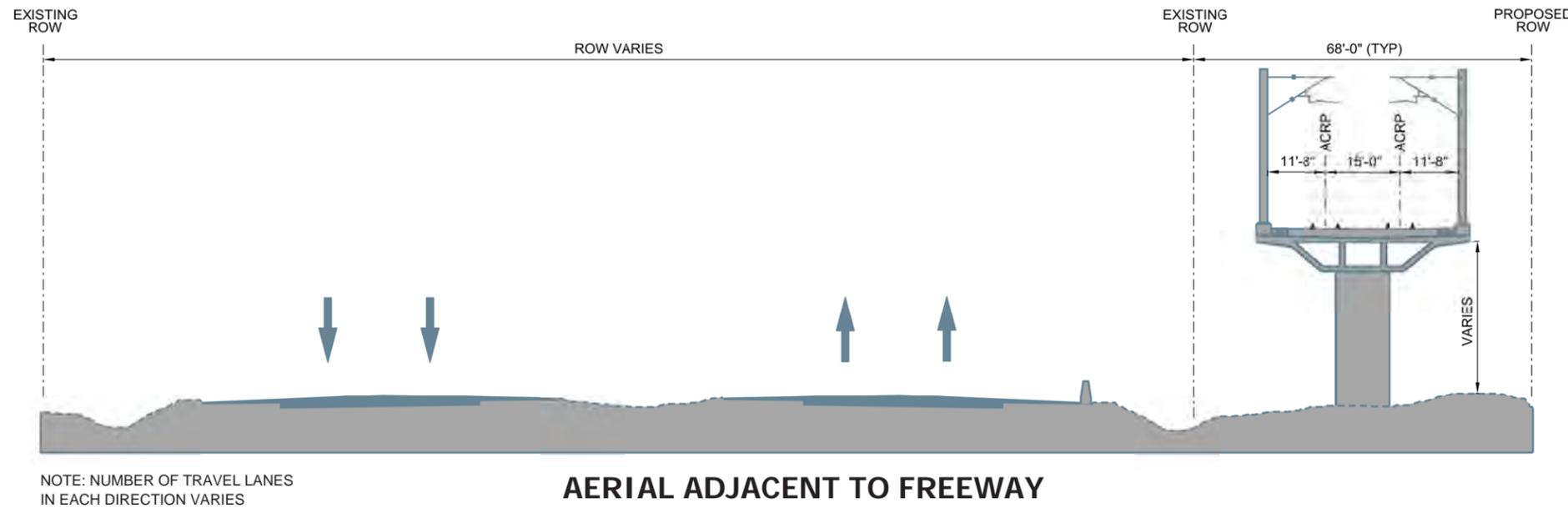
As noted previously, one of the project goals/objectives is to have a right-of-way independent of UP freight operations to the maximum extent feasible. In the alternative descriptions below, it is described where the route is adjacent to but not within active UP rights-of-way used for freight operation (which is the dominant condition when near UP) and when the route is within active UP rights-of-way (which is limited to portions of certain alternatives). “Active UP rights-of-way” are defined as a 100-foot wide UP corridor which contains currently operating main line and parallel sidings. There is the possibility that UP owns additional property parallel to the 100-foot (typical) width outside the area of active freight operations; when an alternative is within such areas, acquisition of rights-of-way from UP would be necessary. UP also owns rights-of-way that are not currently in use for freight operations. Property

research will be conducted in subsequent evaluations to identify all locations of UP-owned land (and all other privately and publically held land) crossed by alternatives carried for further analysis.

3.3.4 REGIONAL RAILROAD SYSTEM

Following the typical cross-section illustrations in Figure 3.3-2 to Figure 3.3-4 and the typical station platform illustration in Figure 3.3-5, the existing regional railroad lines are shown in Figure 3.3-6a through Figure 3.3-6d for reference in the discussion of alternative alignments below.

**Figure 3.3-2
Typical Aerial Cross-sections**

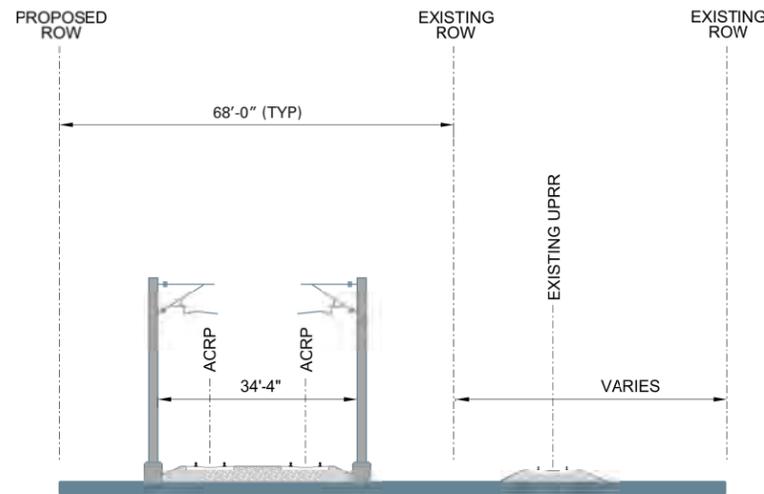


- LEGEND**
- ACRP Altamont Corridor Rail Project
 - ROW Right of Way
 - TYP Typical
 - UPRR Union Pacific Railroad

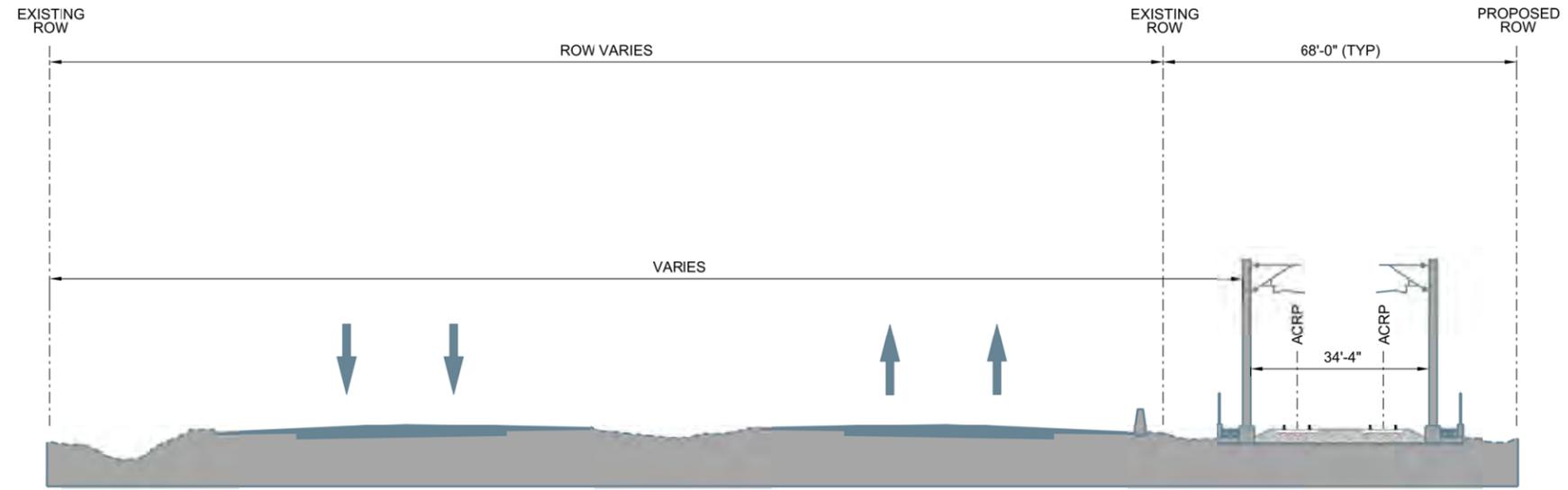
NOTE: CONDITION IS LIMITED AND APPLIES TO SPECIFIC LOCATIONS ONLY. SEE DESCRIPTION OF ALTERNATIVES IN SECTIONS 3.3-2 THROUGH 3.3-9 AND DETAILED ENGINEERING DRAWINGS IN APPENDIX C.

Source: HNTB 2010.

**Figure 3.3-3
Typical At-Grade Cross-sections**



RURAL AT-GRADE ADJACENT TO UPRR CORRIDOR

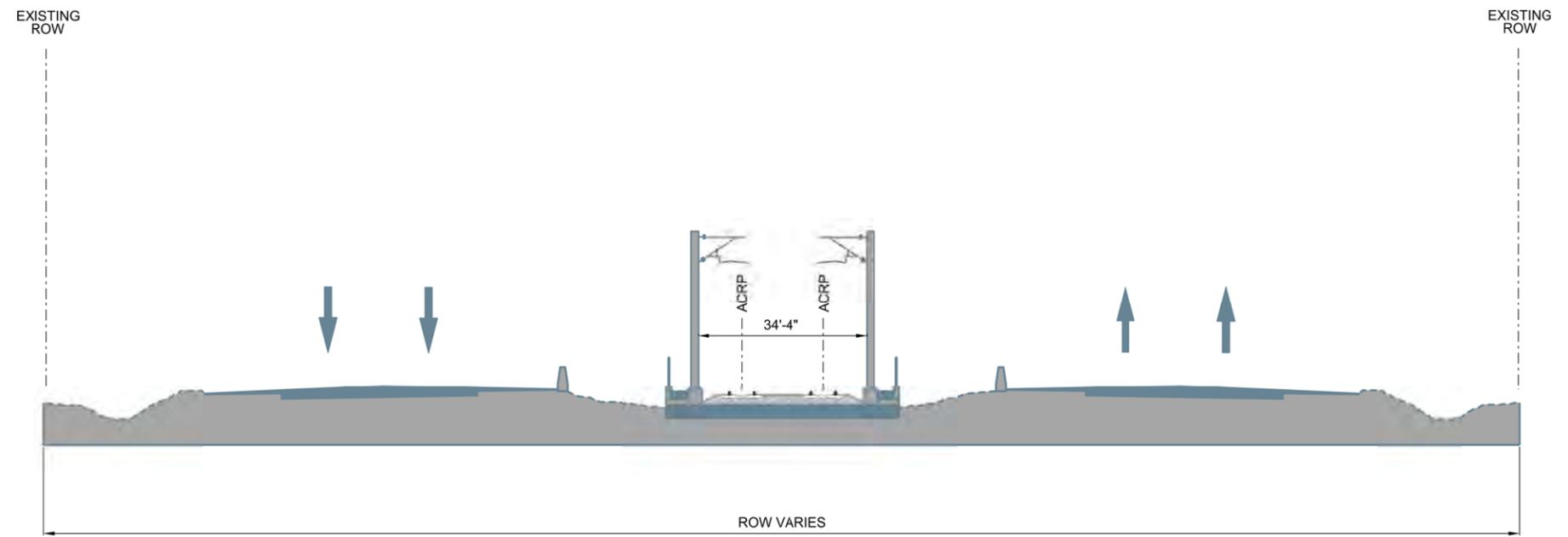


NOTE: NUMBER OF TRAVEL LANES IN EACH DIRECTION VARIES

AT-GRADE ADJACENT TO FREEWAY

LEGEND

- ACRP Altamont Corridor Rail Project
- ROW Right of Way
- TYP Typical
- UPRR Union Pacific Railroad

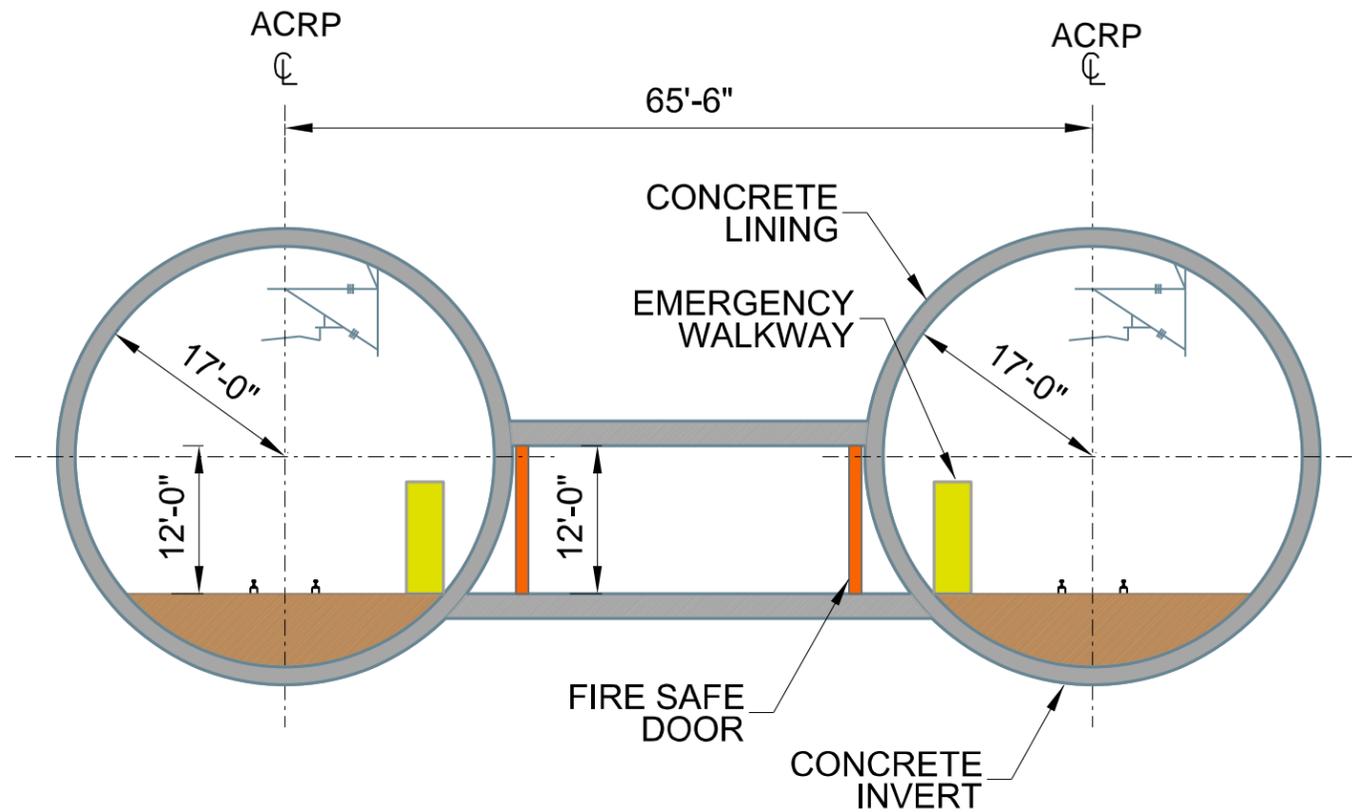


NOTE: NUMBER OF TRAVEL LANES IN EACH DIRECTION VARIES

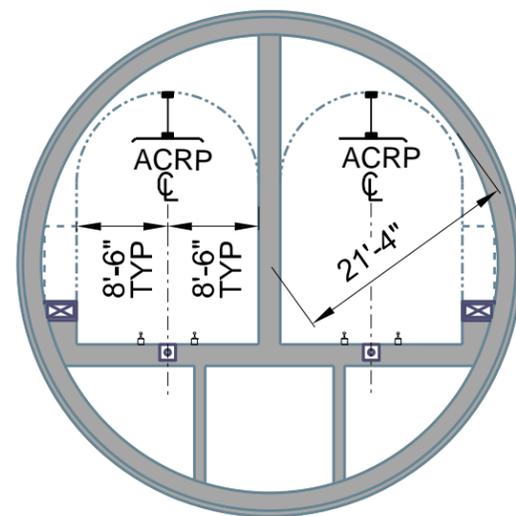
AT-GRADE IN FREEWAY MEDIAN

Source: HNTB 2010.

**Figure 3.3-4
Typical Subway Cross-sections**



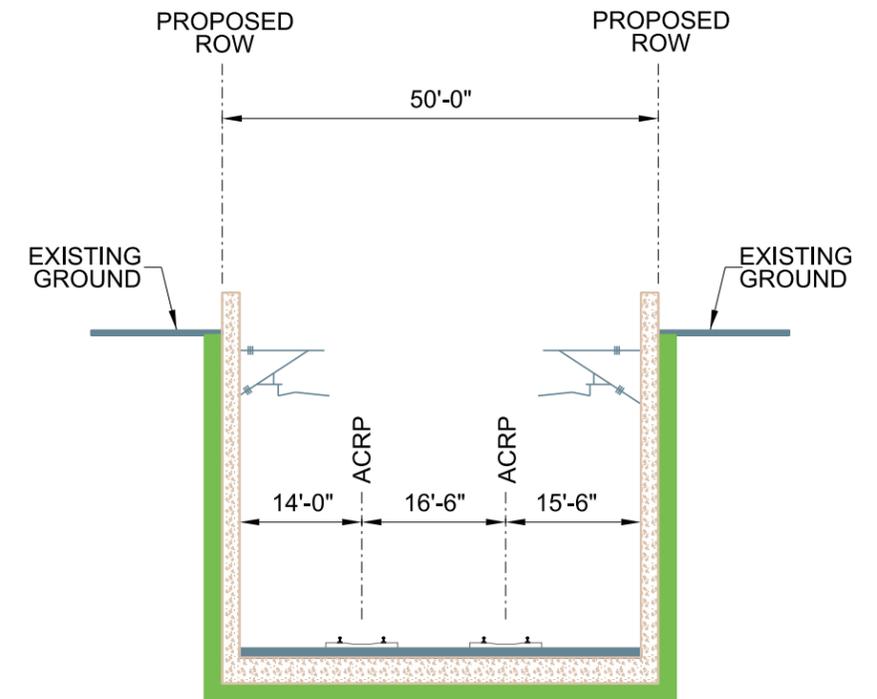
TWIN-BORE TUNNEL



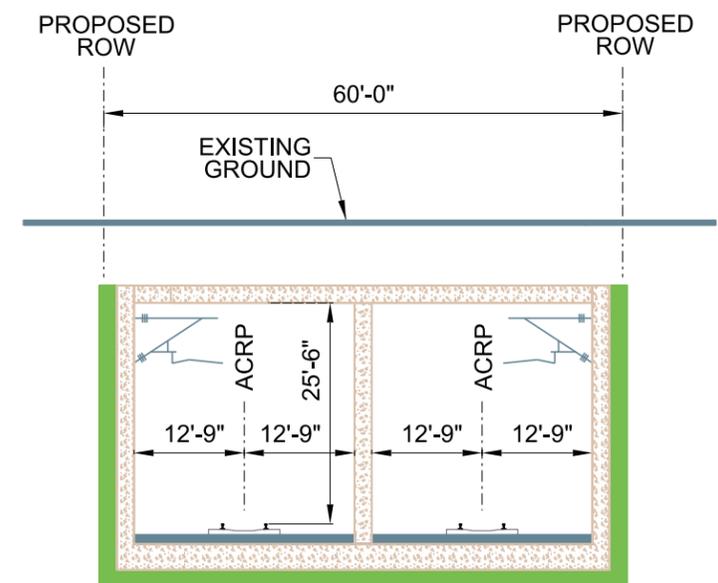
ALTERNATE SINGLE-BORE TUNNEL

LEGEND

- ACRP Altamont Corridor Rail Project
- ROW Right of Way
- TYP Typical



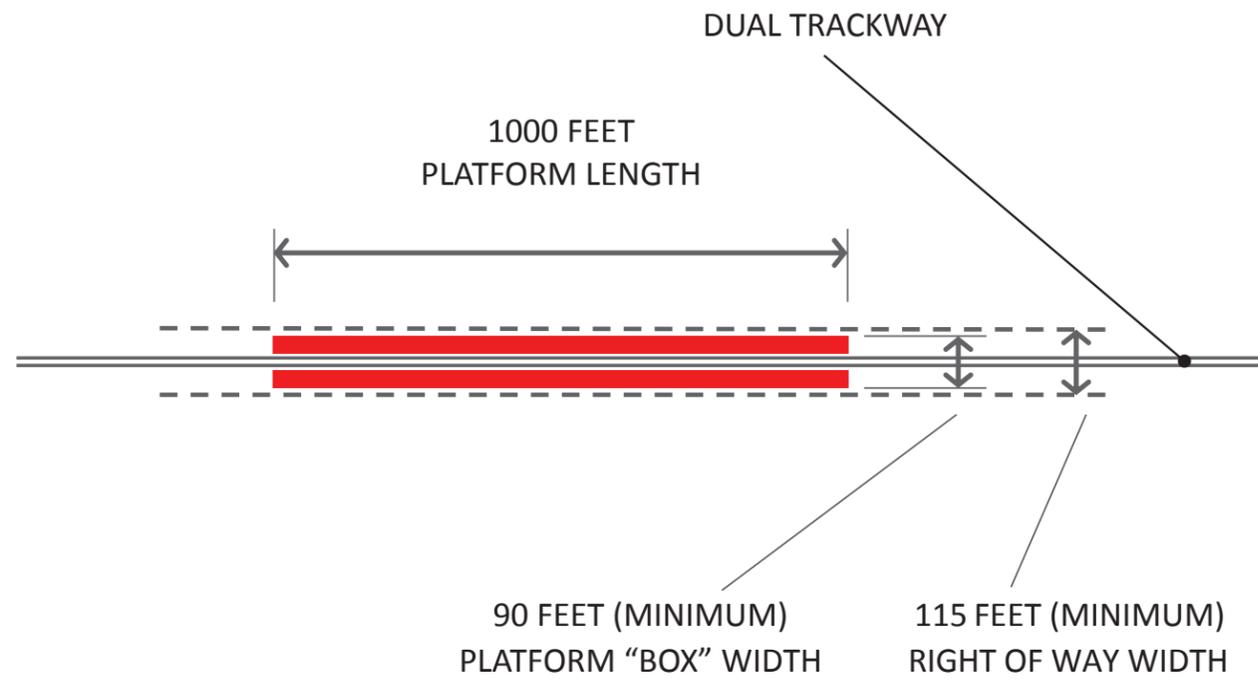
OPEN-CUT TRENCH



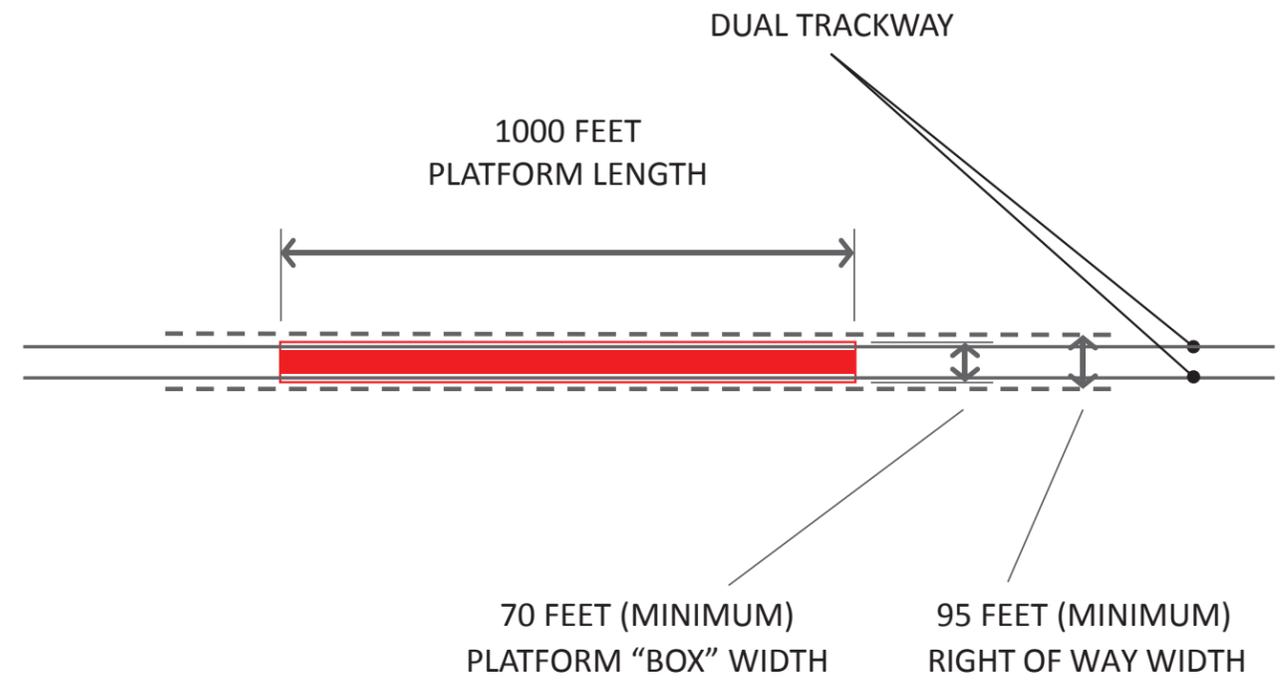
CUT-AND-COVER TUNNEL

Source: HNTB 2010.

Figure 3.3-5
Dimensions of Typical Regional Station Platform



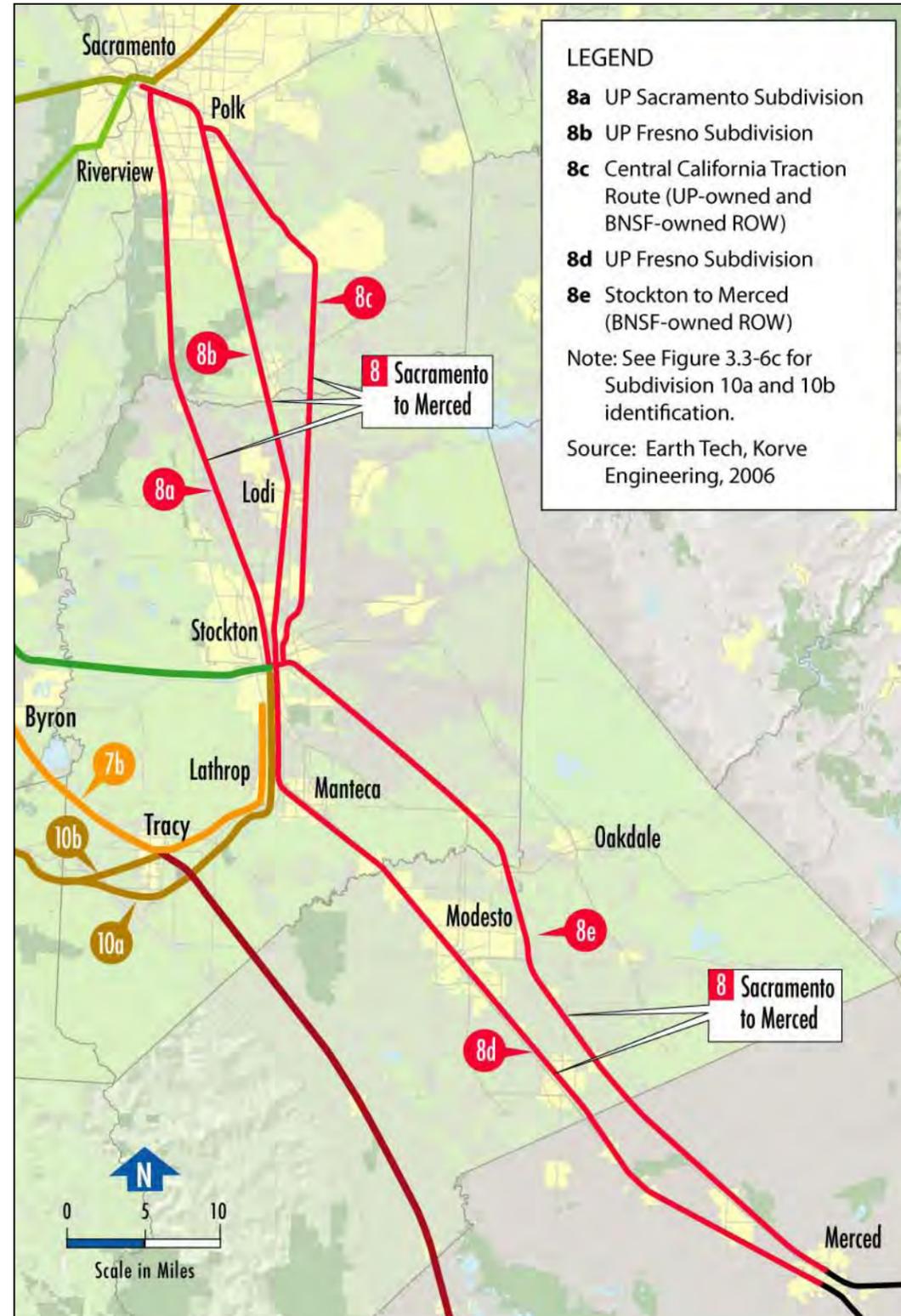
STATION PROTOTYPICAL DIMENSIONS – DUAL SIDE PLATFORM



STATION PROTOTYPICAL DIMENSIONS – CENTER PLATFORM

Source: AECOM 2010.

Figure 3.3-6d
Oakland to San Jose



3.3.5 SAN JOSÉ TO FREMONT (AREA 1.1)

Area 1.1 begins at the existing Diridon Station in San José and extends north and east through the cities of San José, Santa Clara, Milpitas, Newark, and Fremont.

SCOPING ALTERNATIVES

The following alignments were suggested for the Altamont Corridor Rail Project during scoping for the San José to Fremont area:

- West of SJC—use existing ACE line/Trimble.
- East of SJC—use Guadalupe Parkway.
- Existing UP alignment through the Baylands.
- UP Warm Springs Subdivision².
- Existing ACE alignment in combination with the UP Warm Springs Subdivision to allow two-way separated travel.
- Avoid the Don Edwards San Francisco Bay National Wildlife Refuge.
- Parallel the BART alignment to San José.
- I-880 on the west side.
- Connect from Warm Springs BART to current ACE alignment, then south through Baylands.
- Use SR 237 to connect between I-880 and Great America.
- Follow Trimble.
- No aerial section adjacent to College Park neighborhood in San José.
- Terminate Altamont Corridor Rail Project in Fremont (i.e., Stockton to Fremont only) and use connections to BART and Amtrak Capitol Corridor instead of extending to San José.
- BART should follow the southern proposed rail alignment through Milpitas, San José, and Santa Clara.
- Extend BART to San José.
- Extend both Caltrain and ACE in the East Bay from San José to Livermore.
- Upgrade UP Warm Springs line to passenger standards for use as a second track in reverse commute direction (while using existing ACE line for opposite direction), and enable ACE and Amtrak Capitol Corridor trains to stop in Santa Clara.

Station alternatives suggested in scoping included:

- San José Diridon.
- SJC.
- Santa Clara (Caltrain).
- Great Mall/Tasman (VTA connection).
- First/Trimble (VTA connection).
- Great America (VTA connection).

ALTERNATIVES IDENTIFIED DURING AND AFTER THE IDA

Several alignments were developed during the IDA analysis, including the following:

- An alignment adjacent to the UP Coast Subdivision between San José and Newark and adjacent to the UP Centerville line across Fremont adjacent to where the ACE trains presently operate.
- An I-880 alignment, including a Trimble connector.
- An alignment adjacent to the UP Warm Springs Subdivision east of I-880, as well as three connectors.

² The term “subdivision” as used throughout the descriptions of the alignment alternatives refers to a specific section of existing UP and/or SP lines (see Figures 3.3-6a through 3.3-6d above).

- An alignment along SR 237 connecting an I-880 alignment to the existing Great America ACE Station.
- A "Grimmer Connector," eastward from the UP Coast Subdivision to the Warm Springs BART vicinity south of Grimmer Boulevard.

Station alternatives considered during the IDA analysis include:

- San José Diridon.
- Santa Clara.
- Tasman/Great Mall.
- Tasman/I-880.
- First Street/Trimble.
- Great America.
- Fremont Centerville ACE.
- Warm Springs BART.

One additional alignment was developed during the AA:

- A second connector from the UP Coast Subdivision alignment to the Warm Springs BART Station south of Cushing Parkway.

ALIGNMENT AND STATION ALTERNATIVES WITHDRAWN FROM FURTHER ANALYSIS

All the alignment alternatives listed above were reviewed by the Altamont Corridor Rail Project Team (the Project Team), the Authority, the FRA, and the Working Group. Many of the scoping alternatives were carried forward for evaluation as part of this study. However, as a result of further review, several alignment and station alternatives were withdrawn from further analysis in the AA phase.

The alignment alternatives not carried forward are listed below:

- **East of SJC—use Guadalupe Parkway:** From the San José Diridon Station, routing along Guadalupe Parkway would not allow an opportunity for a Santa Clara Station while being less direct than alignments along I-880. This alternative also would have required an alignment along Charcot Avenue or crossing commercial land to link to Trimble Road, both of which would be more disruptive than the alignment carried forward along Trimble Road.
- **Existing ACE alignment in combination with the UP Warm Springs Subdivision to allow two-way separated travel:** The existing ACE alignment is on the UP tracks and does not meet the project purpose and need of an independent alignment. If a new alignment were pursued through the Don Edwards San Francisco Bay National Wildlife Refuge, it would have two tracks to allow two-way separated travel, thus negating the need for a second route. Similarly, use of the existing UP Warm Springs Subdivision does not meet the project purpose and need; an alignment parallel to the UP Warm Springs Subdivision was carried forward.
- **Parallel the BART alignment to San José:** Consultation with BART has indicated that there is inadequate space to parallel BART without substantial taking of private property.
- **BART should follow the southern proposed rail alignment through Milpitas, San José, and Santa Clara:** This is a suggestion concerning BART, not the Altamont Corridor Rail Project.
- **Extend BART to San José:** BART is already proposed to be extended to San José. The No Project Alternative includes this suggestion.
- **Extend both Caltrain and ACE in the East Bay from San José to Livermore:** ACE already serves San José and Livermore. Caltrain provides service from Gilroy to San Francisco; its extension to Livermore would be redundant with ACE. In addition, Caltrain would need to reverse direction between San José and Santa Clara in order to access the ACE route without missing the San José terminus.
- **Upgrade UP Warm Springs line to passenger standards for use as a second track in reverse commute direction (while using existing ACE line for opposite direction), and enable ACE and Amtrak Capitol Corridor trains to stop in Santa Clara:** As noted above, the use of active UP tracks would not meet the project purpose and need of an independent alignment.

Station alternatives not carried forward are listed below:

- **SJC:** At present, there is VTA bus service from the Santa Clara Caltrain Station to SJC (10 Airport Flyer). Given the proximity of the Santa Clara Station to the airport and existing direct airport connections, an additional stop at SJC itself would not substantially increase ridership, but would slow service to other stations. In addition, there would be numerous challenges to routing the Altamont Corridor Rail Project through the airport facility.

ALIGNMENT AND STATION ALTERNATIVES CARRIED FORWARD INTO ANALYSIS

The following alignment alternatives were carried forward for further evaluation in this study:

- **Alternative EB-1:** In Caltrain right-of-way, adjacent to the UP Coast Subdivision and the UP Centerville Line.
- **Alternative EB-2:** In Caltrain right-of-way, adjacent to the UP Coast Subdivision, south of Grimmer.
- **Alternative EB-3:** In Caltrain right-of-way, adjacent to the UP Coast Subdivision, south of Cushing, adjacent to the UP Warm Springs Subdivision.
- **Alternative EB-4:** In Caltrain right-of-way, adjacent to the UP Coast Subdivision, SR 237, I-880.
- **Alternative EB-5:** In Caltrain right-of-way, adjacent to the UP Coast Subdivision, Trimble, I-880.
- **Alternative EB-6:** In Caltrain right-of-way, adjacent to the UP Coast Subdivision, Trimble, adjacent to the UP Warm Springs Subdivision.
- **Alternative EB-7:** I-880 (south of airport), I-880.
- **Alternative EB-8:** I-880 (south of airport), adjacent to the UP Warm Springs Subdivision.

The following station alternatives were carried forward for further evaluation in this study:

- San José Diridon.
- Santa Clara.
- Tasman/Great Mall.
- Tasman/I-880.
- First Street/Trimble.
- Great America.
- Fremont Centerville ACE.
- Warm Springs BART.

Each alignment and station alternative is described below. The alignment alternatives and station locations are shown in Figure 3.3-7a (the extension of Alternative EB-1 all the way to the Centerville station is shown in Figure 3.3-8).

Alternative EB-1

This alternative generally would run adjacent to the UP Coast Subdivision and UP Centerville line to the Fremont Centerville ACE Station.

Altamont Corridor service would operate on the existing Caltrain tracks between the San José Diridon and Santa Clara stations. The alternative would be adjacent to the UP Coast Subdivision on the east side of the tracks at grade from the existing Santa Clara station to reach a short section of retained cut south of Central Expressway. Directly south of Central Expressway, the alignment would reach a tunnel portal. The tunnel would be adjacent to the UP right-of-way under Central Expressway and U.S. Highway 101 (US 101) to reach a portal north of US 101. North of US 101, the alignment would continue in a short section of retained cut alongside and west of Lafayette Street and ascend to grade south of Montague Expressway. North of Montague Expressway, the alignment would either be at grade or on an aerial structure along Lafayette Street north to near Tasman Drive. If on an aerial structure, the alignment would continue climbing up and cross to the east of the UP Coast Subdivision, continuing over the southbound lanes of Lafayette to an aerial station located over Lafayette Street to a potential Great America Station directly south of Tasman Drive.

The alignment would continue at grade north of Tasman Drive, rise on an aerial structure directly south of SR 237 to cross SR 237, and then run adjacent to the UP Coast Subdivision on a low trestle through the Don Edwards San

Francisco Bay National Wildlife Refuge. Because of right-of-way constraints and to avoid grade crossings, the alignment would continue on an aerial structure through Newark and Fremont adjacent to the UP Coast Subdivision and UP Centerville line to a potential aerial station immediately west of the existing Fremont-Centerville Amtrak/ACE Station.

Alternative EB-2

This alternative would have the same route as Alternative EB-1 from Diridon Station to just north of the Don Edwards National Wildlife Refuge at which point it would diverge from EB-1.

Southwest of Cushing Parkway, the alignment would curve to the east and descend to grade, and then rise again on an aerial structure across I-880 and running along the northern perimeter of the former New United Motor Manufacturing, Inc. (NUMMI) automobile manufacturing plant, paralleling Grimmer Boulevard, to reach a potential station at the future Warm Springs BART Station, perpendicular to the BART alignment.

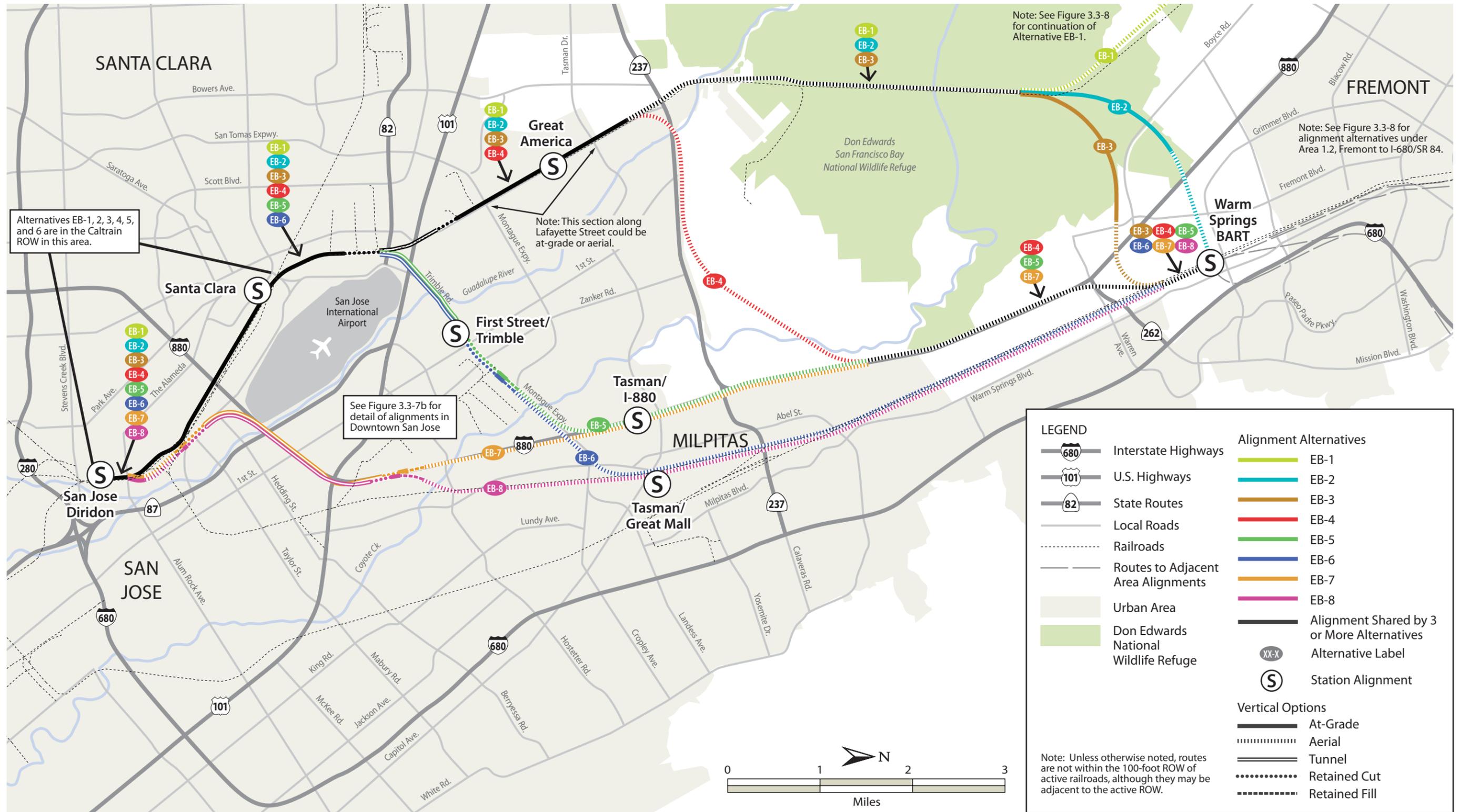
Alternative EB-3

This alternative would have the same route as Alternative EB-1 from Diridon Station to just north of the Don Edwards National Wildlife Refuge at which point it would diverge from EB-1.

Southwest of Cushing Parkway, the alignment would descend to grade and curve to the east, rise again on an aerial structure across Fremont Boulevard and I-880, and curve south of the former NUMMI automobile manufacturing plant to be adjacent to the UP Warm Springs Subdivision on an aerial structure to a potential joint Warm Springs Station with BART.

Alternative EB-3 is the same as EB-2 from Diridon Station to a point north of the Don Edwards National Wildlife Refuge, at which point EB-2 is routed along an alignment south of Grimmer Boulevard to reach the Warm Springs BART Station perpendicular to the BART alignment. Alternative EB-3 is routed south of Cushing Parkway and then adjacent to the UP Warm Springs Subdivision to reach the Warm Springs BART Station parallel to the BART alignment.

Figure 3.3-7a
Alignment and Station Alternatives from San Jose to Fremont (Area 1.1)



Alternative EB-4

This alternative would have the same route as Alternative EB-1 from Diridon Station to just north of the Great America Station near Tasman Drive at which point it would diverge from EB-1.

The alignment would continue on aerial structure north of Tasman Drive, then curve east to parallel SR 237 on the north side set back to the rear of undeveloped properties abutting the freeway. East of North First Street, the alignment would cross Coyote Creek and curve into an aerial alignment following I-880 on the west side, at a point north of McCarthy Ranch and south of Dixon Landing Road. The aerial alignment would follow I-880 to Mission Boulevard, cross over the I-880/Mission Boulevard interchange, and transition in new right-of-way to be adjacent to UP Warm Springs Subdivision. The aerial alignment would then be adjacent to the UP Warm Springs Subdivision to a potential joint Warm Springs Station with BART.

Alternative EB-5

This alternative would have the same route as Alternative EB-1 from Diridon Station to just south of Central Expressway at which point it would diverge from EB-1.

Directly south of Central Expressway, the alignment would reach a tunnel portal. The tunnel would curve east to follow Trimble Road and enter a section of retained cut in the median of Trimble Road. The retained cut section would extend from Orchard Parkway east to a point east of Zanker Road and would include a potential Trimble Road/North First Street station. The alignment would ascend to grade east of Zanker Road and rise on retained fill to an aerial structure in the vicinity of the Trimble Road/Montague Expressway intersection.

The aerial alignment would follow Montague Expressway on the south side, continue east over Coyote Creek, and curve north to follow I-880 on the west side. The aerial alignment would follow I-880 between a point north of Montague Expressway and a point south of Mission Boulevard, with a potential intermediate station at Tasman Drive/I-880. The alignment would cross over the I-880/Mission Boulevard interchange and transition in new right-of-way before running adjacent to be adjacent to UP Warm Springs Subdivision. The aerial alignment would run adjacent to the UP Warm Springs Subdivision to a potential joint Warm Springs Station with BART.

Alternative EB-6

This alternative would have the same route as Alternative EB-5 from Diridon Station to Montague Expressway at which point it would diverge from EB-5.

The aerial alignment would follow Montague Expressway on the south side, cross over Coyote Creek and I-880, and continue along the same bearing east of the point where Montague Expressway curves east to a perpendicular intersection with Main Street. The alignment would curve north to run adjacent to the UP Warm Springs Subdivision and reach a potential Tasman/Great Mall Station. The aerial alignment would continue to run adjacent to the UP Warm Springs Subdivision north from a potential Tasman/Great Mall Station to a potential joint Warm Springs station with BART.

Alternative EB-7

This alternative generally would follow I-880 from San José to the future Warm Springs BART Station in Fremont.

From the San José Diridon Station, this alignment would cross the parking lots west of the HP Pavilion at grade, curve to the west and rise on an aerial structure along Montgomery Street, and continue along the same bearing to descend on a short section of retained fill to grade east of the Caltrain shops. South of Taylor Street, the alignment would descend into a retained cut section on the east side of Coleman Avenue before reaching a tunnel portal in the vicinity of Emory Street. The alignment would curve east in a tunnel to follow I-880 to a point north of US 101 and rise from tunnel to short sections of retained cut and then at grade to retained fill, turning northwards in the median of I-880 on an aerial structure.

The aerial alignment would continue in the median of I-880 to a point south of SR 237, with a potential intermediate station at Tasman Drive/I-880. South of the I-880/SR 237 interchange, the aerial alignment would cross over the southbound lanes of I-880, continue to follow I-880 to Mission Boulevard, cross over the I-880/Mission Boulevard

interchange, and transition in new right-of-way to the UP Warm Springs Subdivision. The aerial alignment would run adjacent to the UP Warm Springs Subdivision to a potential joint Warm Springs station with BART.

Alternative EB-8

This alternative would have the same route as Alternative EB-7 from Diridon Station to just east of US 101 at which point it would diverge from EB-7.

Just east of US 101, the alignment would be at grade, and then begin to curve east and rise on retained fill to aerial structure south of the *San Jose Mercury News* printing facility. The aerial structure would continue along a reverse curve across Coyote Creek to run adjacent to the UP Warm Springs Subdivision.

The aerial alignment would continue north adjacent to the UP Warm Springs Subdivision to a potential joint Warm Springs station with BART, with a potential intermediate station at Tasman/Great Mall.

Station Alternatives

The station locations in this area are shown in Figure 3.3-7a above and described in more detail below. The more detailed station layouts can be found in Appendix D.

San José Diridon

The existing San José Diridon Station is located west of downtown San José, south of the intersection of Cahill Street and The Alameda in San José. The Altamont Corridor Rail Project is anticipated to utilize existing at-grade platforms along with Capital Corridor, Caltrain, and intercity Amtrak services. Diridon is a major proposed HST station, with HST operating on a dedicated platform level (the alignment and profile of HST at the station is currently under study). No issues are identified at this level of study. The San José Diridon Station is a major regional intermodal center, linking the California HST System with intercity Amtrak service, commuter rail, a future BART extension, VTA light rail transit (LRT), transit buses, and a potential transit system serving SJC.

Santa Clara

This station would be located along the shared Caltrain/UP corridor, directly east of the Santa Clara Caltrain Station (El Camino Real at Benton Street) in Santa Clara. The station is anticipated to be at-grade, along the east side of the rail corridor. This station is currently being reconstructed to provide a platform configuration so that the current ACE train will be able to stop there. The station concept would preserve the planned configuration and service. VTA is also currently planning a people-mover connection that would tie this station to the SJIA terminals and the North First Street Metro LRT stop. An elevated or below grade pedestrian path would connect to the existing Caltrain station (west side of corridor) and to the possible future transit system connecting with the SJIA. The station would provide an intermodal connection between Caltrain southbound to Altamont eastbound services and for westbound Altamont to northbound Caltrain services.

Tasman/Great Mall

This station would be located adjacent to the UP corridor immediately north of the Great Mall Parkway/South Main Street intersection in Milpitas. The station would be elevated to pass above Great Mall Parkway and the elevated VTA LRT viaduct, with direct pedestrian connections to the VTA elevated Great Mall/Main LRT Station and the at-grade Great Mall/Main Transit Center. The station would provide direct access to the Great Mall regional retail complex and excellent connections to VTA LRT and bus transit.

Tasman/I-880

The station would be located along the west side of I-880, immediately south of the I-880/Tasman Drive (Great Mall Parkway) interchange. The station would be elevated for the alignment to pass over Tasman Drive, and could include a possible elevated pedestrian connection to a currently undeveloped property at the southwest corner of the Tasman Drive/Barber Lane intersection. There would be a station entrance and path to the VTA I-880/Milpitas LRT Station at the Tasman Drive/Alder Drive intersection. Development of the elevated station over an active freeway interchange is

complex and likely costly. The station provides good connections to the VTA LRT system, which serves the Great Mall regional retail complex east of the I-880 corridor.

First Street/Trimble

This station would be located along Trimble Road, immediately west of the Trimble Road/North First Street intersection in San José. The location relative to the intersection is subject to further study. The station would be underground for the alignment to pass under the intersection, with surface access points at the intersection and west along Trimble. The station would be within one block of the VTA Bonaventure LRT Station and would also be a possible connection with a future transit system serving SJIA.

Great America

This station would be located immediately south of the Tasman Drive overcrossing of the UP Coast Subdivision and Lafayette Street in Santa Clara at the location of the existing Great America ACE Station. The station is a major destination of the existing ACE service, serving major employment centers in Silicon Valley. The station would be elevated for the alignment to pass over Tasman Drive and avoid impacts on UP operations and Lafayette Street. The station would provide direct pedestrian access to the Tasman Drive overpass (with connection to the VTA Lick Mill LRT Station) and to grade (with access to the Great America theme park and sports facilities). Further study may move station platforms northward to provide direct access to both sides of Tasman Drive.

Warm Springs BART

This station would be located immediately south of the intersection of the UP Warm Springs Subdivision and Grimmer Boulevard in Fremont. With all East Bay alternatives other than Alternatives EB-1 and EB-2, the station would be parallel to and immediately west of the railroad corridor. With Alternative EB-2, the station would be perpendicular to the railroad corridor with its east end immediately west of the rail corridor. In both cases, the station would be elevated and have a direct connection to the proposed Warm Springs BART Station, also at this site. The station would provide direct intermodal connections with BART and regional bus transit, with the potential to share park-and-ride capacity with BART.

3.3.6 FREMONT TO I-680/SR 84 (AREA 1.2)

Area 1.2 begins in Fremont (at either the future Warm Springs BART Station or the existing Fremont-Centerville ACE/Amtrak Station) and extends east to the vicinity of the I-680/SR 84 interchange.

SCOPING ALTERNATIVES

The following alignment alternatives were suggested during scoping for the Fremont area:

- Avoid Fremont entirely.
- Follow the existing ACE/UP alignment.
- Avoid the Centerville area of Fremont.
- Parallel the BART alignment (north-south).
- Use San Francisco Public Utilities Commission (SFPUC) Hetch-Hetchy utility easement (east-west).
- Use power line easement (east-west).
- Use Auto Mall Parkway (east-west) to connect from I-680 to existing ACE line.
- Avoid high-priced residential areas on east side of Fremont by following the existing ACE/UP route.
- Connect to the Dumbarton Rail Project.
- Use the SP alignment (through Niles Canyon).
- Niles Canyon to Union City and Newark via SR 84 and Decoto.
- Avoid Niles Canyon.
- Extend BART from Fremont to Livermore.

- Redwood City connection.

Station alternatives suggested in scoping included:

- Shinn Intermodal Station.
- Two BART connections in Fremont.
- No Fremont stations.
- Warm Springs BART.
- Irvington BART.
- Fremont-Centerville ACE/Amtrak.

ALTERNATIVES IDENTIFIED DURING AND AFTER THE IDA

Several alignments were developed during the IDA analysis, including the following:

- An alignment parallel to I-680.
- An alignment adjacent to the UP Warm Springs Subdivision to Niles Junction.
- A tunnel from east of Niles Junction to the vicinity of I-680/SR 84.

Station alternatives considered during the IDA analysis include:

- Warm Springs BART.
- Fremont-Centerville ACE/Amtrak.
- I-680/SR 84.

One additional alignment was developed during the AA:

- An alignment adjacent to the UP Warm Springs Subdivision to the former Western Pacific Railroad (WP) alignment.

ALIGNMENT AND STATION ALTERNATIVES WITHDRAWN FROM FURTHER ANALYSIS

All the alignment and station alternatives listed above were reviewed by the Project Team, the California High-Speed Rail Authority staff, FRA staff, and the Working Group. Many of the scoping alternatives were carried forward for further evaluation as part of this study. However, as a result of further review, several alignment and station alternatives were withdrawn from further analysis in the AA phase.

The alignment alternatives not carried forward are listed below:

- **Avoid Fremont entirely:** There is no feasible way to avoid crossing some portion of Fremont if serving San José and connecting to the Tri-Valley area without routing entirely in a tunnel alignment. Because of the length of such a tunnel and its associated cost, this alternative is considered infeasible.
- **Follow the existing ACE/UP alignment:** Alternative EB-1 (see above), carried forward for analysis, uses the ACE/UP alignment through Fremont, but it does not use the UP alignment through Niles Canyon. An at-grade alignment through Niles Canyon would involve substantial environmental impacts on Alameda Creek riparian habitat, which is unlikely to be permitted by federal and state resource agencies. This alternative does not meet the project's purpose and need because it is not an independent right of way and it would not improve travel times compared to existing ACE service.
- **Parallel the BART alignment (north-south):** Consultation with BART has indicated there is inadequate space to parallel BART without substantial take of private property.
- **Use SFPUC Hetch-Hetchy utility easement (east-west):** This alignment would not provide connection to either the Warm Springs BART Station or the Fremont-Centerville ACE Station. Although it would connect with the potential Irvington BART Station, it is uncertain at this time whether the Irvington Station will ultimately be built. (And the Hayward fault runs through the site vicinity which would be difficult to accommodate without developing an at-grade or retained earth solution.) Further, this alignment would cross through extensive residential areas, requiring substantial construction and potential operational disruption (depending on the aerial options selected). Overall, this alignment does not provide any advantages over other alignments carried forward.

- **Use power line easement (east-west):** This alignment would not allow for connections to any BART station in Fremont or any existing rail or transit station.
- **Use Auto Mall Parkway (east-west) to connect from I-680 to existing ACE line:** This alignment would not allow for connections to any BART station in Fremont or any existing rail or transit station.
- **Use the SP alignment (through Niles Canyon):** An at-grade alignment through Niles Canyon would involve substantial environmental impacts on Alameda Creek riparian habitat, which is unlikely to be permitted by federal and state resource agencies.
- **Niles Canyon to Union City and Newark via SR 84 and Decoto:** An at-grade alignment through Niles Canyon would involve substantial environmental impacts on Alameda Creek riparian habitat, which is unlikely to be permitted by federal and state resource agencies. Use of SR 84 and Decoto would result in substantial community disruption because it would require extensive routing through both Fremont and Union City.
- **Extend BART from Fremont to Livermore:** Extending BART, which is an urban transit system, does not meet the project purpose and need, which are for regional intercity and commuter passenger rail.
- **Redwood City connection:** Building a route to Redwood City is outside the project purpose and need, which are defined as connecting the northern San Joaquin Valley to the vicinity of San José. The Dumbarton Rail Corridor Project, which is being pursued by the San Mateo County Transportation Authority, includes this proposed connection, and the Altamont Rail Corridor Project includes a project goal to accommodate a connection to the Dumbarton Corridor, which could occur east or west of Niles Canyon.

Station alternatives not carried forward are listed below:

- **Two BART connections in Fremont:** There is no existing transportation corridor to the Fremont BART Station that the Altamont Corridor Rail Project could use in combination with alternatives involving a station in Warm Springs or Centerville. Two connections would add substantial cost and result in slower service times overall without a sufficient offset in ridership increase. Connections from other BART stations in the inner East Bay to the Altamont Corridor Rail Project could be made via a single BART connection at Warm Springs. Connections from Amtrak Capitol Corridor could be made at a Fremont Centerville ACE Station. See discussions about the Shinn and Irvington BART stations below.
- **Shinn Intermodal Station:** A Shinn station would be located at the intersection of the UP Oakland Subdivision and the UP Centerville Line, where the BART alignment crosses the UP Centerville Line south of the Fremont Quarry Lakes Regional Recreation Area. To connect Altamont Corridor service to BART, a Shinn station would require a new BART station at a location that is very close to the existing Union City and Fremont stations, thus adding travel time to BART service between Alameda County and Santa Clara County. To connect to Amtrak Capitol Corridor, a new station at Shinn would either require relocation of the Amtrak Capitol Corridor stop from the Fremont Centerville ACE Station or would result in slowing of Amtrak Capitol Corridor service with future stops in Union City, Shinn, and Fremont-Centerville. The Fremont Centerville ACE, Warm Springs BART, and the Union City Intermodal stations—all of which are considered more favorable options for a station in the Fremont/Union City area—were carried forward.
- **Irvington BART:** It is uncertain at this time whether the Irvington Station ultimately will be built. An additional stop at Irvington would require additional construction costs and service time compared to alternatives with only a Warm Springs BART connection. The Altamont Corridor Rail Project would need to cross the Hayward fault to access the Irvington site which may be problematic given the Authority's design criterion which does not permit lines to cross principal active fault lines in tunnel or on aerial structure.
- **No Fremont stations:** Connecting to BART in Fremont/Union City is considered a key element of the Altamont Corridor Rail Project. If the Altamont Corridor Rail Project were to terminate in Union City instead of San José, then there would be no Fremont station nor would the line extend directly to San José.

ALIGNMENT AND STATION ALTERNATIVES CARRIED FORWARD INTO ANALYSIS

The following alignments were carried forward for further evaluation in this study:

- **Alternative EBWS-1:** I-680 to near I-680/SR 84.
- **Alternative EBWS-2:** Adjacent to the UP Warm Springs Subdivision, tunnel south of Niles Canyon.

- **Alternative EBF-1:** Fremont-Centerville, adjacent to the UP Centerville Line, Niles Tunnel.

The following station alternatives were carried forward for further evaluation in this study:

- Warm Springs BART.
- Fremont Centerville ACE.
- I-680/SR 84.

Each alignment and station alternative is described below. The alignment alternatives and station locations are shown in Figure 3.3-8.

Alternative EBWS-1

This alternative generally runs adjacent to I-680 from the future Warm Springs BART Station to the I-680/SR 84 interchange.

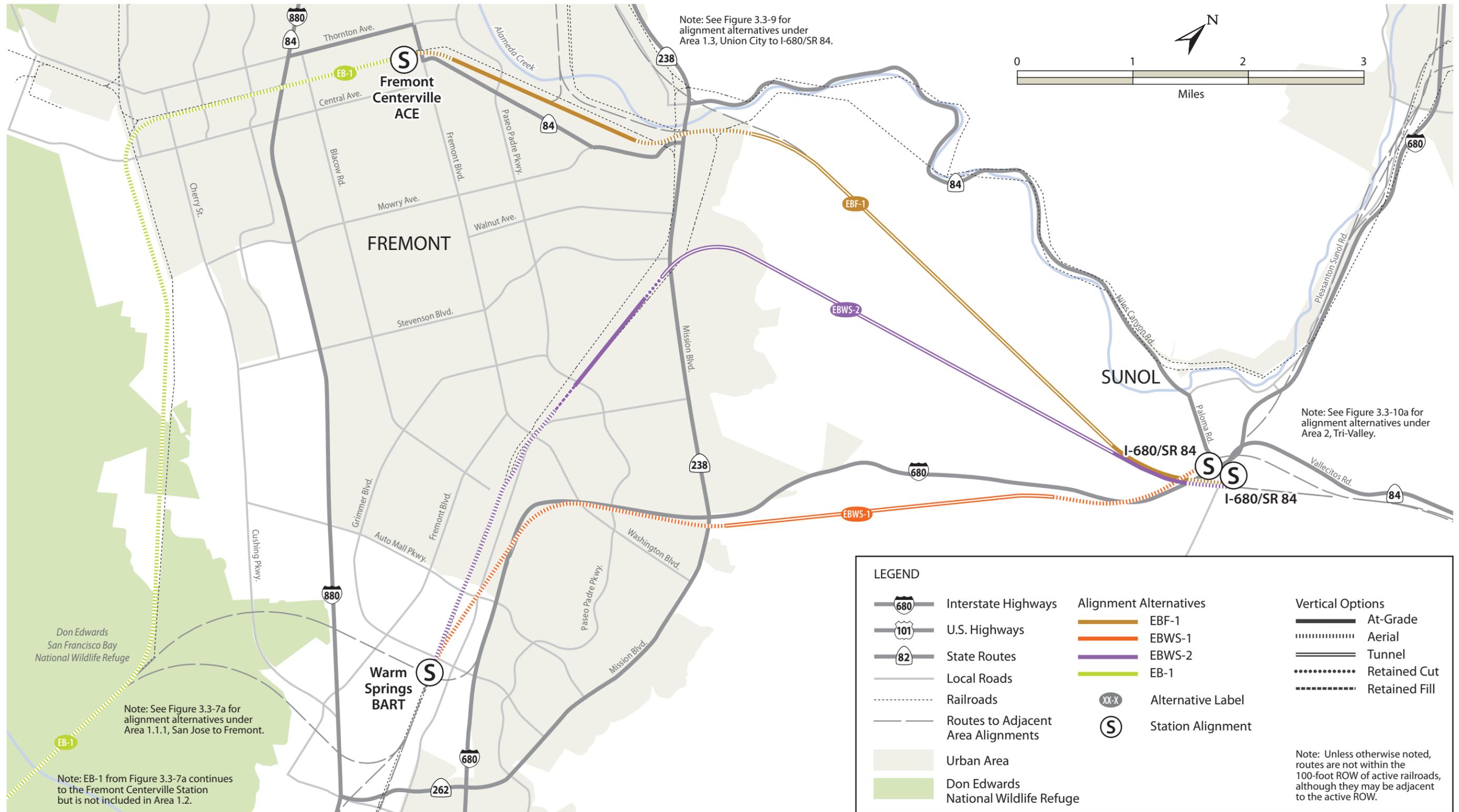
From a station parallel to the future Warm Springs BART Station, the alignment would transition on an aerial structure in new right-of-way to I-680 north of Durham Road/Auto Mall Parkway. The aerial alignment would follow I-680 on the south side to a tunnel portal at a point east of the I-680/Mission Boulevard interchange. The tunnel would roughly parallel I-680 on the south and extend to a point in the vicinity of Sunol Valley Golf Course. The tunnel would be adjoined on the east by aerial structure and cross over to the north side of I-680 in the vicinity of Alameda Creek to reach a potential station east of I-680 in the vicinity of the SR 84 interchange.

Alternative EBWS-2

This alternative generally would be adjacent to the UP Warm Springs Subdivision from the future Warm Springs BART Station north toward Fremont Central Park and then turn eastward into a new tunnel south of Niles Canyon to the I-680/SR 84 interchange.

From the future Warm Springs BART Station, the alignment would run adjacent to the UP Warm Springs Subdivision on an aerial structure to the vicinity of Walnut Avenue, transition to an at-grade section in the golf course in Fremont Central Park, and then transition to a tunnel that would turn east and then southward. Approaching I-680, the alignment would rise on an aerial structure to cross I-680 and reach a potential station east of I-680 in the vicinity of the SR 84 interchange.

Figure 3.3-8
Alignment and Station Alternatives from Fremont to I-680/SR 84 (Area 1.2)



Alternative EBF-1

This alternative would proceed eastward from the Fremont Centerville ACE Station to the I-680/SR 84 interchange.

Heading east from the Fremont Centerville ACE Station, the alternative would proceed adjacent to the UP Centerville line. Approaching Niles Junction, the alignment would rise on an aerial structure and cross over the UP Warm Springs Subdivision and Mission Boulevard. From Niles Junction, the aerial alignment would curve east into the portal of a new Niles Tunnel immediately south of Niles Reservoir. The tunnel would extend east to a point in the vicinity of Alameda Creek in Sunol Valley and continue east at grade. Approaching I-680, the alignment would rise on an aerial structure to cross I-680 and reach a potential station east of I-680 in the vicinity of the SR 84 interchange.

Station Alternatives

The station locations in this area are shown in Figure 3.3-8 above and described in more detail below. The more detailed station layouts can be found in Appendix D.

Warm Springs BART

See the station description provided earlier under Area 1.1.

Fremont Centerville ACE

The station would be located immediately west of the intersection of the UP Niles Subdivision and Fremont Boulevard, near the site of the Centerville ACE Station in Fremont. The station would be elevated for the alignment to pass over Fremont Boulevard to avoid conflicts with at-grade rail operations and to support a longer-radius curve east of Fremont Boulevard, independent of the tighter at-grade curved UP alignment. The station would provide convenient south-to-east and west-to-north transfers with Capital Corridor commuter rail and Amtrak intercity services, and the site is reasonably close to the urban centers of Union City and Fremont. This station could also provide a connection point to the Dumbarton Corridor Rail Project.

I-680/SR 84

This station would be located along the existing I-680 transportation corridor near the interchange of I-680 and SR 84, east of Sunol. With connecting alignments from the East Bay along I-680, the station would be parallel to I-680 and immediately southwest of the interchange. With connecting alignments from the East Bay north of I-680, the station would be southeast of the interchange, crossing I-580 at an angle. In both cases, the station would be elevated for the alignment alternatives to cross over the I-680 corridor. Direct regional highway access (I-680, SR 84) facilitates an intercept of express buses operating in the highly populated I-680 corridor, providing regional transit connectivity.

3.3.7 UNION CITY TO I-680/SR 84 (AREA 1.3)

Area 1.3 begins in the vicinity of the existing Union City BART Station in Union City and extends south and east to the vicinity of the I-680/SR 84 interchange.

SCOPING ALTERNATIVES

The following alignments were suggested during scoping for the Union City area:

- Parallel the BART alignment (north-south).
- Niles Canyon to Union City and Newark via SR 84 and Decoto Road.
- Connect to Dumbarton rail.
- Use existing ACE alignment.
- Use SP alignment.
- Tunnel across Niles area.
- Avoid Niles Canyon.

- Redwood City connection.

Station alternatives suggested in scoping included:

- Shinn Intermodal Station.
- Union City BART.

ALTERNATIVES IDENTIFIED DURING AND AFTER THE IDA

Several alignments were developed during the IDA analysis and include the following:

- A design option following in the UP Niles Subdivision.
- A tunnel from east of Niles Junction to the vicinity of I-680/SR 84.

Station alternatives considered during the IDA analysis include:

- Union City.
- Shinn.
- I-680/SR 84.

One additional alignment was developed during the AA process:

- An alignment from the Union City Intermodal Station in the UP Oakland Subdivision (presuming purchase of the subdivision as proposed by the City of Union City) to Niles Junction.

ALIGNMENT AND STATION ALTERNATIVES WITHDRAWN FROM FURTHER CONSIDERATION

All the alignment and station alternatives listed above were reviewed by the Project Team, the Authority, the FRA, and the Working Group. Many of the scoping alternatives were carried forward for evaluation as part of this study. However, as a result of further review, several alignment and station alternatives were withdrawn from further analysis in the AA phase.

The alignment alternatives not carried forward are listed below:

- **Niles Canyon to Union City and Newark via SR 84 and Decoto:** An at-grade alignment through Niles Canyon would involve substantial environmental impacts on Alameda Creek riparian habitat, which is unlikely to be permitted by federal and state resource agencies. Use of SR 84 and Decoto would result in substantial community disruption because it would require extensive routing through both Fremont and Union City. This alternative does not meet the project's purpose and need because it is not an independent right of way and it would not improve travel times compared to existing ACE service.
- **Redwood City connection:** Building a route to Redwood City is outside the project purpose and need, which are defined as connecting the northern San Joaquin Valley to the vicinity of San José. The Dumbarton Rail Corridor Project, which is being pursued by the San Mateo County Transportation Authority, includes this proposed connection, and the Altamont Rail Corridor Project includes a project goal to accommodate a connection to the Dumbarton Corridor which could occur either east or west of Niles Canyon.
- **Use existing ACE alignment:** Alternatives EB-1 and EBF-1 (see above), carried forward for analysis, use the ACE/UP alignment through Fremont but do not use the UP alignment through Niles Canyon. An at-grade alignment through Niles Canyon would involve substantial environmental impacts on Alameda Creek riparian habitat, which is unlikely to be permitted by federal and state resource agencies. This alternative does not meet the project's purpose and need because it is not an independent right of way and it would not improve travel times compared to existing ACE service.
- **Use SP alignment:** An at-grade alignment through Niles Canyon would involve substantial environmental impacts on Alameda Creek riparian habitat, which is unlikely to be permitted by federal and state resource agencies. This alternative would not improve travel times compared to existing ACE service.

Station alternatives not carried forward are listed below:

- **Shinn Intermodal Station:** The reasons for not carrying forward this station were discussed above in Section 3.3.5.

ALIGNMENT AND STATION ALTERNATIVES CARRIED FORWARD INTO ANALYSIS

The following alignments were carried forward for further evaluation in this study:

- **Alternative EBUC-1:** Adjacent to UP Niles Subdivision, Niles Tunnel.
- **Alternative EBUC-2:** UP Oakland Subdivision, Niles Junction, Niles Tunnel.

The following station alternatives were carried forward for further evaluation in this study:

- Union City Intermodal.
- I-680/SR 84.

Each alignment and station alternative is described below. The alignment alternatives and station locations are shown in Figure 3.3-9.

Alternative EBUC-1

This alternative generally would follow adjacent to the UP Niles Subdivision from Union City to Niles Junction and a new tunnel from Niles Junction to the I-680/SR 84 interchange.

From the Union City Intermodal Station, (parallel to but approximately 800 feet offset from the existing Union City BART Station), this alignment would be located on an aerial structure adjacent to the active UP Niles Subdivision and curve east into the portal of a new Niles Tunnel, immediately south of Niles Reservoir. The tunnel would extend east to a point in the vicinity of Alameda Creek in Sunol Valley and continue east at grade. Approaching I-680, the alignment would rise on an aerial structure to cross I-680 and reach a potential station in the vicinity of the I-680/SR 84 interchange.

Alternative EBUC-2

This alternative generally would follow the UP Oakland Subdivision from Union City to Niles Junction, and a new tunnel from Niles Junction to the I-680/SR 84 interchange.

From an aerial Union City station along the UP Oakland Subdivision (adjacent to the existing BART station), this alignment would descend to grade, located in a purchased right-of-way in the UP Oakland Subdivision to a point west of Mission Boulevard, then rise on an aerial structure to Niles Junction. The aerial alignment would curve east from Niles Junction into the portal of a new Niles Tunnel immediately south of Niles Reservoir. The tunnel would extend east to a point in the vicinity of Alameda Creek in Sunol Valley and continue east at grade. Approaching I-680, the alignment would rise on an aerial structure to cross I-680 and reach a potential station in the vicinity of the I-680/SR 84 interchange.

Station Alternatives

The station locations in this area are shown in Figure 3.3-9 and described in more detail below. The more detailed station layouts can be found in Appendix D.

The location of the Union City station is provided below and shown in Figure 3.3-9.

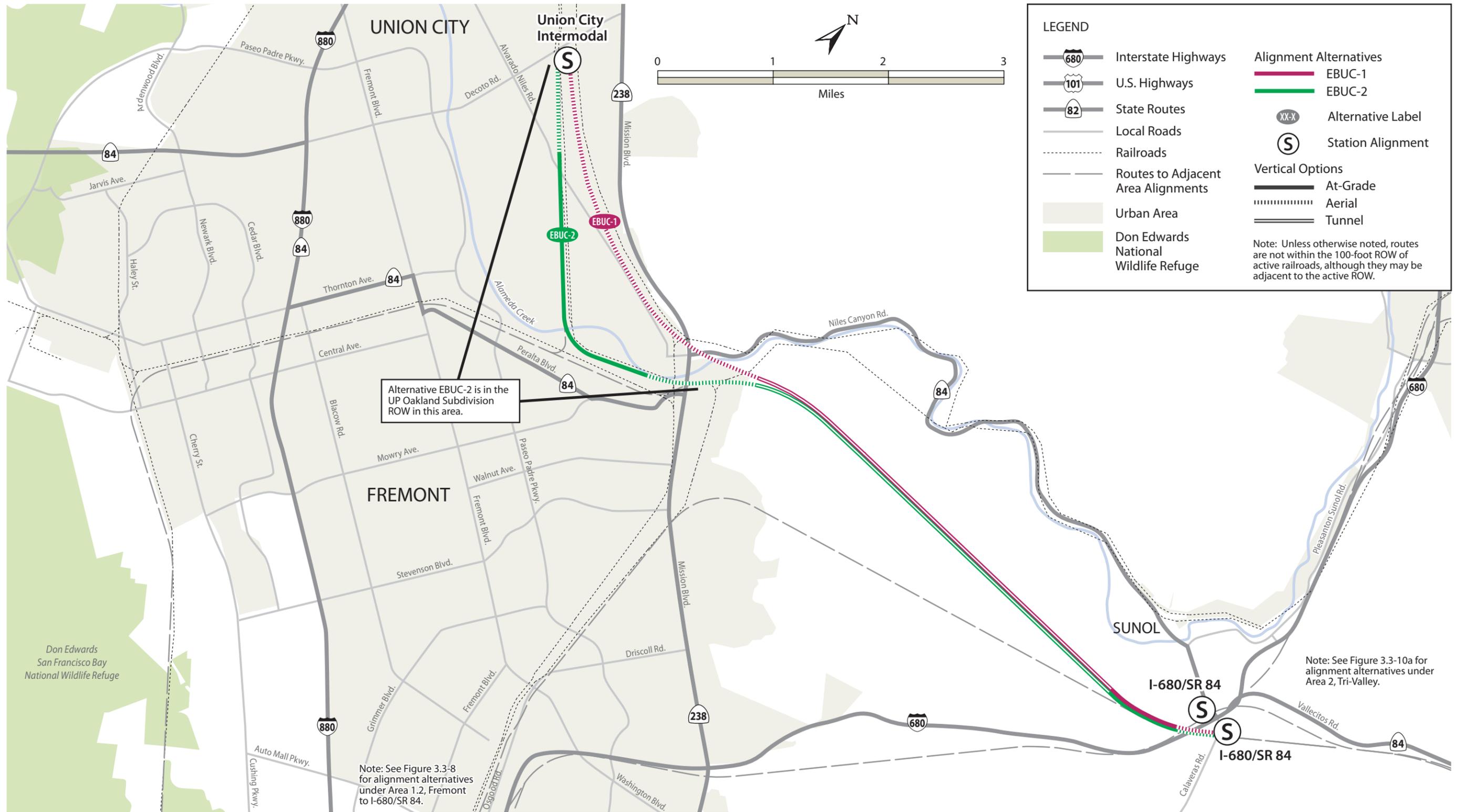
Union City Intermodal

This station would be located east of the existing Union City BART Station near the intersection of the BART corridor (UP Oakland Subdivision) and Alvarado-Niles Road in Union City. Under Alternative EBUC-1, the station would be approximately 1/8 mile east of the BART station along the parallel UP Niles Subdivision, connected to BART by planned TOD. Under Alternative EBUC-2, the station would be immediately east of the BART station. In both cases, the station would be elevated to allow unimpeded at-grade east-west access between the stations and planned redevelopment areas. This station could also provide a connection point to the Dumbarton Corridor Rail Project and Amtrak Capitol Corridor.

I-680/SR 84

See the station description provided above under Area 1.2.

Figure 3.3-9
Alignment and Station Alternatives from Union City to I-680/SR 84 (Area 1.3)



3.3.8 TRI-VALLEY (AREA 2)

Area 2 begins near the I-680/SR 84 interchange and extends north and east through Pleasanton and Livermore to Greenville Road on the west side of the Altamont Pass.

SCOPING ALTERNATIVES

The following alignments were suggested during scoping for the Pleasanton and Livermore area:

- Follow I-680.
- Follow I-580.
- Follow ACE alignment.
- Follow SP alignment.
- Follow SR 84.
- North-south through quarry areas (El Charro Road, then due south).
- North of Livermore.
- South of Livermore.
- Avoid Pleasanton entirely.
- Local service alternative that would divert from I-580 rail to serve downtown Livermore using existing UP or SP alignment.
- Terminate Altamont Corridor Rail Project in Livermore (e.g., Stockton to Livermore only) and use connections to BART (or as Phase 1 of project).

Station alternatives suggested in scoping include:

- Dublin (at BART).
- Downtown Pleasanton.
- Pleasanton at Alameda County Fairgrounds.
- No Pleasanton station.
- SR 84/Stanley.
- Downtown Livermore.
- Vasco Road.
- Greenville Road.
- Isabel/I-580.
- BART and the California HST System should share stations in Livermore.

ALTERNATIVES IDENTIFIED DURING AND AFTER THE IDA

The Tri-Valley options were coordinated closely with BART to accommodate a potential intermodal link between BART and ACE along an extension of the Dublin/Pleasanton line, which is currently being pursued by BART in a parallel effort.

Several alignments were developed during the IDA analysis and include the following:

- An alignment along I-680 and I-580.
- Pleasanton options—two corridor alternatives (along the active UP and along the inactive former SP).
- Central Livermore—two design options (one generally following the UP corridor and one separate from UP).
- An alignment south of Pleasanton along SR 84 to Stanley.
- An alignment south of Pleasanton and Livermore along SR 84 and then cross-country to Vasco Road.
- An alignment east of downtown Livermore—three options extend east to the Altamont Pass, including I-580, a former SP line, and a new corridor south of the existing UP main line.

Station alternatives considered during the IDA analysis include:

- I-680/SR 84 interchange.
- Dublin/Pleasanton BART Station.
- Three options in Pleasanton—Bernal/I-680, downtown UP, downtown SP.
- Seven options in Livermore—Isabel/Stanley, Isabel/I-580, downtown Livermore (two options), Vasco Road (two options), and Greenville Road.

Additional alignments developed during the AA process included:

- A design option along the active UP in Pleasanton involving a new dual-purpose tunnel to underground the existing UP freight service and the new Altamont Corridor Rail Project service, and to eliminate at-grade crossings.
- A second alternative south of Pleasanton and Livermore that would follow along SR 84 and then traverse land farther south than the IDA alternative to avoid Sycamore Grove Park.

ALIGNMENT AND STATION ALTERNATIVES WITHDRAWN FROM FURTHER ANALYSIS

All the alignment alternatives listed above were reviewed by the Project Team, the Authority, the FRA, and the Working Group. Many of the scoping alternatives were carried forward for further evaluation as part of this study. However, as a result of further review, several alignment and station alternatives were withdrawn from further analysis in the AA phase.

The alignment alternatives not carried forward are listed below:

- **North-south through quarry areas between Livermore and Pleasanton (El Charro Road, then due south):** Because BART has selected a preferred alternative that does not include a station at Isabel/I-580; this alignment would not provide any new utility or connections that could already be provided by any of the alternatives being carried forward.
- **North of Livermore:** Review of potential alignments north of I-580 indicated that such alignments would involve additional cost because of out-of-the-way travel and would encroach on highly sensitive natural resources (i.e., Springtown Alkali Sink).
- **Local service alternative that would divert from I-580 rail to serve downtown Livermore using existing UP or SP alignment:** This alternative would not serve the project purpose and need of use of an independent right-of-way. Functionally, Alternative TV-1 (see description below) would allow for the possibility of some form of downtown shuttle connection from either a Vasco Road station or an Isabel/I-580 station; therefore, this alternative is redundant to Alternative TV-1.

Station alternatives not carried forward are listed below:

- **Isabel/Stanley:** This station location would serve only limited purpose given its isolated location between Livermore and Pleasanton, and it is not expected to support increased ridership to compensate for the reduction in service time that would occur if there were other stations in Livermore and Pleasanton.
- **Greenville:** BART has selected a preferred alternative that does not extend to Greenville. Therefore, a station at Greenville would not have linkages to BART that can otherwise be provided by a Vasco Road station. In addition, although there is some TOD potential at Greenville, it is far less robust than the potential around Vasco Road, which would affect ridership potential. The TOD potential at Greenville north of I-580 is further limited due to the presence of highly sensitive threatened and endangered species habitat whereas the areas around Vasco Road are not.

ALIGNMENT AND STATION ALTERNATIVES CARRIED FORWARD INTO ANALYSIS

The following alignments were carried forward for further evaluation in this study:

- **Alternative TV-1:** I-680, I-580.
- **Alternative TV-2a:** I-680, in former SP—Pleasanton (aerial), adjacent to the UP-Livermore (aerial), adjacent to the UP east of downtown Livermore.

- **Alternative TV-2b:** I-680, in former SP—Pleasanton (tunnel), Railroad Avenue (tunnel), in former SP.
- **Alternative TV-2c:** I-680, in UP - Pleasanton (tunnel), adjacent to UP Livermore (tunnel), in former SP.
- **Alternative TV-3:** SR 84, Isabel, Railroad Avenue, in former SP east of downtown Livermore.
- **Alternative TV-4:** SR 84, south of Livermore, east of Vasco Road, adjacent UP.

The following station alternatives were carried forward for further evaluation in this study:

- I-680/SR 84.
- Bernal/I-680.
- Dublin/Pleasanton BART.
- Downtown Pleasanton (UP) (subway).
- Downtown Pleasanton (SP) (aerial).
- Downtown Pleasanton (SP) (subway).
- Isabel/I-580.
- Downtown Livermore.
- Vasco Road (SP).
- Vasco Road (UP).

Each alignment and station alternative is described below. The alignment alternatives and station locations are shown in Figure 3.3-10a.

Alternative TV-1

This alternative generally would follow I-680 and I-580 from the I-680/SR 84 interchange to I-580 at Greenville Road in Livermore.

From an aerial I-680/SR 84 station, this alternative would cross over the I-680/SR 84 interchange to a short section of retained cut and then enter a tunnel on the east side of I-680 between SR 84 and Koopman Road. The alignment would emerge from the tunnel to cross over the I-680/Sunol (Koopman Road) interchange on an aerial structure, follow I-680 on the west side, descend to a section of retained fill, and return to grade to reach a point about midway between the I-680/Sunol (Koopman Road) and I-680/Sunol Boulevard/Castlewood Drive interchanges.

From the point about midway between the I-680/Sunol (Koopman Road) and I-680/Sunol Boulevard/Castlewood Drive interchanges, the alignment would rise on an aerial structure on the west side of I-680, generally paralleling I-680, and cross twice over Pleasanton Sunol Road and the UP right-of-way. In the vicinity of the I-680 overcrossing of the UP right-of-way, the alignment would cross to the east side of I-680 and closely follow I-680, with a potential station south of Bernal Avenue. The alignment would continue on an aerial structure on the east side of I-680 north to I-580, and curve east to follow I-580 on the south side of I-580 before reaching a potential station at the existing Dublin/Pleasanton BART Station.

From the potential station at the existing Dublin/Pleasanton BART Station, the alignment would continue on an aerial structure, transition to the I-580 median east of the existing BART tracks, and continue east to reach a potential I-580/Isabel Avenue station east of the I-580/Isabel Avenue interchange. The aerial I-580/Isabel Avenue station would straddle the westbound lanes, and the aerial alignment would transition to the north side of I-580 and enter a retained cut extending to a point west of First Street. The alignment would then transition to an aerial structure and transition from north of I-580 to within the I-580 right-of-way and continue on an aerial structure to Greenville Road.

Alternative TV-2a

Starting at the I-680/SR 84 interchange, this alternative would generally follow I-680 and the former SP right-of-way through Pleasanton and run adjacent to the UP right-of-way through Livermore to reach Greenville Road.

From an aerial I-680/SR 84 station, this alternative would cross over the I-680/SR 84 interchange to a short section of retained cut before entering a tunnel on the east side of I-680 between SR 84 and Koopman Road. The alignment would emerge from the tunnel to cross over the I-680/Sunol (Koopman Road) interchange on an aerial structure,

follow I-680 on the west side, descend to a section of retained fill, and reach a point about midway between the I-680/Sunol (Koopman Road) and I-680/Sunol Boulevard/Castlewood Drive interchanges.

From the point about midway between the I-680/Sunol (Koopman Road) and I-680/Sunol Boulevard/Castlewood Drive interchanges, the alignment would continue on retained fill, transition to grade in the vicinity of the intersection of Pleasanton Sunol and Verona Roads, and follow the former SP right-of-way to a point directly east of the I-680 overcrossing of the former SP right-of-way. The alignment would then rise on an aerial structure within the former SP right-of-way and continue through downtown Pleasanton to a point east of Valley Avenue, with a potential Pleasanton station between Angela and Spring Streets.

East of Valley Avenue, the alignment would descend from the aerial structure to grade and continue to follow the former SP right-of-way to a point directly east of Isabel Avenue. The alignment would then rise on an aerial structure adjacent to the UP right-of-way and continue to a potential downtown Livermore station between L Street and Junction Avenue. The aerial alignment would continue east, descend to grade at a point west of Mines Road, and continue adjacent to the UP right-of-way to a point east of Mines Road. The alignment would then continue at grade adjacent to the UP right-of-way to a potential Vasco Road station at the location of the existing ACE station, directly east of Vasco Road. The alignment would then continue at grade adjacent to the UP right-of-way to a point west of Greenville Road.

Alternative TV-2b

Starting at the I-680/SR 84 interchange, this alternative would generally follow I-680 and the former SP right-of-way through Pleasanton, as well as Railroad Avenue and the former SP right-of-way through Livermore, to reach Greenville Road.

From an aerial I-680/SR 84 station, this alignment would cross over the I-680/SR 84 interchange to a short section of retained cut before entering a tunnel on the east side of I-680 between SR 84 and Koopman Road. The alignment would emerge from the tunnel to cross over the I-680/Sunol (Koopman Road) interchange on an aerial structure, follow I-680 on the west side, descend to a section of retained fill, and reach a point about midway between the I-680/Sunol (Koopman Road) and I-680/Sunol Boulevard/Castlewood Drive interchanges.

From the point about midway between the I-680/Sunol (Koopman Road) and I-680/Sunol Boulevard/Castlewood Drive interchanges, the alignment would continue on retained fill, transition to grade in the vicinity of the intersection of Pleasanton Sunol and Verona Roads, and follow the former SP right-of-way to a point directly east of the I-680 overcrossing of the former SP right-of-way. The alignment would then descend into a tunnel under the former SP right-of-way and continue through downtown Pleasanton to a point east of Valley Avenue, with a potential below-grade Pleasanton station between Angela and Spring Streets.

East of Valley Avenue, the alignment would ascend from the tunnel to grade and continue to follow the former SP right-of-way to a point directly east of Isabel Avenue. The alignment would then continue at grade to reach a short retained cut section on the approach to a tunnel portal west of Murrieta Boulevard. The alignment would continue in a tunnel under Stanley Boulevard, Railroad Avenue, and the UP right-of-way to reach an eastern tunnel portal at a point west of Mines Road, and would continue adjacent to the UP right-of-way at grade to a point east of Mines Road. The alignment would then continue at grade within the former SP right-of-way to a point west of Greenville Road, with a potential Vasco Road station immediately east of Vasco Road.

Figure 3.3-10a
Alignment and Station Alternatives through the Tri-Valley (Area 2)

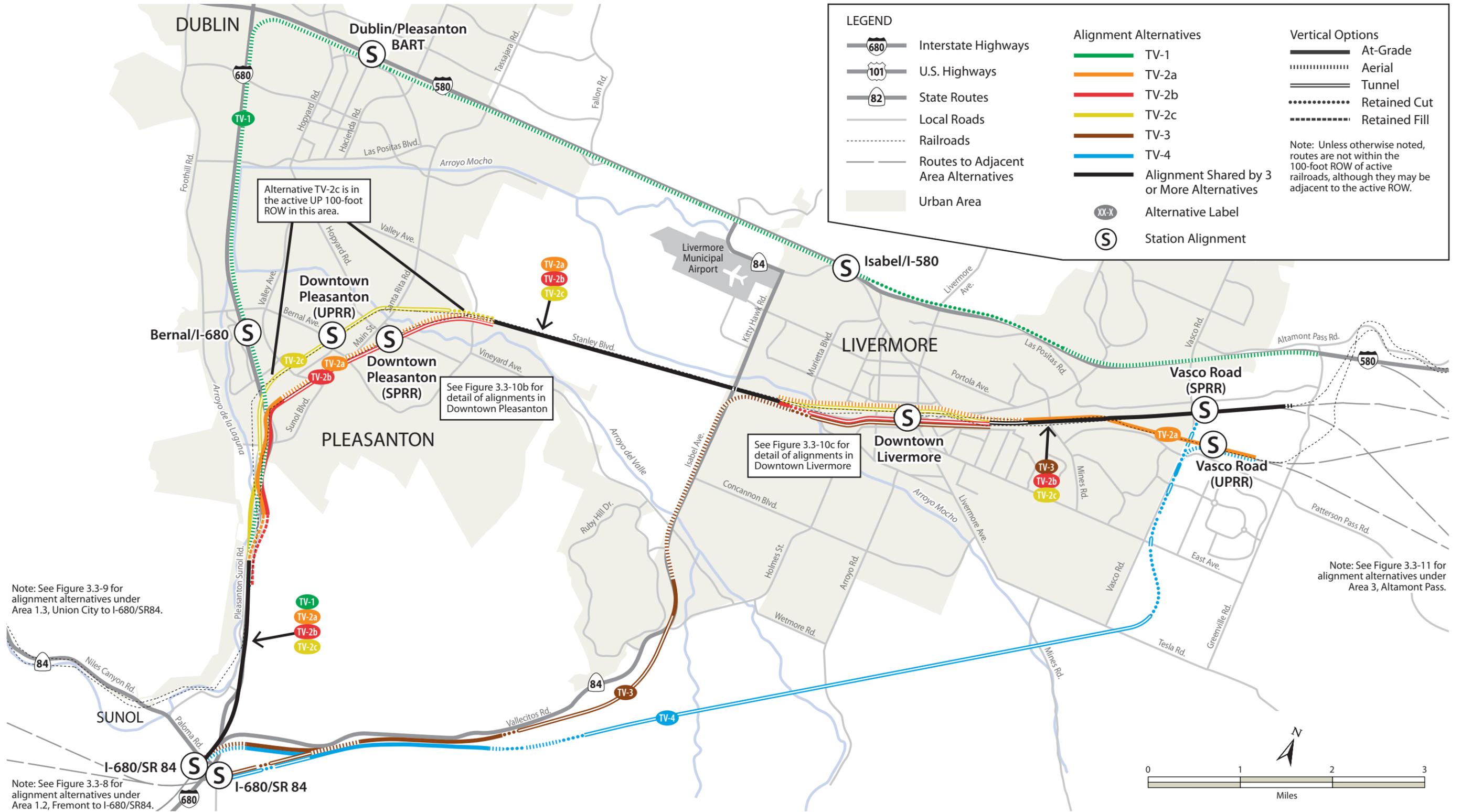


Figure 3.3-10b
Alignment and Station Alternatives through the Tri-Valley (Area 2): Downtown Pleasanton

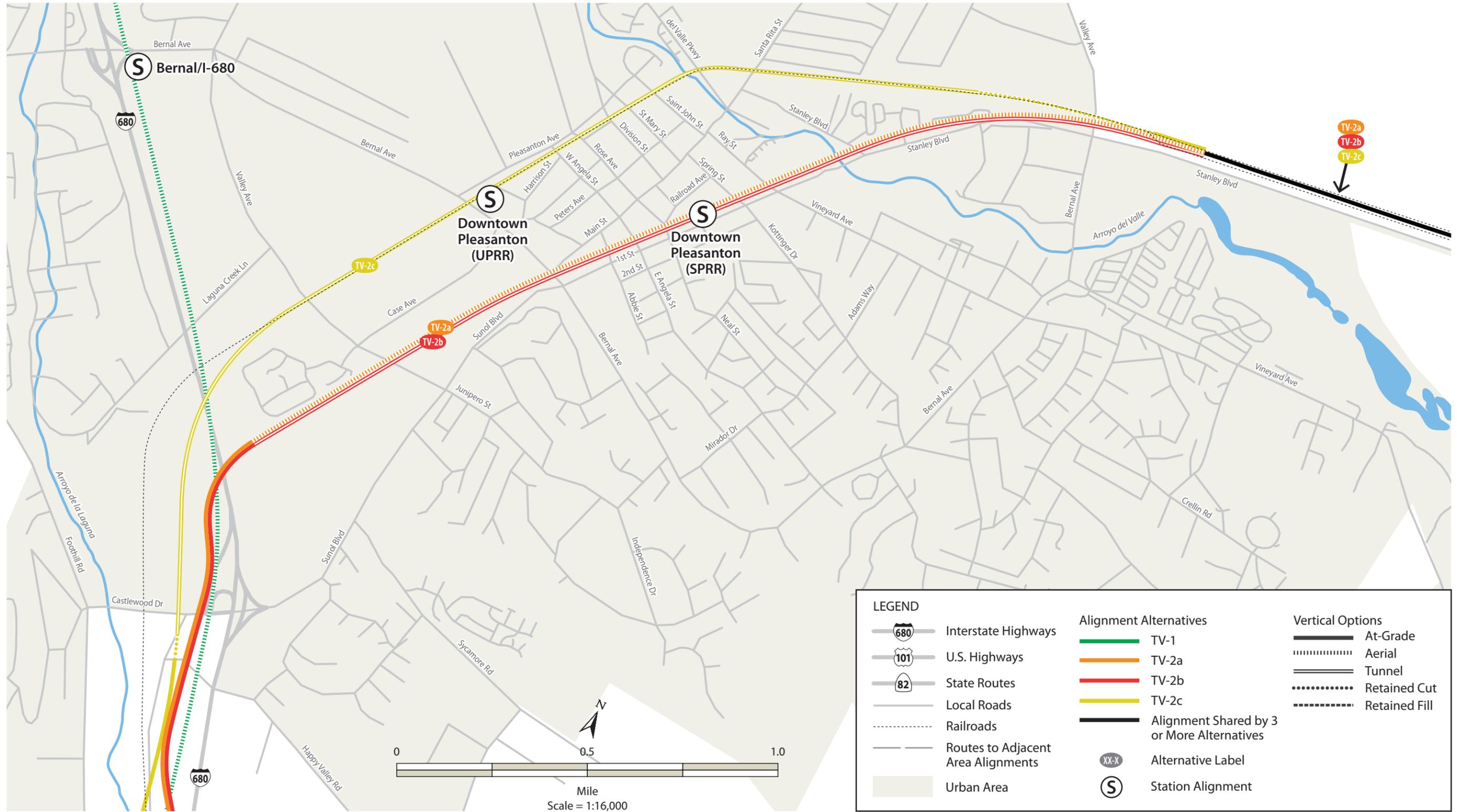


Figure 3.3-10c
Alignment and Station Alternatives through the Tri-Valley (Area 2): Downtown Livermore



Alternative TV-2c

Starting at the I-680/SR 84 interchange, this alternative would generally follow I-680 and the UP right-of-way through Pleasanton, then be adjacent to the UP right-of-way in downtown Livermore, and then be in the former SP right-of-way east of downtown Livermore to reach Greenville Road.

From an aerial I-680/SR 84 station, this alternative would cross over the I-680/SR 84 interchange to a short section of retained cut before entering a tunnel on the east side of I-680 between SR 84 and Koopman Road. The alignment would emerge from the tunnel to cross over the I-680/Sunol (Koopman Road) interchange on an aerial structure, follow I-680 on the west side, descend to a section of retained fill, and reach a point about midway between the I-680/Sunol (Koopman Road) and I-680/Sunol Boulevard/Castlewood Drive interchanges.

From the point about midway between the I-680/Sunol (Koopman Road) and I-680/Sunol Boulevard/Castlewood Drive interchanges, the alignment would rise on an aerial structure on the west side of I-680, only generally paralleling I-680, and cross twice over Pleasanton Sunol Road and the UP. In the vicinity of the intersection of Pleasanton Sunol and Happy Valley Roads, the alignment would enter a short retained cut section approaching a tunnel under the Castlewood Country Club golf course. The existing UP tracks would transition to enter the tunnel as well. The four-track tunnel would curve east under the UP right-of-way and continue through downtown Pleasanton to a point in the vicinity of the intersection of Stanley Boulevard and California Avenue, with a potential below-grade Pleasanton station between Angela and Spring Streets. The existing UP tracks on the surface would be made redundant and could be removed, allowing for redevelopment of the right-of-way above the tunnel. The alignment and relocated UP tracks would continue east in retained cut within the UP right-of-way to a point east of Valley Avenue. The alignment and relocated UP tracks would then ascend from retained cut to grade and continue east to follow the former SP right-of-way to a point directly east of Isabel Avenue. Reaching grade, the relocated UP tracks would transition to rejoin the existing surface tracks in the UP right-of-way.

From a point directly east of Isabel Avenue, the alignment would descend in a short section of retained cut to a tunnel portal in the vicinity of the intersection of Stanley Boulevard and El Caminito. The alignment would run adjacent north of the UP right-of-way in tunnel to a point west of Mines Road and continue adjacent north of the UP right-of-way at grade to a point east of Mines Road. The alignment would then continue at grade within the former SP right-of-way to a point west of Greenville Road, with a potential Vasco Road station immediately east of Vasco Road.

Alternative TV-3

Starting at the I-680/SR 84 interchange, this alternative would generally follow SR 84 south of Pleasanton to enter Livermore via Isabel Avenue, and continue east through Livermore along Railroad Avenue and the former SP to reach Greenville Road. Two options have been defined for the alternative, depending on whether the potential I-680/SR 84 station is located on the west side of I-680 (oriented parallel) or located on the east side of I-680 (oriented at a skew angle):

- From an aerial I-680/SR 84 station on the west side of I-680 (oriented parallel), the alignment would cross over I-680, curve to follow SR 84 at grade on the south side of the highway, and continue to the vicinity of Little Valley Road.
- From an aerial I-680/SR 84 station on the east side of I-680 (oriented at a skew angle), the alignment would enter a set of two tunnels through the hills east of I-680, with a section at grade between them. The alignment would emerge to follow SR 84 on an aerial structure on the south side of the highway and descend to grade in the vicinity of Little Valley Road.

From the vicinity of Little Valley Road, the alignment would continue north and east for about 1 mile at grade along the south side of SR 84 to reach a short section of retained cut approaching a tunnel portal. Heading northeast, the tunnel would diverge from SR 84 and curve north to rejoin the highway at a portal in the vicinity of the intersection of Vallecitos Road and Isabel Avenue. The alignment would follow SR 84 at grade along the east side of SR 84 (Isabel Avenue) and rise to an aerial structure south of Vineyard Avenue. The aerial alignment would cross over to the west side of SR 84 (Isabel Avenue) south of Vineyard Avenue and continue north to a point south of Stanley Boulevard.

From the point south of Stanley Boulevard, the aerial alignment on the west side of SR 84 (Isabel Avenue) would curve east to run adjacent to the UP right-of-way on the north side of Stanley Boulevard and descend to grade. The alignment would continue east at grade to reach a short retained cut section on the approach to a tunnel portal west of Murrieta Boulevard. The alignment would continue in a tunnel under Stanley Boulevard, Railroad Avenue, and adjacent to the UP right-of-way to return to grade at a point west of Mines Road, and then continue along the UP right-of-way at grade to a point east of Mines Road. The alignment would then continue at grade within the former SP right-of-way to a point west of Greenville Road, with a potential Vasco Road station immediately east of Vasco Road.

Alternative TV-4

Starting at the I-680/SR 84 interchange, this alternative would generally follow SR 84 south of Pleasanton and along an existing high-voltage transmission line south of Livermore through Sycamore Grove Park to enter Livermore east of Vasco Road, and then continue east adjacent to the UP right-of-way to reach Greenville Road.

Two options have been defined for the alternative, depending on whether the potential I-680/SR 84 station is located on the west side of I-680 (oriented parallel) or located on the east side of I-680 (oriented at a skew angle):

- From an aerial I-680/SR 84 station on the west side of I-680 (oriented parallel), the alignment would cross over I-680, curve to follow SR 84 at grade on the south side of the highway, and continue to the vicinity of Little Valley Road.
- From an aerial I-680/SR 84 station on the east side of I-680 (oriented at a skew angle), the alignment would enter a set of two tunnels through the hills east of I-680, with a section at grade between them. The alignment would emerge to follow SR 84 on an aerial structure on the south side of the highway and descend to grade in the vicinity of Little Valley Road.

From the vicinity of Little Valley Road, the alignment would continue north and east for somewhat less than 2 miles at grade, gradually divert south from SR 84 to follow an existing high-voltage transmission line with a short section of aerial structure, followed by retained cut, another aerial structure, and a second section of retained cut to reach a tunnel portal. The tunnel would extend approximately 6 miles in a northeast direction following the transmission line crossing under Sycamore Grove Park, Arroyo Road, Mines Road, and Tesla Road. Northeast of Tesla Road, the alignment would transition to a retained cut section that would be located within the buffer zone on the west side of Lawrence Livermore National Laboratory between the laboratory and Vasco Road. Two short tunnel segments would be located at East Avenue and West Gate Drive to preserve at-grade roadway access. North of West Gate Drive, the alignment would transition to at-grade and then a short retained cut segment prior to transitioning to an aerial structure and curving east to run adjacent on the south side of the UP right-of-way and reach a potential station east of Vasco Road. The aerial alignment would continue adjacent and south of the UP right-of-way to a point west of Greenville Road.

Greenville Road "Mix and Match"

In the vicinity of Greenville Road, the six I-680/SR 84 to Greenville Road alternatives (TV-1, 2a, 2b, 2c, 3, and 4) approaching Greenville Road from the west either adjacent to the UP right-of-way or within the former SP right-of-way would connect to either of the two Altamont Pass alternatives (A-1 or A-2) described in the following section. The "mix-and-match" connecting segments are shown on the engineering drawings in Appendix C.

Station Alternatives

The station locations in this area are shown in Figure 3.3-10a and described in more detail below. The more detailed station layouts can be found in Appendix D.

I-680/SR 84

See the station description provided earlier under Area 1.2.

Bernal/I-680

This station would be located along the east side of I-680, south of the I-680/Bernal Avenue interchange in Pleasanton. The station would be elevated for the alignment to pass over Bernal Avenue. There is the possibility for at-grade station facilities (entrance, park-and-ride, transit center, etc.) on cleared land southeast of the interchange, but land availability has not yet been determined.

Dublin/Pleasanton BART

This station would be located along the south side of the I-580 corridor, adjacent to the Dublin/Pleasanton BART Station, east of the I-580/Hopyard Road interchange in Dublin. The station would be elevated, likely above the BART park-and-ride facility along the south side of I-580 corridor. The station would have direct access to the BART station and to the TOD district north of I-580.

Downtown Pleasanton (UP)

This station would be located at the site of the current Pleasanton ACE Station, along the UP corridor north of Bernal Avenue in Pleasanton. The station would be underground as part of a proposed shared-use corridor with the UP, to minimize environmental impacts on downtown Pleasanton. It is anticipated that the station would make use of the park-and-ride facility for the current ACE station, which will be replaced by the new station. In comparison to the Downtown Pleasanton (SP) alternative (see below), the station is not as convenient to the heart of downtown Pleasanton. The station has good access to the I-680 corridor via Bernal Avenue and has direct access to Alameda County Fairgrounds.

Downtown Pleasanton (SP)

This station would be located along the former SP corridor north of the Neal Street/Railroad Avenue intersection near a historic depot in Pleasanton. With Alternative TV-2a, the station would be elevated. With Alternative TV-2b, the station would be underground. It may be possible to integrate the historic depot into the new station as a station entrance, offices, or a waiting room. The site has direct access to downtown Pleasanton, one block from the Main Street retail corridor.

Isabel/I-580

This station would be located along the south side of the I-580 corridor, east of the future I-580/Isabel Avenue interchange in Livermore. The station is paired with a possible BART station at this location, along the proposed BART extension from Dublin/Pleasanton to downtown Livermore. The station would be elevated for the alignment to clear the proposed at-grade BART alignment in the I-580 median (although the location and profile will be subject to further study). The station would support a park-and-ride "intercept" facility along the I-580 corridor. At present, BART is not considering a station at this location (although alternatives with a station at this location were previously considered).

Downtown Livermore

This station would be located along the UP corridor in downtown Livermore, east of Livermore Avenue (site of the Livermore ACE Station and downtown transit center). The station would be elevated above the UP corridor to maintain existing UP rail operations and would connect to the existing Livermore Valley Center parking garage, with frontage on Railroad Avenue. The site provides direct access to downtown Livermore and intermodal connections with the transit center and a future BART station (subject to further study).

Vasco Road (SP)

This station would be located along the "UP Siding" (former SP corridor) immediately east of Vasco Road, between Brisa Street and Las Positas Road in Livermore. Under Alternatives TV-1, TV-2b, and TV-3, the station would be at-grade. The site supports a future BART station (subject to further study), a park-and-ride "intercept" facility serving the I-580 corridor, and significant TOD potential supported by City of Livermore planning policies.

Vasco Road (UP)

This station would be located along the UP corridor immediately east of Vasco Road, between Brisa Street and Patterson Pass Road in Livermore. Under Alternatives TV-2a and TV-2c, the station would be at-grade. Under Alternative TV-4, the station would be elevated for the alignment to curve from Vasco Road into the UP corridor, and the station would be located farther east to avoid the curve. The site supports a future BART station (subject to further study) and a park & ride "intercept" facility serving the I-580 corridor.

3.3.9 ALTAMONT PASS (AREA 3)

Area 3 begins at the eastern edge of Livermore and ends at the western edge of Tracy. It includes the Altamont Pass and Patterson Pass.

SCOPING ALTERNATIVES

The following alignments were suggested during scoping for the Altamont Pass area:

- Along I-580 (see Alternative A-1 below).
- Through Patterson Pass (see Alternative A-2 below).

Station alternatives suggested in scoping included:

- I-580/I-205 Junction.
- I-580 near Mountain House (with park-and-ride).
- I-580 near Corral Hollow (with park-and-ride).

ALTERNATIVES IDENTIFIED DURING AND AFTER THE IDA

There were no additional alternatives or stations identified during or after the IDA analysis process.

ALIGNMENT AND STATION ALTERNATIVES WITHDRAWN FROM FURTHER ANALYSIS

All the alignment alternatives listed above were reviewed by the Project Team, the Authority, the FRA, and the Working Group. There were no alignments withdrawn from further analysis in this area.

Three freeway intercept station locations (I-580/I-205, I-580 near Mountain House, and I-580 near Corral Hollow) were dismissed from further analysis because there were multiple station alternatives in Tracy that would adequately serve Tracy and that would result in shorter commute distances for more people relative to a freeway intercept station.

ALIGNMENT AND STATION ALTERNATIVES CARRIED FORWARD INTO ANALYSIS

The following alignments were carried forward for further evaluation in this study:

- **Alternative A-1:** Northern alignment near I-580.
- **Alternative A-2:** Southern alignment through Patterson Pass.
- **California Aqueduct "Mix and Match."**

No station alternatives were suggested during scoping or developed as part of the IDA process. Each alignment alternative is described below and is shown in Figure 3.3-11.

Alternative A-1

This alternative would generally follow I-580 through the Altamont Pass between Livermore and Tracy. From a point west of Greenville Road either adjacent to the UP right-of-way or within the former SP right-of-way, the alignment would rise on an aerial structure to cross Greenville Road and continue east across the Patterson Reservoir Aqueduct to reach a tunnel portal. The alignment would continue in a tunnel to follow I-580 along the south side of I-580, continue on the same bearing as I-580 curves to the north, and reach a tunnel portal at a point south of where I-580 crosses the UP and former SP. The alignment would continue east from tunnel on an aerial structure, cross the UP

and former SP, and enter a section at grade converging with I-580. In the vicinity of where Jess Ranch Road turns east from a north-south bearing to roughly parallel I-580, the alignment would continue east on an aerial structure and follow I-580 to the Grant Line Road/Jess Ranch Road intersection. The aerial structure would be adjoined on the east by a short section in retained cut, diverging south from I-580, and followed by an aerial structure to a point just west of the Alameda County/San Joaquin County line. After a short section at grade, the alignment would continue on an aerial structure and converge again with I-580, following I-580 on the south side of the freeway. The alignment would continue on an aerial structure to a point south of the Patterson Pass Road/Mountain House Parkway intersection, curve east across I-580, and cross the California Aqueduct and Delta Mendota Canal to follow either adjacent to the UP right-of-way or within the former SP right-of-way.

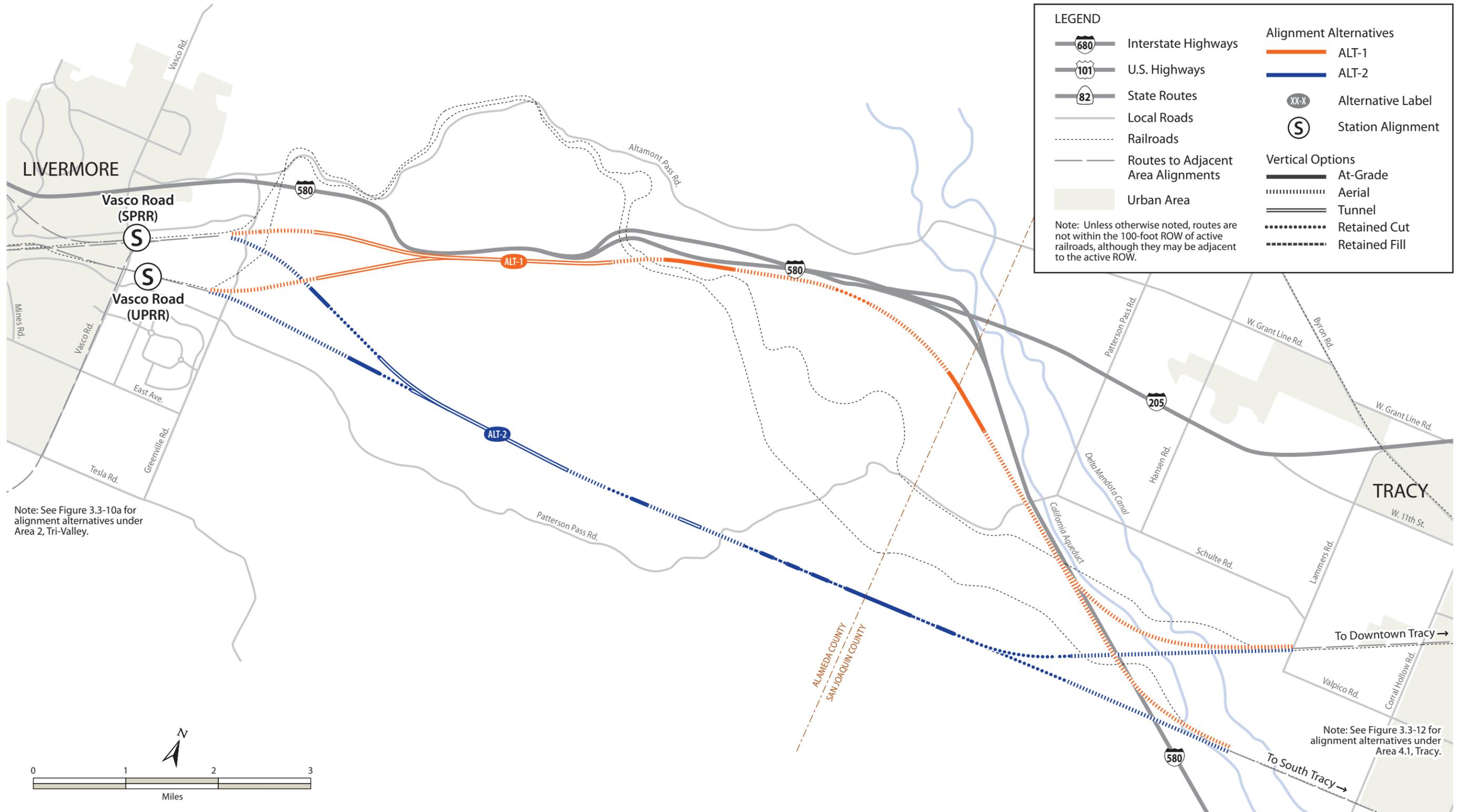
Alternative A-2

Alternative A-2 would provide a more direct southern route through the Altamont Pass connecting Livermore and Tracy. This route would include tunnel, aerial, at-grade, retained fill, and retained cut sections to traverse the varying terrain. This alternative would cross Patterson Pass Road on an aerial section at about midpoint of the range near Patterson Pass. This alternative would not cross the UP or SP right-of-way.

California Aqueduct "Mix and Match"

In the vicinity where the UP and former SP rights-of-way cross the California Aqueduct and Delta Mendota Canal west of Tracy, the two Altamont Pass alternatives (A-1 and A-2) approaching the California Aqueduct from the west would connect to either of the two Tracy alternatives (T-1 and T-2) described in the following section. The "mix-and-match" segments are shown in engineering drawings in Appendix C.

Figure 3.3-11
Alignment and Station Alternatives through the Altamont Pass (Area 3)



3.3.10 TRACY (AREA 4.1)

Area 4.1 begins at the California Aqueduct and extends to the San Joaquin River through Tracy.

SCOPING ALTERNATIVES

The following alignments were suggested during scoping for the Tracy area:

- Follow the existing ACE line south of Tracy.
- Extend route through the middle of Tracy.
- BART should be extended to Manteca to connect to the California HST System.

Station alternatives suggested in scoping include:

- Downtown Tracy.
- ACE Tracy (south Tracy).
- Avoid downtown Tracy.
- Avoid southern Tracy because of poor access and sprawl concerns.
- Mountain House (northwest of Tracy).
- I-580 near Mountain House (with park-and-ride).
- I-580 near Corral Hollow (with park-and-ride).
- I-5 near Kasson Road (with park-and-ride).
- Only one station in Tracy (not two).
- Only one station in Stockton (not two).

ALTERNATIVES IDENTIFIED DURING AND AFTER IDA

Two alignments were developed during the IDA analysis:

- An alignment along the former SP line through the center of Tracy.
- An alignment adjacent to the UP Oakland Subdivision right-of-way.

Station alternatives considered during the IDA analysis include:

- Downtown Tracy Station.
- South Tracy ACE Station (near the Tracy ACE Station).

No additional alignment or station alternatives were developed during the AA process.

ALIGNMENT AND STATION ALTERNATIVES WITHDRAWN FROM FURTHER ANALYSIS

All the alignment alternatives listed above were reviewed by the Project Team, the Authority, the FRA, and the Working Group. No alignment alternatives were withdrawn, and all were carried forward for evaluation as part of this study. However, as a result of further review, several station alternatives were withdrawn from further analysis in the AA phase.

Station alternatives not carried forward are listed below:

- **Mountain House:** Placement of a station in Mountain House would require an alignment north of Tracy, which would either require multiple lines near Tracy merging west of Tracy or would require an alignment with extensive out-of-direction travel from downtown Tracy along the WPRR line northwest to Mountain House and then back southward toward the Altamont Pass. The extended length would degrade service for mainline passengers without a substantial increase in ridership.
- **I-5 near Kasson Road (with park and ride):** This alternative would involve a station several miles east of Tracy. This station would require longer commute distance for Tracy, Lathrop, and Manteca residents than any of the station alternatives carried forth and likely would not increase ridership.

ALIGNMENT AND STATION ALTERNATIVES CARRIED FORWARD INTO ANALYSIS

The following alignments were carried forward for further evaluation in this study:

- **Alternative T-1:** Downtown Tracy.
- **Alternative T-2:** South of Tracy.

The following station alternatives were carried forward for further evaluation in this study:

- Downtown Tracy.
- South Tracy Station (near the Tracy ACE Station).

Each of alignment and station alternatives is described below and shown in Figure 3.3-12.

Alternative T-1

This alternative generally would follow the former SP right-of-way through Tracy. The right-of-way would need to be purchased from either the UP or other underlying owners, but it would not encroach on the active UP right-of-way.

The alignment would follow the former SP right-of-way on the north side of Schulte Road on an aerial structure from the Delta Mendota Canal to a point east of Lammers Road. The alignment would descend to a short section at grade and rise again to an aerial structure west of Corral Hollow Road. The alignment would continue on an aerial structure on the north side of the former SP right-of-way to reach a station at the existing downtown transit center in Tracy. The elevated station would be positioned at a slight skew angle, allowing the alignment to cross to the south side of the former SP tracks. Access to the platform potentially would be facilitated with a pedestrian bridge over the former SP tracks. The aerial alignment would continue north and east to 11th Street, cross back over to the north side of the former SP tracks, and descend to grade. The alignment would continue at grade on the north side of the former SP right-of-way to a point west of Banta Road, rise on an aerial structure through the unincorporated town of Banta, and return to grade. The at-grade alignment would continue to follow the former SP on the north side of the tracks and cross under I-205 to reach the San Joaquin River.

Alternative T-2

This alternative generally would run adjacent to and south of the UP right-of-way south of Tracy.

The alignment would run adjacent to the UP right-of-way at grade on the south side of the UP tracks from the Delta Mendota Canal to a point west of MacArthur Drive, fitting between the UP tracks and Linne Road east of Corral Hollow Road. A potential station would be located at or near the existing ACE station at Tracy Boulevard, and overpasses would be constructed for major cross streets. West of MacArthur Drive, the alignment would rise on an aerial structure to cross over MacArthur Drive, curve to the northeast, return to grade immediately east of the curve, and remain on the south side of the UP right-of-way. The alignment would continue northeast to reach the San Joaquin River and remain at grade except for an aerial structure to cross over the Mococo Line and Banta Road. Overpasses would be constructed to carry Chrisman, Bird, and Kasson Roads over the at-grade alignment.

Figure 3.3-12
Alignment and Station Alternatives through Tracy (Area 4.1)



Station Alternatives

The station locations in this area are shown in Figure 3.3-12 and described below. More detailed station layouts can be found in Appendix D.

Downtown Tracy

This station would be located in the “Bowtie” area in downtown Tracy, east of Central Avenue along the former SP corridor, adjacent to the new “Tracy Transit Station” intermodal center. The station would be elevated for the alignment to clear surface roadways and UP rail operations at-grade. The site would have direct access to downtown Tracy and the site has good regional highway access (11th Street connections to I-205, I-5, and I-580).

South Tracy

This station would be located along the UP corridor, immediately east of the intersection of West Linne Road and Tracy Boulevard, near the site of the Tracy ACE Station in Tracy. The station would be at-grade and along the south side of the railroad corridor, across from the current station. Land south of the station has the potential to be developed as a park-and-ride facility. The site is close to Tracy Municipal Airport and has good regional highway access (Coral Hollow Road connection to I-580).

3.3.11 SAN JOAQUIN RIVER TO STOCKTON (AREA 4.2)

Area 4.2 begins at the San Joaquin River and extends through Lathrop, Manteca, and Stockton.

SCOPING ALTERNATIVES

The following alignment (or alternative route) was suggested during scoping for the Tracy and Stockton area:

- Extend BART to Manteca to connect to the California HST System.

Station alternatives suggested in scoping included:

- Manteca.
- Stockton.

ALTERNATIVES IDENTIFIED DURING AND AFTER THE IDA

Several alignments were developed during the IDA analysis and included the following:

- An alignment along the former SP route west of Sharpe Depot, then northward to downtown Stockton.
- An alignment east of the UP route east of Sharpe Depot, then northward to downtown Stockton.
- An alignment east of the UP route east of Sharpe Depot, turning northeast along Airport Boulevard, then northwest to downtown Stockton.

Station alternatives considered during the IDA analysis include:

- Lathrop Station along the former SP route at Louise Avenue.
- The existing Lathrop-Manteca ACE Station along the UP route at West Yosemite Avenue.
- Downtown Stockton at the site of the existing Cabral Station (ACE).

One additional alignment alternative was developed during the AA process:

- An alignment along I-5 and then along UP to downtown Stockton.

One additional station alternative was identified during the AA process:

- Lathrop/I-5 Station.

ALIGNMENT ALTERNATIVES WITHDRAWN FROM FURTHER ANALYSIS

All the alignment alternatives listed above were reviewed by the Project Team, the Authority, the FRA, and the Working Group. Many of the scoping alternatives were carried forward for evaluation as part of this study. However, as a result of further review, an alignment alternative was withdrawn from further analysis in the AA phase.

The alignment alternative not carried forward is listed below:

- **Extend BART to Manteca to connect to the California HST System:** BART is an urban transit system and top speeds are limited to 70–80 mph, which would not provide the travel time benefits possible with Altamont Corridor Rail Project, which is being designed to 150 mph (rural) speeds; a BART extension to San Joaquin County would not meet the project purpose and need, which include options for service to be interlined with the high-speed main line in the northern San Joaquin Valley to potentially serve additional intercity locations between Sacramento and Merced.

All suggested station alternatives were carried forward for further analysis.

ALIGNMENT AND STATION ALTERNATIVES CARRIED FORWARD INTO ANALYSIS

The following alignments were carried forward for further evaluation in this study:

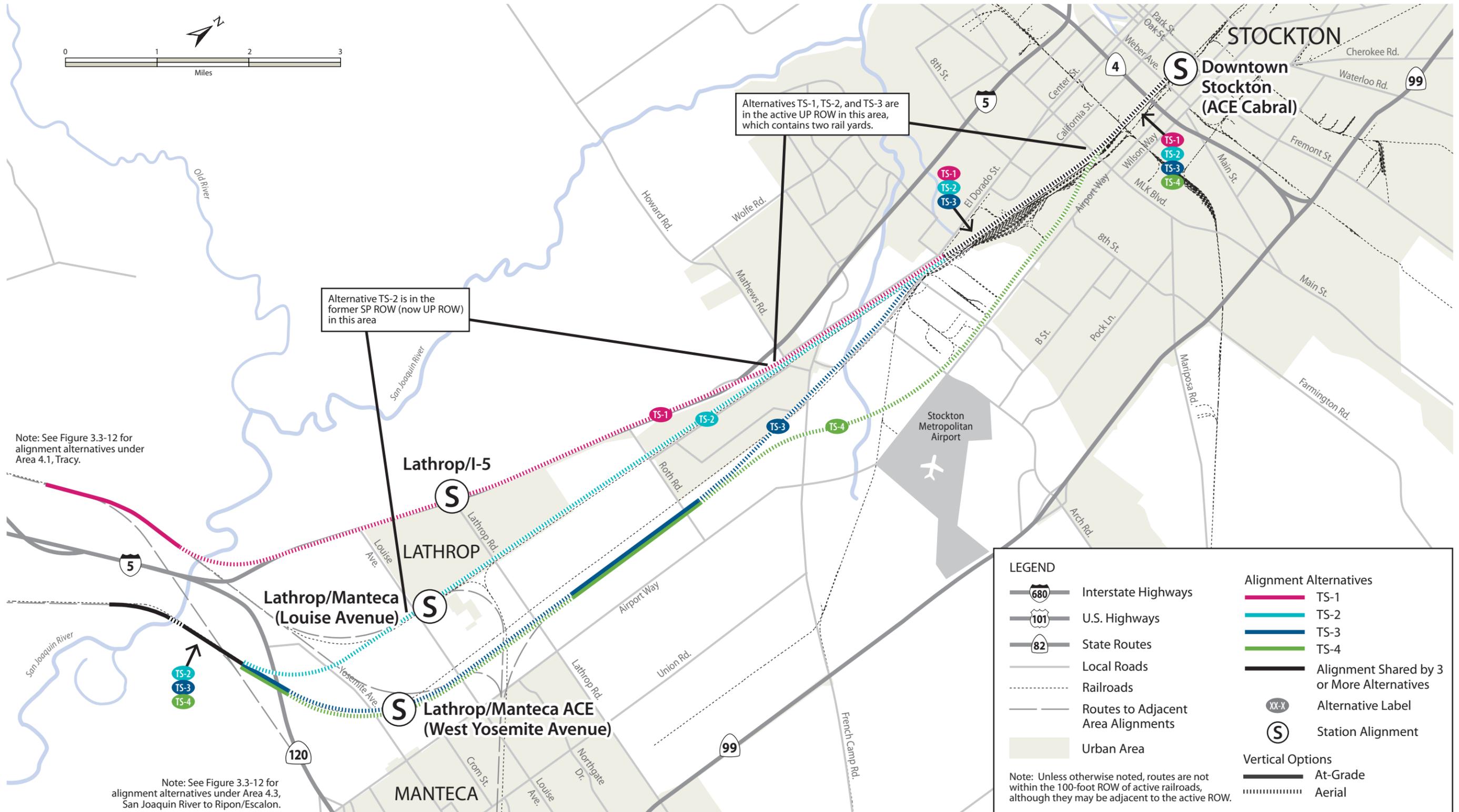
- **Alternative TS-1:** Adjacent to the former SP, I-5, in former SP, in UP.
- **Alternative TS-2:** Adjacent to UP, in former SP, in UP.
- **Alternative TS-3:** Adjacent to UP, east of UP, in UP.
- **Alternative TS-4:** Adjacent to UP, east of UP, Airport, in UP.

The following station alternatives were evaluated further:

- Lathrop/I-5.
- Lathrop/Manteca (Louise Avenue).
- Lathrop/Manteca (West Yosemite Avenue).
- Downtown Stockton (Cabral).

Each alignment alternative and station alternative is described below and shown in Figure 3.3-13.

Figure 3.3-13
Alignment and Station Alternatives from San Joaquin River to Stockton (Area 4.2)



Alternative TS-1

This alternative would follow adjacent to the former SP right-of-way near the San Joaquin River, follow I-5 through Lathrop, return to the former SP right-of-way south of Stockton, and reach the existing Downtown Stockton (Cabral) Station via the UP right-of-way. Sections of the former SP right-of-way would be purchased. Near downtown Stockton, aerial columns would be located within the UP right-of-way.

From an at-grade alignment along the former SP west of the San Joaquin River, this alignment would rise on an aerial structure to cross the San Joaquin River, and curve north to follow I-5 on an aerial structure along the east side of I-5 to a potential Lathrop station at Lathrop Road, which would be accommodated by relocating the northbound on- and off-ramps to the east. The aerial alignment would continue to the El Dorado Street interchange, where it would transition to the east to follow the former SP right-of-way on the east side north to the UP Stockton Yard.

The alignment would continue north on an aerial structure through the Stockton Yard, supported on columns located between the UP and former SP main lines, to the rail junction north of Charter Way. The aerial alignment would continue north on the east side of the UP right-of-way to an elevated station at the existing Downtown Stockton (Cabral) Station.

Alternative TS-2

This alternative would run adjacent to the UP right-of-way and then within the former SP right-of-way through Lathrop, return to the UP right-of-way south of Stockton, and reach the existing Downtown Stockton (Cabral) Station. Sections of the former SP right-of-way would be purchased. Near downtown Stockton, aerial columns would be located within the UP right-of-way.

From a point west of the San Joaquin River, this at-grade alignment would be adjacent to the UP right-of-way on the south side of the tracks, then cross the San Joaquin River on a short aerial structure, continue at grade, and rise on an aerial structure at a point due south of the SR 120/Yosemite Avenue interchange. The aerial structure would curve north in new right-of-way to run within the former SP right-of-way, with a potential Lathrop-Manteca station at Louise Avenue. The alignment would continue north and follow the former SP right-of-way on an aerial structure on the east side of the tracks north to the UP Stockton Yard.

The alignment would continue north on an aerial structure through the Stockton Yard, supported on columns located between the UP and former SP main lines, to the rail junction north of Charter Way. The aerial alignment would continue north on the east side of the UP right-of-way to an elevated station at the existing Downtown Stockton (Cabral) Station.

Alternative TS-3

This alternative would run adjacent to the UP right-of-way through Manteca, then east of the UP right-of-way, return to the UP right-of-way south of Stockton, and reach the existing Downtown Stockton (Cabral) Station. Near downtown Stockton, aerial columns would be located within the UP right-of-way.

From a point west of the San Joaquin River, this at-grade alignment would be adjacent to the south side of the UP right-of-way where it crosses the San Joaquin River on a short aerial structure, continue at grade to cross under SR 120, and rise on an aerial structure west of McKinley Avenue. A potential Lathrop/Manteca station would be located in the new right-of-way on the north side of Yosemite Avenue. The alignment would continue north on an aerial structure in new right-of-way parallel to and between the UP right-of-way and Airport Way, descend to grade due east of the southern end of the Defense Distribution Depot San Joaquin, and continue at grade to a point north of Roth Road. North of Roth Road, the alignment would ascend on an aerial structure, curve west to a point south of French Camp Road, and run adjacent to the UP right-of-way on the west side of the tracks north to the UP Stockton Yard.

The alignment would continue north on an aerial structure through the Stockton Yard, supported on columns located between the UP and former SP main lines, to the rail junction north of Charter Way. The aerial alignment would continue north on the east side of the UP right-of-way to an elevated station at the existing Downtown Stockton (Cabral) Station.

Alternative TS-4

This alternative would run adjacent to the UP right-of-way through Manteca, swing east to Airport Way south of Stockton, and return to the UP right-of-way to reach the existing Downtown Stockton (Cabral) Station. Near downtown Stockton, aerial columns would be located within the UP right-of-way.

From a point west of the San Joaquin River, this at-grade alignment would be adjacent to the south side of the UP right-of-way as it crosses the San Joaquin River on a short aerial structure, continue at grade to cross under SR 120, and rise on an aerial structure west of McKinley Avenue. A potential Lathrop/Manteca station would be located in the new right-of-way on the north side of Yosemite Avenue. The alignment would continue north on an aerial structure in new right-of-way parallel to and between the UP right-of-way and Airport Way, descend to grade due east of the southern end of the Defense Distribution Depot San Joaquin, and continue at grade to a point north of Roth Road. North of Roth Road, the alignment would ascend on an aerial structure and continue north to a point south of French Camp Road, where it would begin a reverse curve crossing French Camp Road and Rock Creek to the intersection of Airport Way, Sperry Road, and Arch Airport Road, and then continue north on the west side of Airport Way.

The aerial alignment would continue north along the west side of Airport Way to the vicinity of 6th Street, where it would begin a reverse curve crossing over Charter Way to reach the rail junction north of Charter Way. The aerial alignment would continue north on the east side of the UP right-of-way to an elevated station at the existing Downtown Stockton (Cabral) Station.

Station Alternatives

Locations of the stations are shown in Figure 3.3-13 and described in detail below. The more detailed station layouts are provided in Appendix D.

Lathrop/I-5

This station would be located along the I-5 corridor at the I-5/Lathrop Road interchange in Lathrop. The station is being studied as part of a shared corridor serving regional and high speed rail, under an alignment alternative developed for the *Merced to Sacramento HST Preliminary Alternatives Analysis*. Only regional rail would stop at this station, and HST would pass through on express tracks. The design of this station is subject to further study as part of the *Merced to Sacramento HST Preliminary Alternatives Analysis*. The site does not provide close access to Manteca. The site has direct access to I-5 and is close to other regional highways (SR 120, SR 99, I-205, I-580). Altamont Corridor service at this station would be limited to trains between the East Bay and Stockton.

Lathrop/Manteca (Louise Avenue)

This station would be located along the UP (former SP) corridor immediately east of the Louise Avenue/South Howland Road intersection in Lathrop. The station would be elevated for the alignment to pass over Louise Avenue and not conflict with at-grade railroad operations. The site has reasonable access to the I-5 corridor.

Lathrop/Manteca ACE (West Yosemite Avenue)

This station would be located adjacent to the UP corridor at Yosemite Avenue, east of Shideler Parkway, at the site of the ACE Lathrop/Manteca Station in Lathrop. The station would be on a tangent alignment separate from the UP curved alignment and would be elevated for the alignment to pass over Yosemite Avenue and not conflict with UP rail operations at-grade. The station would be located in a minimally-developed area between the central parts of Manteca and Lathrop which may attract growth away from the downtown areas of both cities. The site has potential TOD opportunities and good regional highway access (SR 120, SR 99, I-5).

Downtown Stockton (Cabral)

This station would be located at the site of the Stockton ACE Station, along the UP corridor south of East Miner Avenue in Stockton. The station would be elevated, immediately east of the historic Downtown Stockton (Cabral) Station, which will be incorporated as part of the new facility. Serving both regional rail and the California HST

System, the station is being studied as part of a shared corridor under an alignment alternative developed for the Merced to Sacramento HST Preliminary Alternatives Analysis.

3.3.12 SAN JOAQUIN RIVER TO RIPON/ESCALON VICINITY (AREA 4.3)

Area 4.3 begins at the San Joaquin River and extends through Lathrop, Manteca, and Escalon to connect with the Merced to Sacramento HST Section in either the UP corridor or BNSF corridor to Modesto.

SCOPING ALTERNATIVES

The following alignments were suggested during scoping for the Tracy to Modesto area:

- Follow SR 120, south of Manteca.
- Follow SR 99 to Modesto from Manteca.
- Extend through downtown Modesto because right-of-way for four lines already exists.

Station alternatives suggested in scoping included:

- Downtown Modesto.
- Only one station in Modesto (not two).

ALTERNATIVES IDENTIFIED DURING AND AFTER THE IDA

Several alignments were developed during the IDA analysis and include the following:

- An alignment along the former SP, turning back to be adjacent to the UP Fresno Subdivision through downtown Manteca, then linking to the Merced to Sacramento HST Section along SR 99/UP to Modesto.
- An alignment adjacent to the UP, turning back to be adjacent to the UP Fresno Subdivision through downtown Manteca, then linking to the Merced to Sacramento HST Section along SR 99/UP to Modesto.
- An alignment along the existing and planned alignment of SR 120 connecting to the Merced to Sacramento HST Section adjacent to the BNSF alignment near Escalon.
- An alignment along SR 120 connecting to the Merced to Sacramento HST Section adjacent to SR 99/UP to Modesto.

Station alternatives considered during the IDA analysis include:

- Lathrop/Manteca (Louise Avenue).
- Lathrop/Manteca ACE Station (West Yosemite Avenue).

One additional station alternative was identified during the AA process:

- Manteca/SR 120 Station.

ALIGNMENT AND STATION ALTERNATIVES WITHDRAWN FROM FURTHER ANALYSIS

All alignments and station alternatives suggested in scoping were carried forward for further consideration.

ALIGNMENT AND STATION ALTERNATIVES CARRIED FORWARD INTO ANALYSIS

The following alignments were carried forward for further evaluation in this study:

- **Alternative TM-1a:** Former SP, turn back, adjacent to UP in Manteca, then south to Modesto.
- **Alternative TM-1b:** Adjacent to UP, turn back, adjacent to UP in Manteca, then south to Modesto.
- **Alternative TM-2a:** Adjacent to UP, SR 120, adjacent to BNSF to Modesto.
- **Alternative TM-2b:** SR 120, adjacent to UP to Modesto.

The following station alternatives were carried forward for further evaluation in this study:

- Lathrop/Manteca (Louise Avenue).
- Lathrop/Manteca (West Yosemite Avenue).

- Manteca/SR 120.

Each alignment and station alternative is described below and shown in Figure 3.3-14.

Alternative TM-1a

This alternative would follow the former SP right-of-way through Lathrop, turn back to run adjacent to the UP right-of-way through downtown Manteca to Modesto. Sections of the former SP right-of-way would be purchased.

From an at-grade alignment along the former SP right-of-way west of the San Joaquin River, this alignment would cross the San Joaquin River on an aerial structure and continue at grade on the north side of the former SP right-of-way to the vicinity of the intersection of Howland Road and Nestle Way. It would then rise on an aerial structure and continue to follow the former SP right-of-way to a potential Lathrop/Manteca station at Louise Avenue. North of the station, the aerial alignment would curve north and east, cross over the former SP right-of-way to run adjacent to the UP right-of-way, and descend to grade on the north side of the tracks at a point west of Airport Way.

Through Manteca, this alternative would be mostly at-grade and adjacent to the UP right-of-way on the north side of the tracks from a point west of Airport Way through downtown Manteca to Modesto, with aerial structures carrying the alignment over Industrial Park Drive and SR 120, and Austin Road. Overpasses would be constructed to carry Airport Way, Louise Avenue, Union Road, Walnut Avenue, Center Street, Yosemite Avenue, and Main Street over the at-grade alignment. The specific alignment through Manteca requires additional evaluation for feasibility.

Alternative TM-1b

This alternative would run adjacent to the UP right-of-way north through the western edge of Manteca, and then turn back to run adjacent to the UP right-of-way through downtown Manteca to Modesto.

From a point west of the San Joaquin River, this at-grade alignment would proceed adjacent to the south side of the UP right-of-way, cross the San Joaquin River on a short aerial structure, continue at grade to cross under SR 120, and rise on an aerial structure west of McKinley Avenue. The aerial alignment would diverge from adjacent to the UP right-of-way to parallel the UP right-of-way and Airport Way between the UP and Airport Way. A potential Lathrop-Manteca station would be located in the new right-of-way on the north side of Yosemite Avenue.

From the potential Lathrop-Manteca station on the north side of Yosemite Avenue, this aerial alignment would curve north and east in new right-of-way, cross once over Airport Way and twice over Louise Avenue to be adjacent to the UP right-of-way, and descend to grade on the north side of the tracks at a point south of Louise Avenue. The at-grade alignment would continue southeast adjacent to the north side of the UP right-of-way through downtown Manteca to Modesto, with aerial structures carrying the alignment over Industrial Park Drive and SR 120, and Austin Road. Overpasses would be constructed to carry Union Road, Walnut Avenue, Center Street, Yosemite Avenue, and Main Street over the at-grade alignment. The specific alignment through Manteca requires additional evaluation for feasibility.

Alternative TM-2a

This alternative would follow SR 120 through the southern edge of Manteca and then continue east to Escalon before turning south to reach Modesto adjacent to the BNSF right-of-way.

From a point west of the San Joaquin River adjacent to the UP right-of-way on the south side of the tracks, the at-grade alignment would rise on an aerial structure over the San Joaquin River, then drop to grade east of the river, and then rise on an aerial structure to curve east in new right-of-way into the bearing of SR 120. Between McKinley Avenue and Airport Way, the aerial alignment would enter the median of SR 120 and descend to grade just west of the SR 120/Airport Way interchange. The alignment would continue at grade in the median of SR 120 and rise on an aerial structure between the SR 120/Main Street and SR 120/SR 99 interchanges. The alignment would continue east, descend to grade at a point east of Austin Road, and cross over the SR 120/SR 99 interchange and Austin Road. The alignment would continue at grade in new right-of-way along the bearing of SR 120, curve south and east at Saint John Road in the vicinity of Escalon, and follow adjacent to the west side of the BNSF right-of-way to Modesto at grade. Overpasses would be constructed to carry Jack Tone Road, Ripon Road, Murphy Road, Wagner Avenue,

Carrollton Road, Van Allen Road, Sexton Road, Brennan Road, McHenry Avenue, and Saint John Road over the at-grade alignment.

Alternative TM-2b

This alternative would follow SR 120 through the southern edge of Manteca, and then turn south to reach Modesto adjacent to the UP right-of-way.

From a point west of the San Joaquin River adjacent to the UP right-of-way on the south side of the tracks, the at-grade alignment would rise on an aerial structure over the San Joaquin River, then drop to grade east of the river, and then rise on an aerial structure to curve east in new right-of-way into the bearing of SR 120. Between McKinley Avenue and Airport Way, the aerial alignment would enter the median of SR 120 and descend to grade west of the SR 120/Airport Way interchange. The alignment would continue at grade in the median of SR 120 and rise on an aerial structure between the SR 120/Main Street and SR 120/SR 99 interchanges. The alignment would continue east on an aerial structure, curve south, cross over the SR 120/SR 99 interchange and Austin Road in new right-of-way, and descend to grade at a point due east of the SR 99/Austin Road interchange. The alignment would continue at grade in new right-of-way on a course converging with SR 99 and adjacent to the UP right-of-way, rise on an aerial structure at a point west of Olive Avenue to cross over SR 99 and the UP right-of-way, and descend to grade on the south side of the UP right-of-way in the vicinity of the SR 99/Jack Tone Road interchange. The at-grade alignment would continue southeast adjacent to the south side of the UP right-of-way to Modesto.

Station Alternatives

Locations of the stations are shown in Figure 3.3-14 above and described in detail below. More detailed station layouts are provided in Appendix D.

Lathrop/Manteca (Louise Avenue)

The description of this station is provided earlier under Area 4.2.

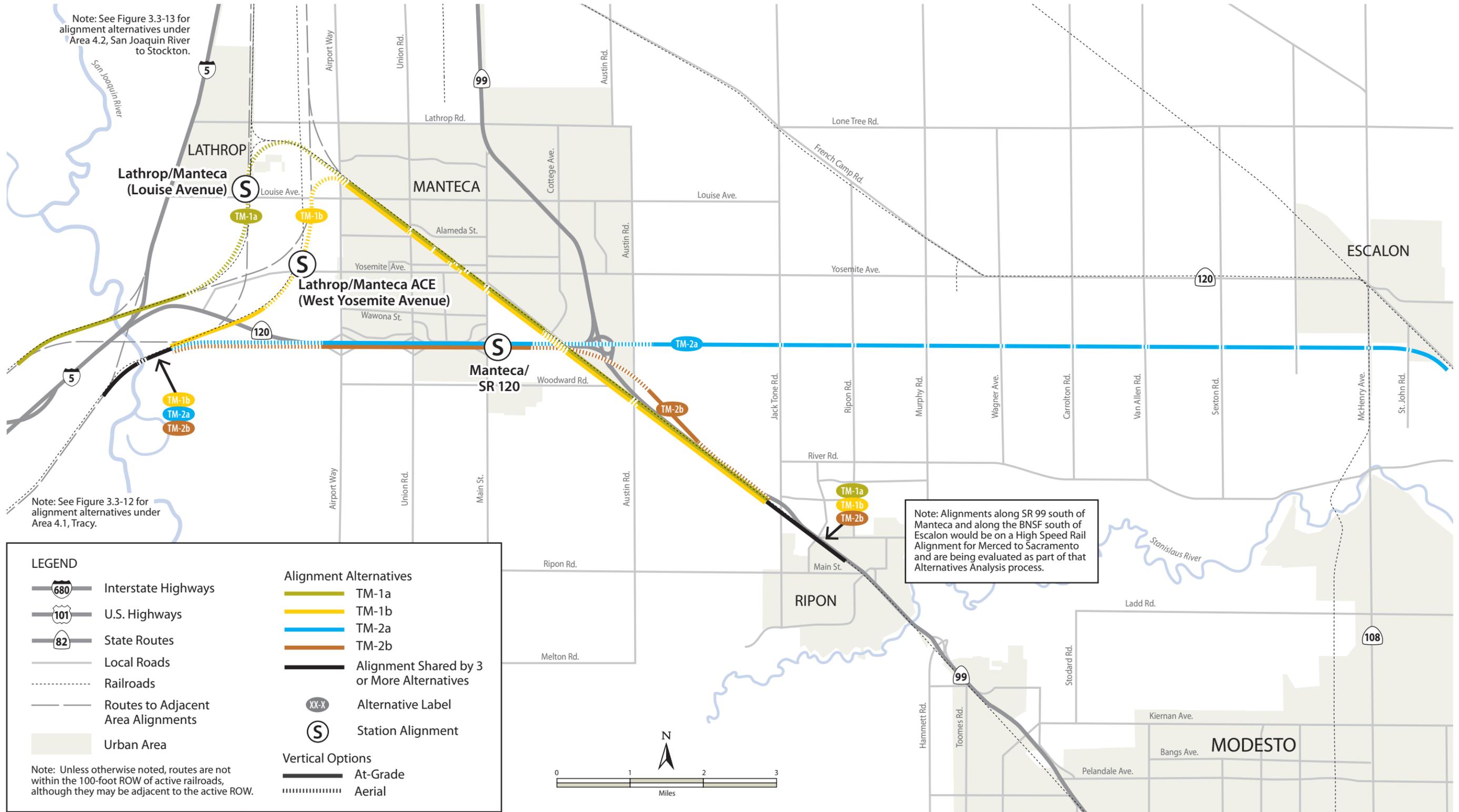
Lathrop/Manteca (West Yosemite Avenue)

The description of this station is provided earlier under Area 4.2.

Manteca/SR 120

This station would be located along the SR 120 corridor immediately east of the SR 120/South Main Street interchange in Manteca. The station would be located at-grade within the SR 120 median, with vertical connections to the South Main Street overpass, and is being studied as part of a shared corridor serving regional and high speed rail, under an alignment alternative developed for the *Merced to Sacramento HST Preliminary Alternatives Analysis*. Only regional rail would stop at this station, and HST would pass through on express tracks. The design of this station is subject to further study as part of the Merced to Sacramento HST Section. The site has direct access to SR 120 and is close to other regional highways (SR 99, I-205, I-5). Altamont Corridor service at this station would be limited to trains between the East Bay and Modesto.

Figure 3.3-14
Alignment and Station Alternatives from San Joaquin River to Ripon/Escalon Vicinity (Area 4.3)



3.4 AGENCY COORDINATION AND PUBLIC OUTREACH

3.4.1 OUTREACH TO AGENCIES AND THE PUBLIC

Early and continuing coordination with the general public and appropriate public agencies has been an essential part of the overall environmental review process (and the AA process specifically). Agency consultation and public participation activities have been accomplished through a variety of formal and informal methods, including interagency technical working group (TWG) meetings; resource agency technical working group (Resource TWG) meetings; public scoping meetings; public information meetings; presentations to policymakers, elected officials, and community organizations; outreach to business groups; informal meetings with key community leaders; and one-on-one telephone conversations with concerned neighbors and other interested stakeholders.

Information about the Altamont Corridor Rail Project and opportunities for public participation have been publicized in the following formats:

- A project website (<http://www.cahighspeedrail.ca.gov>), which includes an Altamont Corridor Rail Project webpage with the project overview, timeline, library of important documents, and a comment button to immediately submit feedback, join the mailing list, or ask questions.
- Public scoping meeting notices published in local and regional newspapers.
- A notice of preparation (NOP) of an EIR per CEQA was distributed to the State Clearinghouse of the Governor's Office of Planning and Research, interested stakeholders, and agencies.
- A notice of intent (NOI) to prepare an EIS per NEPA was distributed to relevant agencies and published in the Federal Register.
- A newsletter announcing project kick-off, scoping meetings, and overall planning process.
- eBlast email notices.
- A telephone hotline at (510) 622-6688.
- Frequently asked questions (FAQs).
- Press releases and articles in eight newspapers (Central Valley Business Times, Contra Costa Times, Manteca Bulletin, Merced Sun-Star, San Jose Mercury News, The Independent, The Record and the Tracy Press)

EARLY OUTREACH AND SCOPING (OCTOBER TO DECEMBER 2009)

Early outreach and scoping activities were initiated in October 2009, including development of project information materials and the project webpage, early engagement with agencies and interested parties, and media communications. On October 23, 2009, an NOP announcing the preparation of an EIR was distributed to the State Clearinghouse; elected officials; federal, state, and local agencies, including the planning and community development directors in each county; and the interested public. An NOI announcing the preparation of an EIS was published in the Federal Register on October 29, 2009. The NOP and NOI described the project purpose and need, project limits, alternatives to be considered, need for public and agency input, potential environmental impacts of the project, points of contact for additional information regarding the project, and dates and locations of scoping meetings.

Public agencies with jurisdiction over aspects of the proposed project or resources that could be affected by the project were requested to advise the SJRRC, the Authority, and the FRA of the applicable permit(s) of each agency, as well as the scope and content of the environmental information that is germane to the agency's statutory responsibilities in connection with the proposed project. The scoping comment period ran from October 23, 2009, through December 4, 2009.

In addition to the NOP, NOI, and public meetings, a press release was sent to regional and local media outlets, and 12 scoping meeting announcements were placed in local and regional newspapers through paid advertisements in October and November 2009, as listed in Table 3.4-1.

**Table 3.4-1
Newspapers Where Scoping Notices Were Placed**

Newspaper	Publication Date
<i>Bilingual Weekly</i> (Stockton area—Spanish language)	November 1, 2009
<i>Central Valley Business Journal</i>	October 30, 2009
<i>The Fremont Argus</i>	November 2, 2009
<i>The Hayward Daily</i>	November 2, 2009
<i>The Independent</i> (Livermore area)	October 29, 2009
<i>La Oferta</i> (San José area—Spanish language)	November 6, 2009
<i>Manteca Bulletin</i>	October 30, 2009
<i>The Modesto Bee</i>	November 2, 2009
<i>The Record</i> (Stockton area)	November 2, 2009
<i>San Jose Mercury News</i>	November 2, 2009
<i>Tri-Valley Herald</i> (Livermore area)	November 2, 2009
<i>Tracy Press</i>	October 31, 2009

In addition, more than 2,400 hardcopy newsletters and 3,500 eBlast scoping meeting notices were emailed to project stakeholders. An informational phone line was also made available for people to provide more information on the proposed project. Along with newspaper advertisements in Spanish-language papers, a phone number was provided to access a Spanish-speaking outreach specialist for questions or comments. This outreach specialist was also available at the scoping meetings serving as a translator. Project information was also made available on the Authority's website (<http://www.cahighspeedrail.ca.gov>).

A poster was provided to the partner agencies for placement on community bulletin boards and public offices, as were extra copies of the newsletter, which were handed out at community meetings and placed in lobbies and libraries.

SCOPING MEETINGS

Four scoping meetings were held. The first was held at the Robert Livermore Community Center in Livermore on November 10, 2009. The second was held at SJCOG in Stockton on November 12, 2009. The third was held at the Fremont Teen Center in San José on November 17, 2009. The fourth was held at Le Petit Trianon Theatre in San José, on November 18, 2009. The open house format was designed to provide the public with an opportunity to learn more about the project, ask questions of project managers and staff, and officially provide feedback for the project administrative record. The scoping meetings drew a combined total of 180 participants.

SCOPING COMMENTS

Between October 23, 2009, and December 10, 2009, written comments were received from 104 commenters, including 67 letters/emails and 37 comment forms. In addition, 30 "draw your own" route maps of the Altamont Corridor were submitted at the public scoping meetings. The following are key themes and topics raised during the scoping process.

Alternatives (Alignment, Station, and Facilities)

Major Issues Raised: Alignment options and alternatives for routes, stations, and facilities. Comments included suggestions related to potential tunnel/aerial structures and alternative designs. The specific alternatives suggested in comment are summarized above in Section 3.3.

Cost/Funding

Major Issues Raised: Project costs (capital and operating) and funding sources.

Environmental Impacts

Major Issues Raised: Environmental impacts and effects, including aesthetics, agricultural resources, air quality, biological resources, cultural resources, environmental justice, geology and soils, hazards, hydrology/water quality, land use (property acquisition), noise and vibration, recreation/parks, traffic and circulation, safety, Section 4(f)/6(f) resources, construction, growth, and cumulative impacts.

Planning Process

Major Issues Raised: Project goals and objectives, purpose and need, planning process (project outreach, environmental document review, and information availability), phasing, and schedule.

Project Coordination/Permitting

Major Issues Raised: Federal, state, regional, and local coordination and involvement related to environmental analysis; other transit and planning projects; and agency jurisdiction and permitting.

Support/Opposition

Major Issues Raised: Support and opposition to project or preferences of particular alternatives (alignments, stations, and facilities).

The full scoping report is available at <http://www.cahighspeedrail.ca.gov>.

Additional Scoping Activities

In addition to the November 2009 scoping meetings, numerous meetings and presentations were conducted with stakeholders, agencies, and community organizations, including:

- Alameda County Congestion Management Agency.
- Altamont Corridor Partnership Working Group.
- California Assemblyperson Cathleen Gilligan.
- California Partnership for the San Joaquin Valley.
- Caltrain.
- Caltrans District 4.
- Capital Corridor Joint Powers Authority.
- City of Dublin.
- City of Fremont.
- City of Livermore.
- City of Milpitas.
- City of Sacramento.
- City of San José.
- City of Tracy.
- City of Union City.
- County of Alameda.
- Fresno Regional Council Policy Board.
- Great Valley Annual Conference 20/20 Foresight.
- Great Valley Center.
- Governor's Partnership for the San Joaquin Valley.
- Livermore Amador Valley Transit Authority.
- California High Speed Train Scoping Meeting (Merced to Sacramento segment).
- Metropolitan Transportation Commission.

- San Francisco Bay Area Rapid Transit District.
- Sacramento Council of Governments.
- San Joaquin County Council of Governments.
- Santa Clara Valley Transportation Authority.
- Stanislaus Council of Governments.
- Tracy Rotary Club.
- Valley Futures Forum Presentation at Great America.
- Valley Center in Modesto.

3.4.2 ALTERNATIVES ANALYSIS AGENCY AND PUBLIC PARTICIPATION ACTIVITIES (JANUARY 2010–SEPTEMBER 2010)

PUBLIC INFORMATION MEETINGS

With input from the scoping process, preliminary alignment alternatives and station locations were identified and presented at the Authority's board meeting on May 6, 2010. The board meeting was open to the public and broadcast live over the Internet. The presentation packet and maps of the preliminary alignment alternatives were posted on the Authority's website and publicized via email notice and press release. Presentations and requests for early input were made at the following public meeting venues during 2010. (These government meetings are open to the public and offered public comment periods.)

- California High-Speed Rail Authority board meeting, May 6, 2010.
- Tri-Valley Regional Rail Policy Advisory Committee (PAC) meeting, June 9, 2010. The Tri-Valley PAC is composed of elected officials from Alameda County and cities in the Tri-Valley area, as well as transit providers like BART, which are guiding implementation of the *Bay Area Regional Rail Plan*.
- Alameda County Transportation Commission (ACTC) meeting, July 22, 2010. The ACTC board is composed of 22 members, including five Alameda County supervisors; representatives from AC Transit and BART; and city council members from 14 municipalities, including Alameda, Albany, Berkeley, Dublin, Emeryville, Fremont, Hayward, Livermore, Newark, Oakland, Piedmont, Pleasanton, San Leandro, and Union City.
- San Joaquin County Board of Supervisors meeting, June 22, 2010.
- Stockton City Council Meeting, July 13, 2010.
- Tracy City Council Meeting, February 2, 2010 and July 6, 2010.

Key issues raised include:

- General support for jobs, economic stimulus, and transportation opportunities for the East Bay, but still some disappointment that Altamont Corridor was not selected for the California HST System main line.
- Desire for linking Altamont Corridor Rail Project to BART and Oakland airport connections.
- Recommendation for outreach to town of Sunol.
- City of Tracy prefers downtown alignment and use of its new multi-modal transit station.

COMMUNITY OUTREACH

Presentations were made to the following business and community groups that requested information and updates about the Altamont Corridor Rail Project:

- Association of General Contractors of California.
- Tracy Rotary Club.
- Fremont Exchange Club.

Key issues raised include:

- Generally a strong desire to get the California HST System and Altamont Corridor Rail Project built as soon as possible.

- Support for jobs and economic benefits, as well as new freedom and mobility.

Telephone conversations were held with neighbors in Livermore, who wanted information about potential alignments between Vasco Road and downtown Livermore and to express concerns about neighborhood impacts. Comments were also received from residents in the Autumn Valley neighborhood.

Key issues raised include:

- Concerns about neighborhood and environmental impacts.
- Impacts on property values and creating blight next to tracks.
- Safety concerns with higher-speed trains running next to residential areas.
- Incompatibility of running faster ACE trains next to slower freight trains (and the velocity blowing the other train off the tracks).
- Cumulative impacts of BART, Super ACE, and freight trains running in the same corridor west of Vasco Road.
- Noise and vibration impacts on residences, schools, and historic structures in downtown Livermore.
- Concern about suicide risk with tracks near schools.
- Expressed preference for using I-580 freeway corridor and staying away from residences.

INTERAGENCY AND TECHNICAL WORKING GROUP MEETINGS

The preliminary alternatives were developed with input and guidance from numerous city and county government agencies and transportation agencies over the past year. These outreach efforts included:

- Altamont Corridor Partnership Working Group (monthly meetings throughout 2010). This group is providing strategic guidance for the project and is composed of representatives from the Authority and SJRRC/ACE (the project co-sponsors), as well as senior managers from cities, counties, and transit/transportation agencies in the four-county study area.
- TWG meetings (in March and August 2010) with staff-level participants from cities, counties, and transit/transportation agencies in the four-county study area. These include the Alameda County Public Works Agency; Association of Bay Area Governments (ABAG); BART; Capitol Corridor Joint Powers Authority; the Cities of Dublin, Escalon, Fremont, Lathrop, Livermore, Lodi, Manteca, Milpitas, Modesto, Pleasanton, San José, Stockton, Tracy, Turlock, and Union City; Livermore Amador Valley Transit Authority; San Joaquin Regional Transit District; SJCOG; San Joaquin County Community Development Department; VTA; and Stanislaus County Transit.
- Livermore Area Recreation and Park District meeting, October 2010.
- City of Santa Clara Transportation Department meeting, October 25, 2010.
- Alameda County Supervisor Scott Haggerty briefing, October 29, 2010.

Key issues raised during the March 2010 TWG meetings include:

- Concerns about several new and planned developments near project alternatives in the Stockton, Lathrop, and Manteca areas.
- A clear preference for a downtown Tracy station and alignment on the former SP through the city, as opposed to the UP corridor currently used for ACE service.
- Request for consideration of an additional alignment alternative skirting the south side of Livermore.
- Desire for more detail regarding areas of consideration and potential conflicts along the I-580 corridor between Dublin and Pleasanton.
- A preference for expanding the use of the UP corridor through Pleasanton over developing the parallel former SP corridor.
- Clear direction that an alignment along the east side of SJC is not compatible with the city's vision for airport access.

Key issues raised during August 2010 TWG meetings include:

- Need to consider BART interface in Livermore.

- Policymakers (city councils) should be involved before decisions are made regarding alternatives.
- Potential concerns with Sycamore Grove Park in Livermore.
- Opportunities for economic benefits at the local level.
- Need to determine feasibility near airport. Meet with San José to discuss airport issues.
- How Union City will fit in; include language in project purpose and need.

RESOURCE AGENCY TECHNICAL WORKING GROUP MEETINGS

Meetings were held with environmental resource agencies on August 19, 2010, in Stockton and August 20, 2010 in Fremont. In attendance were the U.S. Fish and Wildlife Service and the EPA.

Key issues raised include:

- Concerns about impacts on threatened and endangered species and designated critical habitat.
- Process for NEPA/CWA Section 404 coordination on selection of alternatives for study in the *Altamont Corridor Rail Project EIR/EIS*.
- Potential impacts on wetland habitats and species in the Don Edwards San Francisco Bay National Wildlife Refuge.
- Potential impacts on a proposed habitat mitigation location west of Tracy for San Joaquin kit fox and other species.
- Potential impacts on riparian habitats and riparian brush habitat at and adjacent to the San Joaquin River.
- Potential wildlife migration impacts from at-grade sections with fencing through open space/habitat areas.

3.4.3 ALTERNATIVES ANALYSIS PUBLIC PARTICIPATION NEXT STEPS

The next major phase of outreach and public meetings will occur in March 2011 to provide opportunities for the public to review the information in this AA Report and offer feedback and suggestions. Public input is encouraged now at this critical stage in the planning process so that it may be included in the supplemental AA Report and considered during preparation of the *Altamont Corridor Rail Project EIR/EIS*, which will be prepared in 2011–2012. However, public comments and questions may be submitted at any time during the planning process. Likewise, public outreach and meetings will occur during future stages of the project, such as station area planning and design, as well as during public review of the *Altamont Corridor Rail Project EIR/EIS*. Public participation is highly valued and encouraged throughout this planning process. Please call the hotline at (510) 622-6688 with any questions or comments, or visit the Altamont Corridor Rail Project page at <http://www.cahighspeedrail.ca.gov>.

3.4.4 ALTERNATIVES CARRIED FORWARD FOR FURTHER ANALYSIS

Alternatives from the scoping process not carried forward are discussed above in Section 3.3. Based on the initial review of alternatives and subsequent input from the TWGs, the Project Team proceeded with the analysis of the following alignment and station alternatives:

AREA 1.1: SAN JOSÉ TO FREMONT

- Alternative EB-1: In Caltrain right-of-way, adjacent to the UP Coast Subdivision and UP Centerville Line.
- Alternative EB-2: In Caltrain right-of-way, adjacent to the UP Coast Subdivision, south of Grimmer.
- Alternative EB-3: In Caltrain right-of-way, adjacent to the UP Coast Subdivision, south of Cushing, adjacent to UP Warm Springs Subdivision.
- Alternative EB-4: In Caltrain right-of-way, adjacent to the UP Coast Subdivision, SR 237, I-880.
- Alternative EB-5: Adjacent to the UP Coast Subdivision, Trimble, I-880.
- Alternative EB-6: Adjacent to the UP Coast Subdivision, Trimble, adjacent to the UP Warm Springs Subdivision.
- Alternative EB-7: I-880 (south of airport), I-880.
- Alternative EB-8: I-880 (south of airport), adjacent to the UP Warm Springs Subdivision.

- San José Diridon Station.
- Santa Clara Station.
- Tasman/Great Mall Station.
- Tasman/I-880 Station.
- First Street/Trimble Station.
- Great America Station.
- Fremont Centerville ACE Station.
- Warm Springs BART Station.

AREA 1.2: FREMONT TO I-680/SR 84

- Alternative EBWS-1: I-680 to near I-680/SR 84.
- Alternative EBWS-2: Adjacent to the UP Warm Springs Subdivision, Niles Junction, Niles Tunnel.
- Alternative EBF-1: Fremont Centerville, adjacent to the UP Centerville Line, Niles Tunnel
- Warm Springs BART Station.
- Fremont Centerville ACE Station.
- I-680/SR 84 Station.

AREA 1.3: UNION CITY TO I-680/SR 84

- Alternative EBUC-1: Adjacent to the UP Niles Subdivision, Niles Tunnel.
- Alternative EBUC-2: In the UP Oakland Subdivision, Niles Junction, Niles Tunnel.
- Union City Intermodal Station.
- I-680/SR 84 Station.

AREA 2: TRI-VALLEY

- Alternative TV-1: I-680, I-580.
- Alternative TV-2a: I-680, former SP—Pleasanton (aerial), adjacent to UP (aerial), adjacent to UP.
- Alternative TV-2b: I-680, former SP—Pleasanton (tunnel), Railroad Avenue (tunnel), former SP.
- Alternative TV-2c: I-680, in UP—Pleasanton (tunnel), adjacent to UP Livermore (tunnel), former SP.
- Alternative TV-3: SR 84, Isabel, Railroad Avenue, former SP east of downtown Livermore.
- Alternative TV-4: SR 84, south of Livermore, east of Vasco Road, adjacent to UP.
- I-680/SR 84 Station.
- Bernal/I-680 Station.
- Dublin/Pleasanton BART Station.
- Downtown Pleasanton Station (UP) (subway).
- Downtown Pleasanton Station (SP) (aerial).
- Downtown Pleasanton Station (SP) (subway).
- Isabel/I-580 Station.
- Downtown Livermore Station.
- Vasco Road (SP) Station.
- Vasco Road (UP) Station.

AREA 3: ALTAMONT PASS

- Alternative A-1: Northern alignment near I-580.

- Alternative A-2: Southern alignment through Patterson Pass.

AREA 4.1: TRACY

- Alternative T-1: Downtown Tracy.
- Alternative T-2: South of Tracy.
- Downtown Tracy Station.
- South Tracy Station.

AREA 4.2: SAN JOAQUIN RIVER TO STOCKTON

- Alternative TS-1: Former SP, I-5, former SP, in UP.
- Alternative TS-2: Adjacent to UP, former SP, in UP.
- Alternative TS-3: Adjacent to UP, east of UP, in UP.
- Alternative TS-4: Adjacent to UP, east of UP, Airport, in UP.
- Lathrop/I-5 Station.
- Lathrop/Manteca (Louise Avenue) Station.
- Lathrop/Manteca (West Yosemite Avenue) ACE Station.
- Downtown Stockton (Cabral) Station.

AREA 4.3: SAN JOAQUIN RIVER TO RIPON/ESCALON VICINITY

- Alternative TM-1a: Former SP, turn back, adjacent to UP in Manteca and then south to Modesto.
- Alternative TM-1b: Adjacent to UP, turn back, adjacent to UP in Manteca and then south to Modesto.
- Alternative TM-2a: Adjacent to UP, SR 120, adjacent to BNSF to Modesto.
- Alternative TM-2b: SR 120, adjacent to UP to Modesto.
- Lathrop/Manteca (Louise Avenue) Station.
- Lathrop/Manteca ACE (West Yosemite Avenue) Station.
- Manteca/SR 120 Station.

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4.0 EVALUATION OF PROJECT ALTERNATIVES

The alternatives carried into the alternatives analysis were assessed for each of the project objectives and evaluation measures. This information was then used to determine which alternatives should be carried forward into preliminary engineering design and environmental review as part of the EIR/EIS. The primary evaluation measures are listed below:

- **Alignment and station performance objectives and design criteria:** Operating and capital costs, connectivity and accessibility, and ridership and revenue potential.
- **Land use compatibility:** Development potential for TOD near stations, consistency with other planning efforts and adopted plans, need for construction easements within existing transportation rights-of-way, and disruption to state highways.
- **Constructability:** Disruption to existing railroads, utility relocations, residential and business displacement, right-of-way acquisition risk, and phased construction risk.
- **Disruption to communities:** Property access disruption, and local traffic effects around stations and at grade separations.
- **Environmental resources:** Waterways/wetlands, biologically sensitive habitat, cultural resources, and parklands/agricultural lands.
- **Environmental quality:** Noise and vibration, visual (scenic resources), geology, and hazardous materials.

The detailed evaluation of the alternatives is provided in the evaluation tables in Appendix E; GIS analysis conducted in evaluating impacts to environmental resources is provided in the maps in Appendix F; the results of the AA evaluation are discussed in Sections 4.2 to 4.9 below. A summary of the alternatives to be carried forward for further consideration in the EIR/EIS is presented in Section 5.0. Although the screening evaluation covered a broad range of criteria, the focus of the determinations is on which alternatives are to be carried forward or withdrawn from further consideration. Therefore, the evaluation in this section focuses only on the most substantive impacts that distinguish one alternative from another, rather than summarizing all the potential impacts of each alternative.

Evaluation of station options is combined with evaluation of the alignment options. Station options are compared qualitatively on measures of connectivity and accessibility, ridership and revenue potential, potential for TOD near existing and future locations, and local traffic effects. For this preliminary AA, the proposed station designs were developed at a conceptual level; their specific features will be defined during future design processes that will be based on the recommendations of the preliminary AA. Additionally, the review of station options during this conceptual phase has not identified any fatal flaws in relation to localized environmental effects that would preclude a specific station option from further evaluation to determine whether it can be carried forward for analysis in the EIR/EIS.

4.1 SAN JOSÉ TO FREMONT (AREA 1.1)

4.1.1 EVALUATION OF ALTERNATIVES

In Area 1.1, from San José to Fremont, eight alternatives were identified for comparison to the evaluation measures:

- **Alternative EB-1:** Caltrain right-of-way, adjacent to the UP Coast Subdivision and UP Centerville Line.
- **Alternative EB-2:** Caltrain right-of-way, adjacent to the UP Coast Subdivision, south of Grimmer
- **Alternative EB-3:** Caltrain right-of-way, adjacent to the UP Coast Subdivision, south of Cushing, adjacent to the UP Warm Springs Subdivision.
- **Alternative EB-4:** Caltrain right-of-way, adjacent to the UP Coast Subdivision, SR 237, I-880.
- **Alternative EB-5:** Caltrain right-of-way, adjacent to the UP Coast Subdivision, Trimble, I-880.
- **Alternative EB-6:** Adjacent to the UP Coast Subdivision, Trimble, Adjacent to the UP Warm Springs Subdivision
- **Alternative EB-7:** I-880 (south of airport).
- **Alternative EB-8:** I-880 (south of airport), Adjacent to the UP Warm Springs Subdivision.

Table E-1 in Appendix E lists each of the San José to Fremont alternatives considered and the results of the analysis. Key factors that differ between the alternatives are highlighted on the evaluation table. The performances of the eight alternatives with respect to the evaluation measures are described below.

ALTERNATIVE EB-1

Alternative EB-1 generally runs adjacent to the UP Coast Subdivision from Santa Clara to Newark and then runs adjacent to the UP Centerville Line. A portion of the alignment would cross the Don Edwards San Francisco Bay National Wildlife Refuge, and it would end at a potential aerial station at the Fremont Centerville Station.

Stations along this alternative include San José Diridon, Santa Clara, Great America, and Fremont Centerville. There are numerous opportunities for TOD within 0.5 mile of the San José Diridon Station, limited TOD opportunities at the Fremont Centerville Station, and more moderate TOD opportunities at the Santa Clara and Great America stations. The San José Diridon Station is a major regional intermodal center, linking the California HST System with intercity Amtrak service, commuter rail, a future BART extension, VTA light rail service, transit buses, and a potential transit system serving SJC. The Santa Clara Station provides direct access to Santa Clara University. The Great America Station is a major destination for the current ACE service (with the highest ridership among the ACE stations), serving major employment centers in Silicon Valley. The UP corridor west of Fremont Boulevard is narrow, requiring the Fremont Centerville Station to be built directly above active UP tracks, which represents a construction cost and station access constraint. The Fremont Centerville Station would provide convenient south-to-east and west-to-north transfers with Amtrak Capital Corridor commuter rail and Amtrak intercity services, and the site is reasonably close to the urban centers of Union City and Fremont.

Alternative EB-1 was developed to provide connection between San José and Fremont similar to the existing ACE route while maximizing revenue and ridership potential and opportunities for intermodal connections with other transit and rail providers, including Capitol Corridor, Caltrain, VTA, and Amtrak.

This alternative would have substantial impacts on sensitive biological resources, including wetlands, waterways, critical habitat, and threatened and endangered species habitat where the alignment crosses the Don Edwards San Francisco Bay National Wildlife Refuge. Similarly, encroachment into the refuge would result in direct and indirect impacts on parklands because of right-of-way requirements. Other concerns include noise/vibration and visual impacts resulting from the proximity of residential uses (along Lafayette Street in Santa Clara and in Fremont's Centerville district). This alternative (in combination with the connecting Alternative EBF-1) would require extensive acquisition of residential property in the Centerville district. This alternative is also the longest and slowest of the alternatives in this area.

Alternative EB-1 is **withdrawn from further consideration** because, in combination with the connecting Alternative EBF-1, it would result in substantially greater impacts to the natural and human environment compared to other alternatives and would be impracticable. The alternative is primarily withdrawn because of the impacts on the Don Edwards San Francisco Bay National Wildlife Refuge and its biological resources. Secondary reasons for withdrawal of this alternative in combination with connecting to Alternative EBF-1, include the slowest service time to San José (which would substantially affect ridership), substantial constructability risks due to the need for extensive acquisition of residential property in the Fremont Centerville district, and higher noise and visual environmental quality impacts (most acutely in the Centerville district in Fremont).

ALTERNATIVE EB-2

Alternative EB-2 follows the same route as Alternative EB-1 from San José to the Don Edwards San Francisco Bay National Wildlife Refuge, and then diverges eastward from the UP Coast Subdivision and continues eastward south of Grimmer Avenue to a connection with the future Warm Springs BART Station.

Stations along this alternative include San José Diridon, Santa Clara, Great America, and Warm Springs BART. The first three stations were discussed above. There are highly favorable TOD options at the Warm Springs BART Station. The Warm Springs BART Station would provide direct intermodal connections with BART and regional bus transit, with the potential to share park-and-ride capacity with BART. The site is the center of a major Fremont planned mixed-use redevelopment area, including potential redevelopment of the adjacent former NUMMI automobile manufacturing plant.

This alternative was developed to provide connection between San José and Fremont using similar routing in San José and Santa Clara as the existing ACE service, while connecting to the Warm Springs BART Station instead of the Fremont Centerville Station. It would be favorable for overall operating and capital costs, connectivity and accessibility, and revenue and ridership potential. It would have the lowest costs of all the alternatives in this area, and it is more favorable than Alternative EB-1 for ridership and revenue potential (because of the BART connection at the Warm Springs BART Station). This alternative would require far less residential/business displacement than Alternative EB-1 because it would avoid the Fremont Centerville area.

This alternative would have similar impacts as Alternative EB-1 with respect to land use compatibility (encroachment into the Don Edwards San Francisco Bay National Wildlife Refuge) and sensitive biological resources (the wildlife refuge habitat), but would also encroach on an existing vernal pool mitigation complex within the project study area. It would have community impacts, specifically noise and visual impacts on residential areas along Lafayette Street in Santa Clara, but would avoid the Fremont Centerville residential area crossed by Alternatives EB-1 and EBF-1.

Alternative EB-2 **is withdrawn from further consideration** because it would have substantially greater impacts to the natural environment compared to other alternatives. Specifically, this alternative would substantially affect the Don Edwards San Francisco Bay National Wildlife Refuge and its biological resources as well as a vernal pool mitigation complex near Fremont.

ALTERNATIVE EB-3

Alternative EB-3 follows the same route as Alternative EB-2 until the north side of the Don Edwards San Francisco Bay National Wildlife Refuge, where it diverges eastward away from being adjacent to the UP Coast Subdivision southwest of Cushing Parkway, proceeds eastward across Fremont Boulevard and I-880, and curves south of the NUMMI automobile manufacturing plant to follow adjacent to the UP Warm Springs Subdivision.

Stations and the TOD potential for those stations are the same as under Alternative EB-2.

This alternative was developed to provide connection between San José and Fremont using similar routing in San José and Santa Clara as the existing ACE service, while connecting to the Warm Springs BART Station (using a different alignment than Alternative EB-2) instead of the Fremont Centerville Station. It is favorable for overall operating and capital costs, connectivity and accessibility, and revenue and ridership potential, with slightly higher costs than Alternative EB-2. This alternative would require far less residential/business displacement than Alternative EB-1.

Like Alternative EB-2, this alternative would have substantial impacts on the Don Edwards San Francisco Bay National Wildlife Refuge and its biological resources, and would also cross the existing vernal pool mitigation complex crossed by Alternative EB-2. This alternative would also have community noise and visual impacts on residential areas along Lafayette Street in Santa Clara like Alternatives EB-1 and EB-2.

Alternative EB-3 **is withdrawn from further consideration** because it would have substantially greater impacts to the natural environment compared to other alternatives. Specifically, this alternative would substantially affect the Don Edwards San Francisco Bay National Wildlife Refuge and its biological resources as well as the Pacific Commons vernal pool mitigation complex near Fremont.

ALTERNATIVE EB-4

Alternative EB-4 would generally run adjacent to the UP Coast Subdivision and SR 237 from Santa Clara to Milpitas and continue north in the I-880 corridor to the future Warm Springs BART Station.

Stations along this alternative include San José Diridon, Santa Clara, Great America, and Warm Springs BART. The TOD potential for these stations is discussed above.

This alternative was developed to run adjacent to the existing ACE route in San José and Santa Clara, but avoid crossing through the Don Edwards San Francisco Bay National Wildlife Refuge, and connect to the future Warm Springs BART Station. This alternative has lower capital costs than Alternative EB-1 and Alternatives EB-5 through EB-8. This alternative would support revenue and ridership potential by having stations in high employment centers, would have relatively moderate right-of-way requirements (due to following existing transportation corridors), and

would have moderate community and natural resource impacts compared to the other area alternatives. This alternative would require limited residential/displacement.

This alternative would have community noise and visual impacts on residential areas along Lafayette Street in Santa Clara.

Alternative EB-4 **is carried forward for further consideration** because it provides opportunities for multiple stations and connections to other transit services, preserves access to the Great America Station (which has the highest ridership), avoids the substantial biological resource/refuge impacts associated with Alternatives EB-1 through EB-3, and is the lowest costing of all other alternatives that also avoid the refuge.

ALTERNATIVE EB-5

Alternative EB-5 generally follows the same initial route as Alternative EB-4 adjacent to the UP Coast Subdivision, but then diverges just west of SJC, follows Trimble Road to I-880, and continues in the I-880 corridor to the future Warm Springs BART Station in Fremont.

Stations along this alternative include San José Diridon, Santa Clara, Trimble, and Warm Springs BART. The TOD potential for the first two stations was discussed above. The Trimble Station would provide excellent access to the core of Silicon Valley and could help anchor the City of San José's North Gateway urban redevelopment area along the First Street corridor. There are highly favorable TOD options at the Warm Springs BART station.

This alternative was designed to provide a route with a stop in a heavy commercial job center while avoiding routing through residential areas. This alternative is the second lowest cost of alternatives that avoid the refuge. This alternative would support revenue and ridership potential by having stations within high employment centers. It would have moderate right-of-way requirements by following existing transportation corridors. This alternative would require the displacement of a few residences and some commercial/industrial businesses.

The alignment along Trimble Road through commercial areas would have fewer community noise and visual impacts than the alignment along Lafayette Street, where it crosses adjacent to residential areas (in Alternatives EB-1 through EB-4). Overall, this alternative would have lower noise and visual environmental quality impacts than all other alternatives.

Alternative EB-5 **is carried forward for further consideration** because it would avoid the substantial natural environment impacts under Alternatives EB-1 through EB-3, supports revenue and ridership by having stations in high employment centers (and serves a different area than EB-4), and has lower noise and visual environmental quality impacts than all other alternatives.

ALTERNATIVE EB-6

Alternative EB-6 follows the same route as Alternative EB-5 until it reaches I-880, where it diverges and runs adjacent to the UP Warm Springs Subdivision.

Stations along this alignment include San José Diridon, Santa Clara, Trimble, Tasman/Great Mall, and Warm Springs BART. The TOD potential at all stations other than Tasman/Great Mall was discussed above. The Tasman/Great Mall Station would provide direct access to the Great Mall regional retail complex and excellent connections to VTA light rail and bus transit. This alternative is the third lowest costing of other alternatives that avoid the refuge.

This alternative was designed to provide a route with a stop in a heavy commercial job center that did not use I-880. This alternative would support revenue and ridership potential because of stations at Santa Clara, Trimble, and Tasman/Great Mall.

With the exception of Alternatives EB-1 and EB-8, this alternative would have greater noise and visual environmental quality impacts than all other alternatives in this area due to the crossing of certain residential areas along the UP Warm Springs Subdivision. Also excluding Alternatives EB-1 and EB-5, this alternative would require a relatively higher level of residential and business displacement compared to the remaining alternatives in this area.

Alternative EB-6 **is carried forward for further consideration** because it has relatively moderate costs and would support revenue and ridership due to the location of stations within its alignment in high employment centers and regional destinations.

ALTERNATIVE EB-7

This alternative follows I-880 for much of its length.

Stations along this alternative include San José Diridon, Tasman/I-880, and Warm Springs BART. All of these stations were discussed above. Development of the elevated Tasman/I-880 Station over an active freeway interchange would be complex and likely costly, but the station provides good connections to the VTA light rail system, which serves the Great Mall regional retail complex east of the I-880 corridor.

This alternative was designed to provide a route that follows I-880 as much as possible to avoid disruption of properties and noise impacts on existing communities. This alternative has relatively moderate land use incompatibility compared to the other alternatives because it follows the freeway for much of its length. It would require more residential/business displacement than EB-4 and EB-5, but less than EB-6 and EB-8. This alternative would have lower noise and visual impact than all alternatives in this area except EB-5. This alternative is the second-shortest and second-fastest route among the San José to Fremont alternatives.

This alternative has the highest costs of all alternatives in this area because of the tunnel component of the alignment near San José International Airport. Although it provides connection to VTA service at Tasman/I-880, this alternative has less connectivity and less ridership potential than all the other alternatives except Alternative EB-8 because it includes only one station (Tasman/I-880) between San José and Fremont and this one station is not as close to commercial employment centers (such as the Great America or First Street/Trimble stations) or destinations (like the Tasman/Great Mall Station) as stations included in other alternatives.

Alternative EB-7 **is withdrawn from further consideration** because it is impracticable due to cost and because it does not fully meet the purpose and need. This alternative is the highest cost of all alternatives. This alternative also does not meet the purpose and need because it provides insufficient connectivity within centers of employment and destinations to attract substantial ridership.

ALTERNATIVE EB-8

Alternative EB-8 follows I-880 south of SJC and then transitions to be adjacent to the UP Warm Springs Subdivision south of Brokaw Road.

Stations along this alternative include San José Diridon, Tasman/Great Mall, and Warm Springs BART. All of these stations were discussed above.

This alternative was designed to provide a route that follows I-880 in part, but would provide an alternative to using I-880 north of Tasman Road. This alternative is the shortest and fastest route among the San José to Fremont

This alternative is the second highest in cost in this area (after Alternative EB-7) because of the cost of tunneling near San José International Airport. This alternative has less connectivity and revenue and ridership potential than all alternatives, except Alternative EB-7, because it only includes one station between San José and Fremont. This alternative has relatively higher land use incompatibility and constructability risks due to noise and visual impacts and extensive right-of-way acquisition of private lands adjacent to the UP Warm Springs Subdivision. This alternative would require extensive residential/commercial property acquisition, including the second highest amount of residential property acquisition among the alternatives in this area.

Alternative EB-8 **is withdrawn from further consideration** because it would not meet the project purpose and need, is impracticable due to right-of-way concerns, and it would have greater noise and visual environmental quality impacts compared to other alternatives. This alternative would not meet the purpose and need because it provides insufficient connectivity within centers of employment and destinations to attract substantial ridership. Due to being located in residential and commercial areas adjacent to the UP Warm Springs Subdivision, this alternative would be impracticable due to substantial right-of-way acquisition risk and would have greater noise and visual environmental quality impacts compared to all the other alternatives that do not cross the refuge.

4.2 FREMONT TO I-680/SR 84 (AREA 1.2)

4.2.1 EVALUATION OF ALTERNATIVES

In Area 1.2, from Fremont to the I-680/SR 84 interchange, the following four alternatives were identified for comparison to the evaluation measures:

- **Alternative EBWS-1:** I-680 to near I-680/SR 84 intersection.
- **Alternative EBWS-2:** UP Warm Springs Subdivision, Niles Junction, Niles Tunnel.
- **Alternative EBF-1:** Fremont-Centerville, along UP Centerville Line, Niles Tunnel.

Table E-2 in Appendix E lists each of the alternatives considered and identify whether they are to be carried forward for further study or withdrawn from further consideration. The performances of the four alternatives with respect to the evaluation measures are described below.

ALTERNATIVE EBWS-1

Alternative EBWS-1 provides a relatively direct route from the future Warm Springs BART Station to the I-680/SR 84 Station via I-680.

Stations along this alternative include Warm Springs BART and I-680/SR 84. There are highly favorable TOD options at the Warm Springs BART Station, which was discussed above. Local land use planning prohibits the development of residential, commercial, or mixed-use development in the vicinity of the potential I-680/SR 84 Station location. Therefore, the I-680/SR 84 Station is envisioned as a freeway intercept station only; it would not be intended to foster or induce TOD development in the vicinity or growth in this part of Alameda County in general.

This alternative was designed to be the most direct connection from Fremont eastward and to run parallel to a freeway corridor. This alternative has substantially lower costs than other alternatives in this area and has the shortest travel time. This alternative would affect threatened and endangered species habitat when at- or above-grade between Fremont and Sunol. This alternative would result in business displacement north of the Warm Springs BART Station and residential displacement along I-680.

Alternative EBWS-1 **is carried forward for further consideration** because it has the lowest cost and the shortest travel time of alternatives in this area.

ALTERNATIVE EBWS-2

Alternative EBWS-2 connects the future Warm Springs BART Station to the Niles Junction via a route adjacent to the UP Warm Springs Subdivision (on the west side), and connects to the I-680/SR 84 Station via a new tunnel.

Stations along this alignment include Warm Springs BART and I-680/SR 84, both of which were discussed above in terms of TOD potential.

This alternative was designed to provide an alternative to routing along I-680. This alternative would cost substantially more than EBWS-1 and EBF-1.

Alternative EBWS-2 would have the longest route and would be the same in relation to slow travel time compared to alternative EBF-1. This alternative would require business displacement north of the Warm Springs BART Station and residential displacement along the UP Warm Springs Subdivision.

Alternative EBWS-2 **is carried forward for further consideration** because it would provide an alternative to routing adjacent to I-680.

ALTERNATIVE EBF-1

Alternative EBF-1 is adjacent to the UP Centerville Line from the Fremont Centerville ACE Station to the Niles Junction, where it proceeds to the I-680/SR 84 Station via a new tunnel.

Stations along this alternative include Fremont Centerville and I-680/SR 84. There are moderate TOD options near the Fremont Centerville Station, but no TOD potential at the I-680/SR 84 Station because of existing Alameda County planning restrictions.

This alternative was designed to follow adjacent to the ACE route east from the Fremont Centerville Station while avoiding a surface alignment through Niles Canyon.

Compared to the other alternatives in this area, this alternative would have less connectivity and accessibility because of no connection with BART, and thereby having lower revenue and ridership potential because of fewer intermodal connections. This alternative would also have greater land use incompatibility because it would require displacement of residential uses in the Centerville district, and it has a high risk for right-of-way acquisition requirements due to residential and other property acquisition along the UP Centerville line. Use of this alignment would have substantial biological resources impacts as it requires the use of Alternative EB-1 in Area 1.1, which crosses the Don Edwards San Francisco Bay National Wildlife Refuge. This alternative would also have substantial and noise and visual environmental quality impacts as well. This alternative is the same as Alternative EBWS-2 as the slowest of the alternatives in this area; in combination with connecting alternative EB-1, this alternative would have the slowest time from I-680/SR 84 to San Jose.

Alternative EBF-1 **is withdrawn from further consideration** because in combination with alignment connection to Alternative EB-1, it would result in greater impacts on the natural environment (the refuge) and the human environment (especially in the Centerville part of Fremont) than other alternatives. This alternative is also impracticable because it would result in the slowest time to San Jose and have high constructability risk due to extensive property acquisition (especially in the Centerville part of Fremont).

4.3 UNION CITY TO I-680/SR 84 (AREA 1.3)

4.3.1 EVALUATION OF ALTERNATIVES

In Area 1.3, from Union City to the I-680/SR 84 interchange, the following two alternatives were identified for comparison to the evaluation measures:

- **Alternative EBUC-1:** Adjacent to UP Niles Subdivision, Niles Tunnel.
- **Alternative EBUC-2:** UP Oakland Subdivision, Niles Tunnel.

Table E-3 in Appendix E lists each of the alternatives considered and identify whether they are to be carried forward for further study or withdrawn from further consideration. Key factors that differ between the alternatives are highlighted in the table. The performances of these alternatives with respect to the evaluation measures are described below.

The Union City Station is located north of more direct connections to Fremont and other points south. Service under these alternatives would not continue to San José but would terminate at the Union City Station. Alternatives EBUC-1 and EBUC-2 should be considered alternatives to service to Fremont or points south, including San José.

ALTERNATIVE EBUC-1

Alternative EBUC-1 would connect Union City to the I-680/SR 84 Station adjacent to the UP Niles Subdivision to the Niles Junction and then a new tunnel eastward.

Stations along this alternative include Union City¹ and I-680/SR 84. There are highly favorable TOD opportunities near the Union City Station, but no TOD opportunities at the I-680/SR 84 Station because of Alameda County planning restrictions, as discussed above. An elevated station and approach at the Union City Station would impose visual impacts on adjacent residential areas, but a station at this location would greatly enhance planned TOD around and provide direct intermodal connections with BART, Amtrak Capital Corridor commuter rail, and the proposed Dumbarton Commuter Rail Project.

¹ The "Union City Station" is referred to as the "Union City Intermodal Station" by the City of Union City in their planning documents. For the purposes of this AA report, these two terms are considered synonymous.

This alternative was designed to connect Union City with points east, via a route adjacent to an existing UP corridor between Union City and the Niles Junction, while providing a tunnel instead of a surface alignment through Niles Canyon. This alternative would have comparable costs, connectivity and accessibility, and revenue and ridership potential as EBUC-2. This alternative is slightly shorter and faster than EBUC-2.

This alternative would not provide an immediate connection to the Union City Station because its terminus would be on the UP Niles Subdivision, approximately 800 feet east of the station and thus would slow intermodal connections. This alternative would have extensive noise and visual impacts because of being located in and adjacent to residential areas and would affect views from locally designated scenic roads (i.e., Mission Boulevard). This alternative has substantial right-of-way risk because it would require extensive acquisition of residential and other property adjacent to the UP Niles Subdivision.

Alternative EBUC-1 **is withdrawn from further consideration** because it is impracticable and because it has substantially higher environmental quality impacts compared to the other alternative. The primary reason for withdrawal is impracticability due to the high risk of acquiring extensive residential property adjacent to the UP Niles Subdivision. A secondary reason for withdrawal is because this alternative, unlike EBUC-2, does not provide a direct intermodal connection in Union City. An additional secondary reason is the scale of environmental quality impacts (noise and visual) that would occur by locating the alignment directly within residential areas.

ALTERNATIVE EBUC-2

Alternative EBUC-2 would connect Union City to the I-680/SR 84 Station via the UP Oakland Subdivision to the Niles Junction and then a new tunnel eastward.

Stations along this alternative include the Union City Station and I-680/SR 84, both of which were discussed above in terms of TOD potential.

This alternative was designed to provide a direct connection at the Union City Station utilizing the UP Oakland Subdivision (which is being pursued separately by the San Mateo County Transportation Authority for the Dumbarton Rail Corridor Project) and providing a tunnel instead of a surface alignment through Niles Canyon. This alternative would require substantially less residential/commercial property displacement compared to EBUC-1.

This alternative would meet the purpose and need better than EBUC-1 because of its direct connection to the Union City Station) and would lower constructability risk as it would require acquisition of part of the less utilized UP Oakland Subdivision compared to the having to use part of the active UP Niles Subdivision.

Alternative EBUC-2 **is carried forward for further consideration** because it would avoid the constructability/right-of-way acquisition requirements of Alternative EBUC-1 and provides a direct connection to the Union City Intermodal Station.

4.4 TRI-VALLEY (AREA 2)

4.4.1 EVALUATION OF ALTERNATIVES

In Area 2, from the I-680/SR 84 interchange through the Tri-Valley cities of Pleasanton, Dublin, and Livermore, seven alternatives were identified for comparison to the evaluation measures:

- **Alternative TV-1:** I-680, I-580.
- **Alternative TV-2a:** I-680, former SP–Pleasanton (aerial), adjacent to UP (aerial), adjacent to UP.
- **Alternative TV-2b:** I-680, former SP–Pleasanton (tunnel), railroad (tunnel), former SP.
- **Alternative TV-2c:** I-680, UP–Pleasanton (tunnel), adjacent to UP Livermore (tunnel), former SP.
- **Alternative TV-3:** SR 84, Isabel, Railroad Ave., former SP east of downtown Livermore.
- **Alternative TV-4:** SR 84, south of Livermore, East of Vasco Road, adjacent to UP.

Table E-4 in Appendix E lists each of the alternatives considered in the Tri-Valley area and identify whether they are to be carried forward for further study or withdrawn from further consideration. Key factors that differ between the

alternatives are highlighted in the table. The performances of the seven alternatives with respect to the evaluation measures are described below.

ALTERNATIVE TV-1

Alternative TV-1 generally would follow I-680 and I-580 from the I-680/SR 84 interchange to I-580 at Greenville Road in Livermore.

Stations along this alternative include I-680/SR 84, Bernal/I-680, Dublin/Pleasanton BART, and Isabel/I-580. The Bernal/I-680 Station's location would be farther from downtown Pleasanton compared to the Downtown Pleasanton (UP) and Downtown Pleasanton (SP) Stations (see discussion below under Alternatives TV-2a and TV-2c), and the location may be in conflict with planned urban developments in the area, but the site has excellent regional highway access and may have significant TOD potential. A new Altamont Corridor station at the Dublin Pleasanton BART Station may permanently displace BART parking spaces on the south side of the I-580 corridor, resulting in the need for replacement stalls in addition to those required to serve the Altamont Corridor; however, this station would be well situated to serve the Dublin area and employment centers along the I-580 corridor and has direct regional highway access. There is also additional TOD potential adjacent to the Dublin/Pleasanton BART Station. The Isabel/I-580 Station has a large undeveloped parcel just north of the proposed alignment that could be developed for TOD.

This alternative was designed to maximize use of the freeway corridors and connect to an existing BART station. This alternative would be mostly compatibility with adjacent land uses and existing and future TOD and planning in the project area. Additionally, because the proposed alignment would be constructed in existing transportation rights-of-way, it would have limited residential/business displacement.

This alternative would have substantial constructability challenges along the freeways, especially along I-580. An aerial vertical section would need to be built above the proposed BART extension to Livermore from east of Hacienda Drive to Portola Avenue, which would have substantial constructability challenges as it would require placement of two rail lines in a single over/under alignment. If this could not be achieved and BART remains in the I-580 median, then the Altamont Corridor Rail Project's alignment would need to be placed in adjacent commercial or residential areas resulting in substantial right-of-way acquisition risk.

Based on current planning, the Isabel/I-580 Station would not have a BART connection and would have lower TOD potential than potential stations in downtown Livermore. The redundancy of providing commuter rail and BART service (via the existing Dublin/Pleasanton BART Station and the future Livermore extension) would reduce the potential ridership and subsequent revenue potential with this alternative and would be an inefficient use of public transportation funding. This alignment is also the longest of the Tri-Valley alternatives. It would have a longer transit time than the south of Pleasanton (TV-3) and south of Livermore (TV-4) alternatives, and approximately the same transit time as the downtown alternatives (TV-2a, 2b, and 2c).

Alternative TV-1 **is withdrawn from further consideration** because it is impracticable. This alternative would have substantial constructability risk due to extensive construction in and around the freeway and the need to accommodate a future BART extension.

ALTERNATIVE TV-2A

Alternative TV-2a would follow I-680 until it reaches the former SP right-of-way, follow the former SP right-of-way through downtown Pleasanton, and run adjacent to the UP right-of-way through downtown Livermore to reach Greenville Road.

Stations along this alternative include I-680/SR 84, Downtown Pleasanton (SP), Downtown Livermore, and Vasco Road (UP). The Downtown Pleasanton (SP) Station is located directly in downtown Pleasanton, but has no TOD potential because all available land within 0.5 mile has been developed. The Downtown Livermore Station provides direct access to downtown areas, intermodal connections with a transit center, and a future BART station, and it has nearby TOD potential, primarily through reuse of parking lots or redevelopment of existing non-residential uses. However, construction of this station would be costly and may require property on the north side of the UP corridor. The Vasco Road (SP) Station has adjacent undeveloped parcels that could be used for residential, commercial, or mixed use, and supports a future BART station and a park-and-ride intercept facility serving the I-580 corridor. The

area surrounding this proposed station location was approved as a potential Priority Development Area (PDA) by ABAG in January 2011 (PDAs are considered infill transit-oriented growth areas by ABAG).

This alternative was designed to provide downtown connections in Pleasanton and Livermore, while controlling costs through the use of aerial structures. This alternative would have substantially lower costs among the alternatives in the Tri-Valley area. This alternative provides connections at two existing ACE stations and two future BART transit connections with intermodal accessibility between two downtown areas, thereby maximizing revenue and ridership potential and phasing options. This alternative would have relatively lower impacts to natural resources because it is routed along existing transportation corridors that have been previously developed. The location of the Downtown Pleasanton (SP) Station would be directly in downtown Pleasanton, which is slightly more favorable than the Downtown Pleasanton (UP) station location in Alternative TV-2c.

This alternative would have land use incompatibilities due to community visual and noise impacts associated with aerial structures through downtown Pleasanton and Livermore. Pleasanton representatives have expressed opposition to a downtown Pleasanton alignment (aerial or otherwise). Livermore representatives are highly concerned about an aerial alignment through downtown Livermore. This alternative would also displace the most residences and businesses of all alternatives in this area and would displace an existing park as a result of using the currently inactive former SP right-of-way through downtown Pleasanton. The travel time for this alternative is the third-slowest of the Tri-Valley alternatives.

This alignment **is carried forward for further consideration** because it is the lowest cost alternative and because it would have the highest connectivity and accessibility of all the alternatives in this area (which would support revenue and ridership potential). However, as noted above, this alternative would also have substantial noise and visual environmental quality impacts and constructability/right-of-way challenges.

ALTERNATIVE TV-2B

Alternative TV-2b would follow the same alignment as Alternative TV-2a through Pleasanton and east to Livermore, but would then follow Railroad Avenue through downtown Livermore and then run within the former SP line east to Vasco Road and Greenville Road. However, this alternative would be tunneled through both downtown areas.

Stations along this alternative include I-680/SR 84, Downtown Pleasanton (SP), and Vasco Road (SP), all of which were discussed above.

This alternative was designed to minimize operational noise and visual environmental quality impacts in downtown areas. This alternative would minimize community noise and visual impacts through construction of tunnels under downtown Pleasanton and downtown Livermore. This alternative would have relatively lower impacts on natural resources by following existing transportation corridors. This alternative would have less displacement of residences and businesses compared to Alternative TV-2a because of use of tunneling and more use of the former SP line east of downtown Livermore. As noted above, Pleasanton representatives have expressed opposition to a downtown Pleasanton alignment.

Because of tunneling, this alternative would have substantially higher costs than Alternative TV-2a. This alternative would not have a Downtown Livermore Station, which would have relatively less connectivity and accessibility and revenue and ridership potential (i.e., two potential stations instead of three) than Alternative TV-2a. The travel time for this alternative is the second-slowest of the Tri-Valley alternatives.

Alternative TV-2b **is carried forward for further consideration** because it offers an alternative through downtown Pleasanton and Livermore that would ameliorate some of the noise and visual environmental quality impacts of Alternative TV-2a by tunneling.

ALTERNATIVE TV-2C

Alternative TV-2c would be located along I-680 and then on the UP alignment in a tunnel through downtown Pleasanton. It would then travel within the common corridor between Pleasanton and Livermore, continue in a tunnel under the UP alignment in downtown Livermore, run at grade along the SP alignment to Vasco Road, and continue to Greenville Road.

Stations along this alternative include I-680/SR 84, Downtown Pleasanton (UP), and Vasco Road (SP). The Downtown Pleasanton (UP) Station provides good access to the I-680 corridor via Bernal Avenue and has direct access to the Alameda County Fairgrounds, but it is not as convenient to downtown as the Downtown Pleasanton (SP) Station and has only one undeveloped parcel of note within 0.5 mile that might be useable for TOD. The Vasco Road (SP) Station has adjacent undeveloped parcels that could be used for residential, commercial, or mixed-use TOD.

This alternative was designed to utilize tunnels to minimize impacts on downtown areas and to relocate the existing UP freight service through Pleasanton into a tunnel, thereby eliminating at-grade crossings in downtown Pleasanton. Similar to Alternative TV-2b, this alternative would have fewer community visual and noise impacts than Alternative TV-2a. As with Alternatives TV-2a and TV-2b, this alternative would have relatively fewer impacts on natural resources by following existing transportation corridors. This alternative would require less residential and business disruption than Alternative TV-2a because of tunneling and the use of the SP right-of-way east of downtown Livermore. As noted above, Pleasanton representatives have expressed opposition to a downtown Pleasanton alignment.

Because more extensive construction would be necessary, this alternative is the most expensive of the Tri-Valley alternatives. In Livermore, this alternative would only have a station at Vasco Road, which would have less connectivity than Alternative TV-2a. The travel time for this alternative is a little faster than the other downtown alternatives and the freeway alternative (TV-1), but substantially slower than the alternatives south of Pleasanton and Livermore (Alternatives TV-3 and TV-4).

Alternative TV-2c **is withdrawn from further consideration** because it does not meet the purpose and need and it is impracticable due to cost and right-of-way risk. This alternative does not meet the purpose and need of being located in an independent right-of-way to the maximum extent feasible. This alternative is the highest cost of all alternatives in the area. This alternative also has substantial constructability risks due to its location within the active UP right-of-way and the need for right-of-way acquisition or agreement on shared use from UP, when UP has indicated in scoping that it opposes use of any of its right-of-way for this project.

ALTERNATIVE TV-3

Alternative TV-3 would begin at the I-680/SR 84 interchange, generally follow adjacent to SR 84 south of Pleasanton to Stanley Boulevard (crossing private quarry land south of Stanley), and continue east through Livermore along Railroad Avenue (in a tunnel) and the former SP to reach Greenville Road. Two options have been defined for the alternative, depending on whether the potential I-680/SR 84 Station is located on the west side parallel to I-680 or on the east side of I-680 (in a different configuration).

Stations along this alternative include I-680/SR 84 and Vasco Road (SP), both of which were discussed above.

This alternative was designed to avoid downtown Pleasanton and natural areas south of Livermore. Alternative TV-3 provides a more direct route (and less travel time) than the alternative along the freeways (Alternative TV-1) and the alternatives through the downtown areas (Alternatives TV-2a, TV-2b, and TV-2c), but it does not provide as direct (or fast) of a route as the south-of-Livermore alternative (Alternative TV-4). This alternative has the second-lowest cost of Tri-Valley alternatives.

This alternative has a mix of community and natural resource impacts during construction because the routing runs through both developed and undeveloped areas. The majority of this alternative would be tunneled and therefore have relatively higher costs than Alternative TV-2a, but would be less costly than all other alternatives. This alternative would have only one Tri-Valley station, Vasco Road (SP), which would make it less likely to maximize revenue as a result of its potential for lower ridership. This alternative would have community noise and visual impacts that would be lower than the freeway alternative (TV-a) and the aerial downtown alternative (TV-2a) but higher than the downtown tunnel alternatives (TV-2b and TV-2c) and the south of Livermore alternative (TV-4).

This alternative would have high constructability/right-of-way risks due to the need to acquire private quarry land west of SR 84 between Vineyard Avenue and Stanley Boulevard. This area contains significant (MRZ-2)² mineral

² MRZ-2 are areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.

resources (sand and aggregate) that could be highly problematic to acquire. Prior evaluations of potential transportation projects (such as BART to Livermore) crossing this mineral resource area between Livermore and Pleasanton have identified similar obstacles to routing. This alternative would also have a far higher level of impact to wetlands and farmlands compared to other alternatives in this area.

Alternative TV-3 **is withdrawn from further consideration** because it is considered impracticable due to a high level of right-of-way acquisition risk for an extensive area of private land that is a state-designated mineral resource area. A secondary reason for withdrawal is that this alternative would result in greater environmental impact to wetlands and farmlands compared to other alternatives in the area.

ALTERNATIVE TV-4

Alternative TV-4 was designed to avoid downtown Pleasanton and Livermore and follow an existing transmission line while providing a direct east-west route to minimize travel time. It would begin in the same location as Alternative TV-3, but would continue in new right-of-way south of Livermore to enter Livermore adjacent to Vasco Road, and then continue east adjacent to the UP right-of-way to reach Greenville Road.

Stations along this alternative include I-680/SR 84 and Vasco Road (UP), both of which were discussed above.

This alternative would provide a relatively direct route from the I-680/SR 84 Station to the existing ACE station at Vasco Road and would have the fastest travel time of the Tri-Valley alternatives. Due to a nearly continuous area of parklands south of Livermore (Sycamore Grove Park), there is no feasible route that could avoid all parks. The use of a tunnel would minimize impacts to Sycamore Grove Park and limit impacts to other non-urban lands in the alignment (prime farmlands and biological resources habitat). Tunneling would limit impacts to minimal vent shaft and power feed facilities. Following an existing high-voltage transmission line would lower potential aesthetic impacts where the route is above ground. This alternative would avoid community disruption in downtown Pleasanton and Livermore.

This alternative has the second-highest cost of the Tri-Valley alternatives. This alternative would have impacts to threatened and endangered species habitat in areas adjacent to SR 84 and east of SR 84 prior to the long tunneled segment. There may be potential community noise and visual impacts along Vasco Road in Livermore, although of a lesser intensity due to the retained cut design, which would attenuate both noise and visual effects. This alternative would require displacement of commercial/industrial properties adjacent to the UP right-of-way east of Vasco Road and would require coordination with Lawrence Livermore National Laboratory to potentially use the buffer area east of Vasco Road to satisfy laboratory security and safety concerns.

Alternative TV-4 **is carried forward for further consideration** because it is the shortest and fastest route and it would avoid community disruption in downtown areas.

4.5 ALTAMONT PASS (AREA 3)

4.5.1 EVALUATION OF ALTERNATIVES

In Area 3³, from east of Livermore to Tracy through the Altamont Pass, the following alternatives were identified for comparison to the evaluation measures:

- **Alternative A-1:** Northern alignment near I-580.
- **Alternative A-2:** Southern alignment through Patterson Pass.

Table E-5 in Appendix E lists each of the alternatives considered in the Altamont Pass area and identify whether they are to be carried forward for further study or withdrawn from further consideration. Key factors that differ between

³ In the vicinity of where the UP and former SP rights-of-way cross the California Aqueduct and Delta Mendota Canal west of Tracy, the two Altamont Pass alternatives (Alternatives A-1 and A-2) approaching the California Aqueduct from the west would connect to either of the two Tracy alternatives (Alternatives T-1 and T-2) described in Section 4.6. The "mix-and-match" segments are shown on engineering drawings in Appendix C.

the alternatives are highlighted in the table.⁴ The performances of the alternatives with respect to the evaluation measures are described below.

ALTERNATIVE A-1

Alternative A-1 generally follows I-580 through the Altamont Pass where it crosses the highway towards the south, the California Aqueduct, and the Delta Mendota Canal. There are no stations along this alignment.

This alternative was designed to consider an alternative that paralleled I-580. This alternative has comparable operation and capital costs, connectivity and accessibility, and revenue and ridership potential as Alternative A-2. Alternative A-1 has relatively low construction/right-of-way risks (because it crosses undeveloped areas). It would affect threatened and endangered species habitat, but to a less extent than Alternative A-2. This alternative would require limited displacement of commercial/industrial businesses at its east and west ends.

This alternative would not be consistent with the open space and large-parcel agricultural land uses in the Altamont Hills, would affect scenic views through introduction of aerial structures into non-urban landscapes, and would affect views from locally and state-designated scenic roads (Greenville Road, Flynn Road, and I-580). Although this alternative would be inconsistent with current land use planning for the lands south of I-580, by being located roughly parallel to the freeway, this alternative would be less inconsistent than Alternative A-2, which does not follow an existing transportation corridor.

Alternative A-1 **is carried forward for further consideration** because it provides a feasible alternative to connect Tracy to Livermore, would be located along an existing transportation corridor, and would have less impact on natural resources than Alternative A-2.

ALTERNATIVE A-2

Alternative A-2 would provide a direct east-west route through the Altamont Pass connecting Livermore and Tracy. There are no stations along this alignment.

This alternative was designed to minimize the length of construction and travel time in this portion of the route. This alternative would have lower costs than Alternative A-1. This alternative has comparable operational costs, connectivity and accessibility, and revenue and ridership potential as Alternative A-1. This alternative would have a slightly shorter travel time than Alternative A-1. This alternative would require limited displacement of commercial/industrial businesses at its west end (e.g., near Greenville).

This alternative would have greater land use incompatibility than Alternative A-1 because it would be a new transportation corridor through an existing open space area. This alternative would affect more areas of threatened and endangered species habitat than Alternative A-1. This alternative would also cross a proposed mitigation area for threatened and endangered species in the foothills west of I-580 near Tracy. Similar to Alternative A-1, this alternative also would introduce aerial structures into non-urban landscapes and affect views from locally and state-designated scenic roads (Greenville Road, Patterson Pass Road, and portions of I-580).

Alternative A-2 **is carried forward for further consideration** because it would have lower costs and a shorter and faster route than Alternative A-1.

4.6 TRACY (AREA 4.1)

4.6.1 EVALUATION OF ALTERNATIVES

In Area 4.1, from east of Altamont Pass to Tracy, the following alternatives were identified for comparison to the evaluation measures:

⁴ Alternative A-1 would be inconsistent with land use policies within the East County Area Plan that designate the alignment area as permissible for agriculture or agriculture-compatible uses only; Alternative A-2 would be similarly inconsistent with the East County Area Plan and the San Joaquin County General Plan land use policies in the alignment area. However, both plans' overall transportation policies state that this incompatibility would not preclude approving or supporting a rail project in the plan areas.

- **Alternative T-1:** Downtown Tracy.
- **Alternative T-2:** South of Tracy.

Table E-6 in Appendix E lists each of the alternatives considered in the Tracy area; as noted below, both are to be carried forward for further study. Key factors that differ between the alternatives are highlighted in the table. The performances of the two alternatives with respect to the evaluation measures are described below.

ALTERNATIVE T-1

Alternative T-1 would generally follow the former SP right-of-way through downtown Tracy and would primarily be aerial until it reaches the vicinity of the San Joaquin River. The right-of-way through Tracy is relatively wide and undeveloped. The alternative would be outside UP's active freight right-of-way, but would require property acquisitions from UP and various private owners.

The only station along this alignment would be the Downtown Tracy Station. The site would have direct access to downtown Tracy and the transit center, and supports City of Tracy planning objectives for the "Bowtie" area, including significant TOD. Existing vacant land is available for the station and related facilities, and the site has good regional highway access (the 11th Street connections to I-205, I-5, and I-580).

This alternative proposed Downtown Tracy Station would have better connectivity/accessibility, ridership and TOD potential than Alternative T-2.

This alternative has the potential to result in noise/vibration and visual environmental quality impacts on adjacent residential areas within Tracy and would have farmland impacts outside Tracy (but less than Alternative T-2). This alternative would have potential habitat impacts at the crossing of Paradise Cut. There is some potential constructability risk associated with right-of-way acquisition requirements because acquisition from UP may be necessary; however, given the size of the undeveloped corridor through Tracy, the constructability risk is not considered unfavorable because it could be done without affecting UP operations. This alternative also would cost more than Alternative T-2.

Alternative T-1 **is carried forward for further analysis** because it would have favorable ridership and TOD potential because of the Downtown Tracy Station.

ALTERNATIVE T-2

Alternative T-2 would generally run adjacent to the UP right-of-way south of Tracy until it reaches the vicinity of the San Joaquin River.

The only station along this alignment would be the South Tracy Station (at or adjacent to the existing ACE Station). The station site is distant from downtown Tracy, and existing low-density residential developments limit TOD potential west, north, and east of the site. Industrial lands to the south may have limited TOD potential. The site is close to Tracy Municipal Airport and has good regional highway access (the Coral Hollow Road connection to I-580).

This alternative was designed to provide an alternative to routing through downtown Tracy, while still having a stop in Tracy. Because of its location on the southern edge of Tracy, this alternative has less potential for residential impacts than Alternative T-1, but may have more disruption of commercial and industrial land along Linne Road. This alternative has a substantially lower cost than Alternative T-1.

Under this alternative, several overpasses would be constructed to accommodate the primarily at-grade configuration of the alignment. This alternative would also have potential habitat impacts at the crossing of Paradise Cut and greater impacts on farmlands than Alternative T-1.

This alternative **is carried forward for further analysis** because it would provide opportunities for reduced residential impacts compared to Alternative T-1, although with a tradeoff of potentially fewer TOD opportunities and potentially higher take of commercial properties.

4.7 SAN JOAQUIN RIVER TO STOCKTON (AREA 4.2)

4.7.1 EVALUATION OF ALTERNATIVES

In Area 4.2, from San Joaquin River to the Stockton area, four alternatives were identified for comparison to the evaluation measures:

- **Alternative TS-1:** Former SP, I-5, former SP, in UP.
- **Alternative TS-2:** Adjacent to UP, former SP, in UP.
- **Alternative TS-3:** Adjacent to UP, east of UP, in UP.
- **Alternative TS-4:** Adjacent to UP, east of UP, Airport Way, in UP.

Tables E-7 in Appendix E lists each of the alternatives considered in the San Joaquin River to Stockton area and identify whether they are to be carried forward for further study or withdrawn from further consideration. Key factors that differ between the alternatives are highlighted in the table. The performances of the four alternatives with respect to the evaluation measures are described below.

ALTERNATIVE TS-1

Alternative TS-1 would follow the former SP right-of-way crossing the San Joaquin River, follow I-5 through Lathrop, return to the former SP right-of-way south of Stockton, and reach the existing Downtown Stockton (Cabral) Station (ACE/Amtrak) via the UP right-of-way. Sections of the former SP right-of-way would be purchased. The route would need to cross through two rail yards on the approach to downtown Stockton. Near downtown Stockton, aerial columns would be located within the UP right-of-way, which would also need to be acquired.

Stations along this alignment would include Lathrop/I-5 and Downtown Stockton (Cabral). The Lathrop/I-5 Station site within a major freeway corridor is constrained, and construction could be costly. The site does not provide close access to Manteca, but it has direct access to I-5 and is close to other regional highways (SR 120, SR 99, I-205, I-580). The I-5/Lathrop Station would also provide a connection from the project's Tracy-to-Stockton service to the Sacramento to Merced HST Section. There would be a fair amount of TOD potential west of I-5. The Downtown Stockton (Cabral) Station "footprint" may require moderate to significant property takes and potentially affect historic resources, including an architecturally significant former WP depot one block south of the Downtown Stockton (Cabral) Station. The Downtown Stockton (Cabral) Station site supports downtown economic development, including the City of Stockton's Robert Cabral Station Neighborhood Revitalization Plan, which includes TOD opportunities.

This alternative was designed to provide the most direct route for Tracy-to-Stockton service while using the existing I-5 right-of-way. Because of its location within the I-5 corridor, it would have relatively limited disruption to existing residential and commercial properties and provide the potential for a highway intercept station with TOD opportunities. This alternative also provides an opportunity for a shared alignment with HST along I-5 in this area.

There would be risks associated with right-of-way acquisitions in the SP and UP near downtown Stockton, but the right-of-way risks do not preclude the potential feasibility of this alternative at this time because the acquisitions could be done without compromising UP freight operations.

Alternative TS-1 **is carried forward for further consideration** because it provides the most direct route from Tracy to Stockton, with a viable station in the Lathrop-Manteca area, and an opportunity for a shared alignment with HST.

ALTERNATIVE TS-2

Alternative TS-2 would be adjacent to the existing UP crossing the San Joaquin River, transition to the former SP crossing west of Sharpe Depot and then back within the UP right-of-way before reaching the Downtown Stockton (Cabral) Station. There is adequate room within the former SP right-of-way to accommodate the project, and the SP right-of-way is not currently in use by the UP.

Stations along this alignment would include Lathrop/Manteca (Louise Avenue) and Downtown Stockton (Cabral). The TOD potential at the Lathrop/Manteca (Louise Avenue) Station site is limited by industrial areas to the east and south

and may not be compatible with community objectives and city planning policies. The site provides more convenient service to downtown Lathrop than to downtown Manteca and has reasonable access to the I-5 corridor. The Downtown Stockton (Cabral) Station was discussed above.

This alternative was designed to utilize the less-used former SP alignment as much as possible, while providing a Lathrop/Manteca station. This station at Louise Avenue provides opportunities to draw riders from Lathrop and Manteca.

The route through Lathrop would be adjacent to residential areas and rail noise could potentially affect the largest number of receptors of all the alternatives in this area. Like Alternative TS-1, the alignment would also cross through two rail yards and increase constructability risks because of right-of-way acquisition requirements for the portions of the former SP and current UP rights-of-way.

Because of geometric constraints, this alternative would not allow for connectivity or accessibility with future routing through the Lathrop/Manteca area proposed under the Sacramento to Merced HST Section. This HST section would have to be routed either along SR120 and I-5 northward to Stockton or through the center of Manteca adjacent to the UP Fresno Subdivision and then northward toward Stockton. If Alternative TS-2 were combined with Alternative TM-1a, then the length of the redundant alignment would be approximately 7 miles from the north side of Manteca to Industrial Drive. If Alternative TS-2 were combined with Alternative TM-2b, then the length of the redundant alignment would also be approximately 7 miles from SR-120 along I-5 to near Matthews Road. The additional 7 miles would result in higher natural environmental and environmental quality impacts due to construction and operation than other alternatives. If the average combined construction/right-of-way acquisition cost per mile in this area were assumed to be \$80 million per mile, then the additional cost of this redundant alignment could be well over \$500 million.

Alternative TS-2 **is withdrawn from further consideration** because it is impracticable due to the requirement of redundant routes with the HST system and the associated environmental impacts and costs of redundant sections.

ALTERNATIVE TS-3

Alternative TS-3 would be located farther east than Alternatives TS-1 and TS-2 as it crosses through the Lathrop/Manteca area. The alternative would start adjacent to the UP when it crosses the San Joaquin River, stay east of the UP east of Sharpe Depot, and then transition back to the UP near French Camp.

Stations along this alignment would include Lathrop/Manteca ACE (West Yosemite Avenue) and Downtown Stockton (Cabral). The Lathrop/Manteca ACE (West Yosemite Avenue) Station would be located in a minimally developed area between the central parts of Manteca and Lathrop, which may attract growth away from the downtown areas of both cities. The site has potential TOD opportunities and good regional highway access (SR 120, SR 99, I-5). The Downtown Stockton (Cabral) Station was discussed above.

This alternative was designed to provide an alignment separate from existing UP rights-of-way while minimizing community disruption and providing a Lathrop/Manteca station. This alternative would include a station at West Yosemite Avenue that provides opportunities to attract riders from Lathrop and Manteca (like the current ACE station) and that would have stops on both the San José-to-Stockton and San José-to-Modesto service. Because the routing through Manteca would not preclude connectivity with future California HST System operations, this alternative's feasibility would not be compromised by redundant alignments and associated costs. This alternative would potentially have the lowest noise/visual impacts of alternatives in this area because it has less sensitive receptors adjacent to the alignment. Although this alternative is the lowest cost of the alternatives in this area, the cost difference with other alternatives is minor (less than 1% than the next-lowest-cost alternative, TS-4).

Like Alternative TS-1, the alignment would also cross through two rail yards and have substantial constructability risks because of right-of-way acquisition requirements for the portions of the current UP right-of-way.

Alternative TS-3 **is carried forward for further consideration** because it would provide for a combined Lathrop/Manteca station for both Altamont Corridor services (San José to Stockton and San José to Modesto), avoid redundant HST and Altamont Corridor lines in the Lathrop/Manteca area, and would potentially have the lowest noise and visual environmental quality impacts of alternatives in this area.

ALTERNATIVE TS-4

Alternative TS-4 would start adjacent to the UP where it crosses the San Joaquin River, follow in a new right-of-way east of the UP east of Sharpe Depot, and continue to follow Airport Way near Stockton Metropolitan Airport on an aerial structure, and finally transition back to the UP near downtown Stockton.

Stations along this alignment would include Lathrop/Manteca ACE (West Yosemite Avenue) and Downtown Stockton (Cabral), both of which were discussed above.

This alternative was designed to provide an alignment separate from existing UP rights-of-way as much as possible, provide a Lathrop/Manteca station, and avoid the two rail yards along the UP alignment south of downtown Stockton. This alternative would include a station at West Yosemite Avenue that provides opportunities to attract riders from Lathrop and Manteca. This alternative would avoid crossing the two rail yards and therefore reduce the constructability risks of the other alternatives in this area. Alternative TS-4 would also avoid residential areas in Lathrop, but it would have some commercial property impacts west of Manteca and would have community noise and visual impacts along Airport Way in Stockton.

Alternative TS-4 **is carried forward for further consideration** because it would provide for a combined Lathrop/Manteca station for both Altamont Corridor services (San José to Stockton and San José to Modesto), avoid redundant HST and Altamont Corridor lines in the Lathrop/Manteca area, and provide a potential opportunity to avoid constructability risks associated with the two rail yards by routing along Airport Way.

4.8 SAN JOAQUIN RIVER TO MODESTO (AREA 4.3)

4.8.1 EVALUATION OF ALTERNATIVES

Under area 4.3 from the San Joaquin River to Modesto, four alternatives were identified for comparison to the evaluation measures:

- **Alternative TM-1a:** Former SP, turn back, adjacent to the UP in Manteca, then south to Modesto.
- **Alternative TM-1b:** Adjacent to UP, turn back, adjacent to UP in Manteca, then south to Modesto.
- **Alternative TM-2a:** Adjacent to UP, SR 120, SR 120 plan line, adjacent to BNSF to Modesto.
- **Alternative TM-2b:** SR 120, adjacent to UP to Modesto.

Tables E-8 in Appendix E lists each of the alternatives considered in the San Joaquin River to Modesto area and identify whether they are to be carried forward for further study or withdrawn from further consideration. Key factors that differ between the alternatives are highlighted in the table. The performances of these alternatives with respect to the evaluation measures are described below.

Although the Sacramento-to-Merced HST Section may utilize a downtown Manteca station, a downtown Manteca station is not included in any of the following alternatives because the two alternatives that pass through downtown Manteca would have a Lathrop/Manteca station that would support San José-to-Stockton and San José-to-Modesto service, which would make a stop in downtown Manteca redundant. These two alternatives do not preclude stopping in downtown Manteca, and such a station is considered part of the regional Sacramento-to-Merced project at this time.

ALTERNATIVE TM-1A

Alternative TM-1a would follow the former SP right-of-way through southeast Lathrop, turn back to run adjacent to the UP right-of-way through downtown Manteca, and then continue to Modesto adjacent to the UP. Sections of the former SP right-of-way would be required for purchase, as would private property in Manteca and south of Manteca. This alternative would require Alternative TS-2 to be developed.

The only station along this alignment would be Lathrop/Manteca (Louise Avenue). This alignment would connect with an HST alignment along SR 99, which would connect to stations in Modesto and points south. The TOD opportunities at this station were discussed above.

This alternative was designed to provide a combined Lathrop/Manteca station while also utilizing a potential HST alignment through the middle of Manteca. This alternative has favorable connectivity and accessibility because it provides opportunity for a combined Lathrop/Manteca station that would connect Tracy-to-Stockton service with Tracy-to-Modesto service.

The routing of the alignment through downtown Manteca would require extensive property acquisition and would include substantial environmental quality impacts related to noise and visual aesthetics.

Because of geometric constraints, this alternative would not allow for connectivity or accessibility with future routing through the Lathrop/Manteca area proposed under the Sacramento to Merced HST Section. With Alternative TM-1a (combined with Alternative TS-2), the HST section in this area would logically be routed through the center of Manteca adjacent to the UP Fresno Subdivision and then northward toward Stockton. The length of the redundant alignment would be approximately 7 miles from the north side of Manteca to Industrial Drive. The additional 7 miles would result in higher natural environmental and environmental quality impacts due to construction and operation than other alternatives. As noted above, the cost of this redundant alignment could be in excess of \$500 million.

Alternative TM-1a **is withdrawn from further consideration** because it is impracticable due to the requirement of redundant routes with the HST system and the associated environmental impacts and costs of redundant sections.

ALTERNATIVE TM-1B

Alternative TM-1b would run adjacent to the UP right-of-way north through the western edge of Manteca, turn back to run adjacent to the UP right-of-way through downtown Manteca, and continue adjacent to the UP to Modesto. This alternative would be combined with Alternative TS-3.

The only station along this alignment would be Lathrop/Manteca ACE (West Yosemite Avenue), although there could be a downtown Manteca station for the Sacramento to Merced HST Section. This alignment would connect with a HST alignment along SR 99, which would connect to stations in Modesto and points south. The TOD potential of this station was discussed above.

This alternative was designed to provide a combined Lathrop/Manteca station while also utilizing a potential HST alignment through the middle of Manteca. This alternative is favorable for connectivity and accessibility because it provides opportunity for a Lathrop/Manteca station that would connect Tracy-to-Stockton service and Tracy-to-Modesto service. This alternative would provide for a combined route north of Manteca that could accommodate both Altamont Corridor and Sacramento to Merced HST Section service.

This alternative would require extensive property acquisition in Manteca and would include community visual and noise impacts through residential areas in Manteca. This alternative is the slowest of the alternatives through this area.

Alternative TM-1b **is carried forward for further consideration** because it includes favorable connectivity options and would avoid redundant services along Altamont Corridor and HST alignments.

ALTERNATIVE TM-2A

Alternative TM-2a would follow SR 120 through the southern edge of Manteca, and then follow the SR 120 plan line east of Manteca to connect to a future HST BNSF alignment south of Escalon to connect to stations in Modesto and points south. This alternative would be combined with Alternative TS-1.

This alternative includes a Manteca station along SR 120 that would connect Altamont Corridor Tracy-to-Modesto service under the project with the Sacramento to Merced HST Section. Although constrained, the freeway median is adequate to support an at-grade station, although construction within the freeway right-of-way may be costly. The station site is close to downtown Manteca, but not convenient to Lathrop. The site has direct access to SR 120 and is close to other regional highways (SR 99, I-205, I-5). The station has TOD potential in the undeveloped area directly south of the proposed station location, although this would be outside downtown Manteca.

This alternative was designed to provide the most direct routing to the HST alignment adjacent to the BNSF. This alternative is predicated on the selection of the BNSF alignment for the HST; therefore, there would be redundant north-south routes in the general area. This alternative would have slightly higher costs than the other alternatives in

Area 4.3. Alternative TM-2a could have lower ridership and revenue possibilities because of the lack of a connection near Lathrop for the Tracy-to-Modesto service. This alternative would have impacts on prime farmlands east of Manteca to near Escalon. This alternative would have a moderate amount of residential/commercial displacement compared to the other alternatives.

Alternative TM-2a **is carried forward for further consideration** because it is the only alternative that would connect to the north-south Sacramento to Merced HST Section BNSF alignment (if selected). If the BNSF alignment is not carried forward in the HST evaluation process, this alternative would be dismissed from further consideration.

ALTERNATIVE TM-2B

Alternative TM-2b would follow the same alignment along SR 120 through the southern edge of Manteca as Alternative TM-2a, but would turn south near SR 99 to follow adjacent to the UP right-of-way and connect to the HST alignment adjacent to the UP to Modesto. This alternative would be combined with Alternative TS-1.

The only station along this alignment would be Manteca/SR 120, which was described above.

This alternative was designed to provide the most direct route to connect with the HST alignment along SR 99 south of Manteca. Compared to other alternatives within this area, Alternative TM-2b would have the shortest service time and would have relatively fewer right-of-way acquisitions via use of existing SR 120 roadway corridor. This alternative would allow for a combined Altamont Corridor and HST route through Lathrop and northward to Stockton (if combined with Alternative TS-1).

This alternative would have lower ridership and revenue possibilities because it would not include a combined Tracy-Stockton/Tracy-Modesto station as under several other area alternatives, but the Manteca/SR 120 Station could connect Tracy-to-Modesto service to the Sacramento to Merced HST Section.

Alternative TM-2b **is carried forward for further consideration** because it would provide the most direct route to Modesto, while minimizing property acquisition through use of the SR 120 corridor.

5.0 ANALYSIS SUMMARY AND CONCLUSIONS

5.1 SAN JOSÉ TO FREMONT (AREA 1.1)

The following alternatives have been identified to be carried forward into further engineering and environmental analysis:

- Alternative EB-4 provides opportunities for multiple stations and connections to other transit services, preserves access to the Great America station (with favorable ridership/revenue potential), and is the lowest cost of the alternatives that does not cross the Don Edwards National Wildlife Refuge.
- Alternative EB-5 provides service to a different commercial area (First Street/Trimble Road) than Alternative EB-4, supports revenue and ridership by having stations in high employment centers and has lower noise and visual environmental quality impacts than all other alternatives.
- Alternative EB-6 supports ridership and revenue potential by having stations in high employment centers and regional destinations, while having relatively moderate costs compared to the alternatives that do not cross the refuge.

5.2 FREMONT TO I-680/SR 84 (AREA 1.2)

The following alternatives have been identified to be carried forward into further engineering and environmental analysis:

- Alternative EBWS-1 has the lowest cost and the shortest travel time of alternatives in this area.
- Alternative EBWS-2 provides an alternative to routing along I-680.

5.3 UNION CITY TO I-680/SR 84 (AREA 1.3)

The following alternative is identified to be carried forward into further and environmental analysis:

- Alternative EBUC-2 provides a direct connection to the Union City Intermodal Station and would have a lower constructability risk than the other Union City alternative because it would be located in a lesser-used UP right-of-way that is proposed for acquisition for the Dumbarton Rail Corridor Project and is a priority for Capitol Corridor and the City of Union City. It would also have relatively lower noise and visual environmental quality impacts compared to the other withdrawn alternative.

5.4 TRI-VALLEY (AREA 2)

The following alternatives have been identified to be carried forward into engineering and environmental analysis:

- Alternative TV-2a has the lowest cost of alternatives in this area and would have better connectivity/accessibility (connects to two existing ACE stations and two future BART transit connections) and revenue/ridership potential than other area alternatives.
- Alternative TV-2b provides an alternative through downtown Pleasanton and Livermore that would ameliorate some of the noise and visual environmental quality impacts of Alternative TV-2a through use of tunnels in downtown areas.
- Alternative TV-4 provides the shortest and fastest route through the Tri-Valley area and would avoid community disruption and noise and visual environmental quality impacts in downtown areas (although there would be noise and visual impacts along Vasco Road).

5.5 ALTAMONT PASS (AREA 3)

- Alternative A-1 provides a feasible alternative to connect Tracy to Livermore, is located along an existing transportation corridor (I-580), and would have less impact on natural resources than Alternative A-2.
- Alternative A-2 has lower costs, a more direct route, and shorter service times than Alternative A-1.

5.6 TRACY (AREA 4.1)

The following alternatives have been identified to be carried forward into engineering and environmental analysis:

- Alternative T-1 has favorable connectivity/accessibility, revenue/ridership potential, and TOD potential because of the downtown station.
- Alternative T-2 provides opportunities for reduced residential impacts, lower cost, and shorter service times compared to Alternative T-1, although with a tradeoff of potentially fewer TOD opportunities, potentially higher commercial property acquisition, and lower ridership/revenue potential.

5.7 SAN JOAQUIN RIVER TO STOCKTON (AREA 4.2)

The following alternatives have been identified to be carried forward into engineering and environmental analysis:

- Alternative TS-1 provides a direct route from Tracy to Stockton with the fastest service time of alternatives in this area, has a viable freeway intercept station in Lathrop, and would allow for use of a combined alignment for HST and the Altamont Corridor Rail Project, but would have constructability/right-of-way risks associated with crossing two rail yards near downtown Stockton.
- Alternative TS-3 provides a combined Lathrop/Manteca station for both Altamont Corridor Rail Project services (San José to Stockton and San José to Modesto), would allow for a combined alignment for HST and Altamont Corridor Rail Project lines in the Lathrop/Manteca area, would have potentially lower noise and visual environmental quality impacts than other alternatives, but would have constructability/right-of-way risks associated with crossing two rail yards near downtown Stockton.
- Alternative TS-4 provides a combined Lathrop/Manteca station for both Altamont Corridor Rail Project services (San José to Stockton and San José to Modesto), would allow for a combined alignment for HST and Altamont Corridor Rail Project lines in the Lathrop/Manteca area, and avoids constructability/right-of-way risks associated with crossing two rail yards near downtown Stockton by routing along Airport Way.

5.8 SAN JOAQUIN RIVER TO RIPON/ESCALON VICINITY (AREA 4.3)

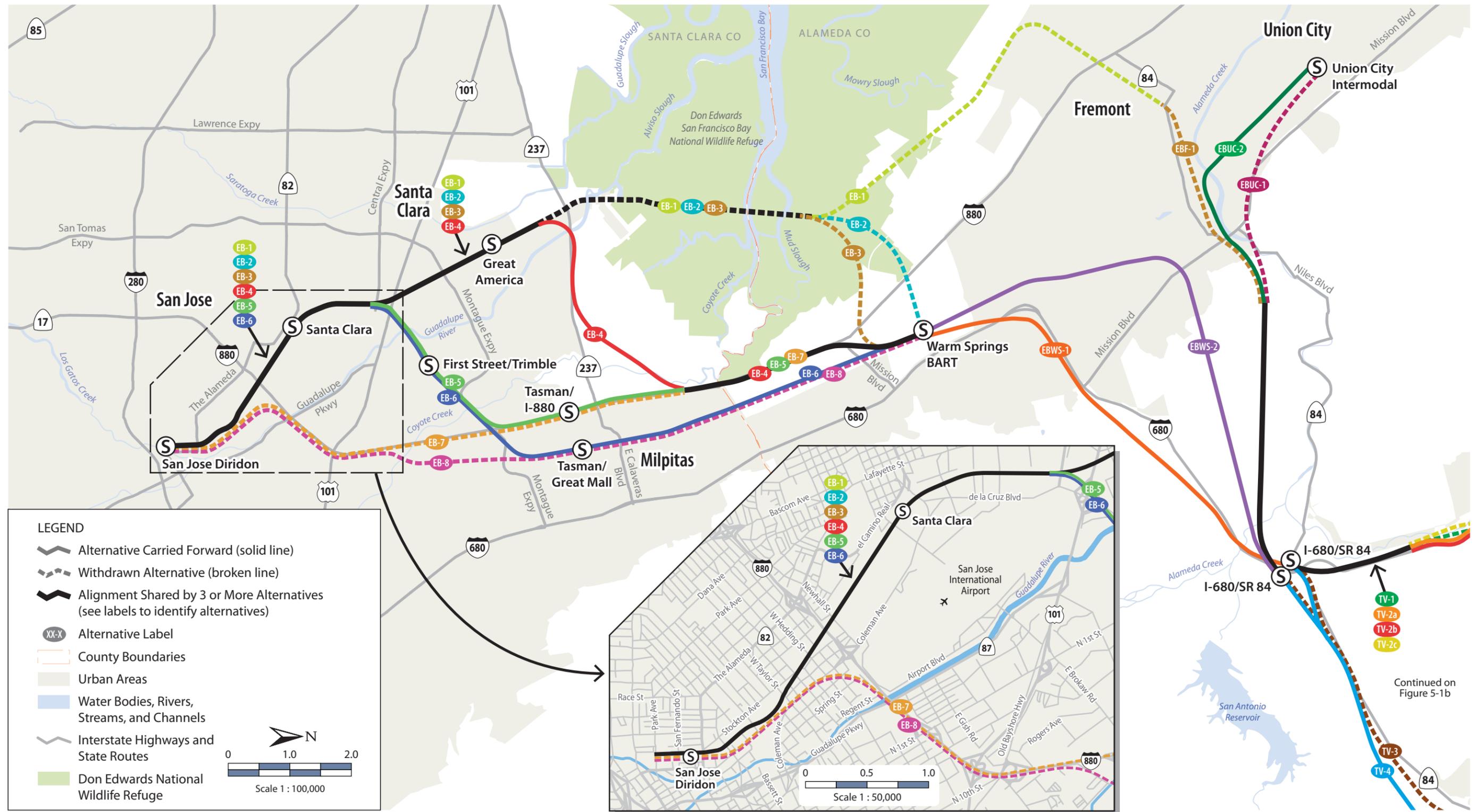
The following alternatives have been identified to be carried forward into engineering and environmental analysis:

- Alternative TM-1b provides a combined station for both Altamont Corridor Rail Project services (San José to Stockton and San José to Modesto) and avoids redundant project and HST alignments.
- Alternative TM-2a is the only alternative that would connect to the north-south Sacramento to Merced HST Section BNSF alignment (if selected). If the BNSF alignment is not carried forward in the HST evaluation process, then this alternative would be dismissed from further consideration.
- Alternative TM-2b provides the most direct route to Modesto of all area alternatives with associated faster service times and has relatively less property acquisition by being located within the SR 120 right of way in the Manteca area.

5.9 ALTERNATIVES TO BE CARRIED FORWARD FOR FURTHER ENGINEERING AND ENVIRONMENTAL ANALYSIS AND ALTERNATIVES RECOMMENDED FOR WITHDRAWAL FROM FURTHER CONSIDERATION

Figure 5-1a–c shows both the alternatives recommended to be carried forward and those recommended for withdrawal. Table 5-1 at the end of this section presents a summary of these recommendations and their rationale. As part of the continuing alternatives analysis process, additional public and agency outreach will occur as these recommendations are finalized and carried forward into further environmental and engineering analysis.

Figure 5-1a
Alignment and Station Alternatives Withdrawn or Carried Forward for Further Evaluation in the EIR/EIS



Continued on Figure 5-1b

Figure 5-1b Alignment and Station Alternatives Withdrawn or Carried Forward for Further Evaluation in the EIR/EIS

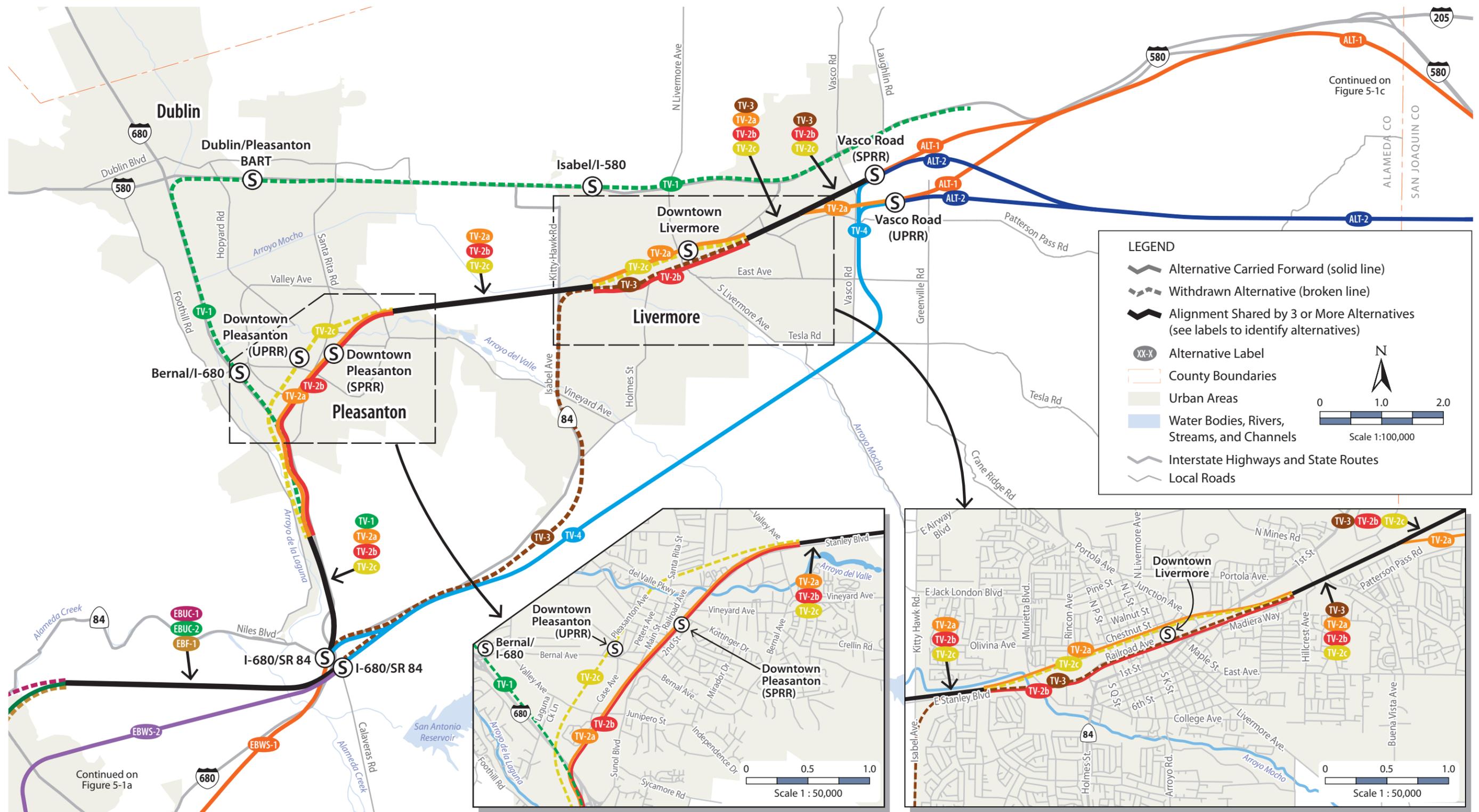
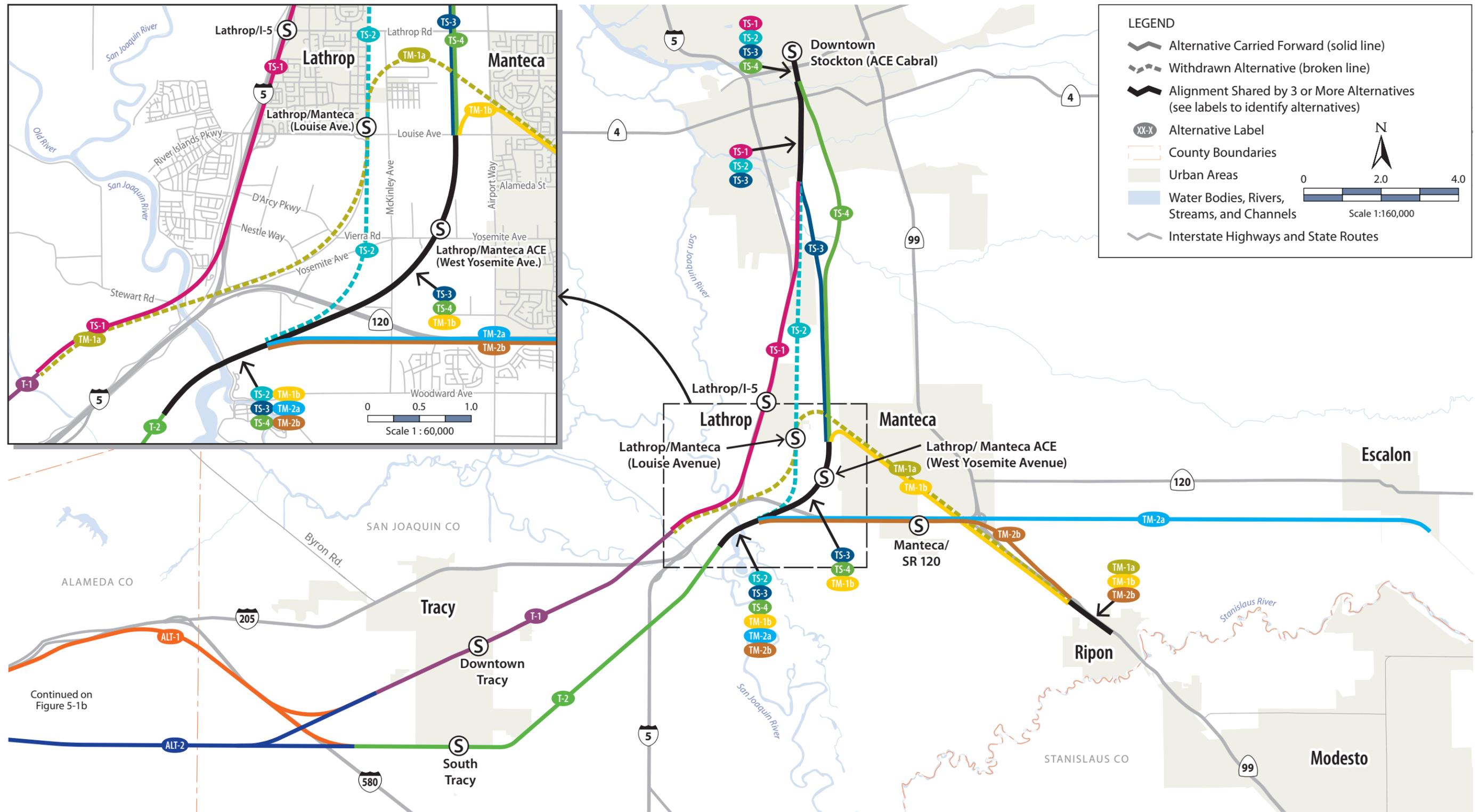


Figure 5-1c Alignment and Station Alternatives Withdrawn or Carried Forward for Further Evaluation in the EIR/EIS



**Table 5-1
Alignment Alternatives and Station Location Options Carried Forward to EIR/EIS and those Withdrawn**

Altamont Corridor Rail Project Alignment Alternatives and Station Location Screening Results ¹												
Alternative	Description		Decision		Rationale to Carry Forward or Withdraw Alternative (P = Primary reason for withdrawal; S = Secondary reason for withdrawal)							
	Alignment	Stations	Carried Forward	Withdrawn	Meets Purpose and Need?	Design Objectives— Operating and Capital Cost	Design Objective— Connectivity/Accessibility	Design Objective— Ridership/Revenue Potential	Land Use— Land Use Compatibility	Constructability— Construction Difficulty/Right- of-Way Acquisition Risk	Natural Resources and/or Environmental Quality	
San Jose to Fremont												
EB-1	In Caltrain right-of-way, adjacent to UP Coast Subdivision, Adjacent to UP Centerville Line	San José Diridon Santa Clara Great America Fremont Centerville		X	Yes			S	S	S	P	Greater natural resource impacts due to crossing of Don Edwards San Francisco Bay National Wildlife Refuge. Impracticable due to constructability risks resulting from extensive property acquisition requirements particularly in the Fremont Centerville and due to the slowest service time of alternatives in area. Greater residential displacement and noise and visual environmental quality impact in the Fremont Centerville Area (in combination with Alternative EBF-1) than other alternatives.
EB-2	In Caltrain right-of-way, adjacent to UP Coast Subdivision, south of Grimmer	San José Diridon Santa Clara Great America Warm Springs BART		X	Yes				S		P	Greater natural resource impacts due to crossing of Don Edwards San Francisco Bay National Wildlife Refuge and the Pacific Commons vernal pool mitigation complex.
EB-3	In Caltrain right-of-way, adjacent to UP Coast Subdivision, south of Cushing, Adjacent to UP Warm Springs Subdivision	San José Diridon Santa Clara Great America Warm Springs BART		X	Yes				S		P	Greater natural resource impacts due to crossing of Don Edwards San Francisco Bay National Wildlife Refuge and the Pacific Commons vernal pool mitigation complex.
EB-4	In Caltrain right-of-way, adjacent to UP Coast Subdivision, SR 237, I-880	San José Diridon Santa Clara Great America Warm Springs BART	X		Yes							Opportunities for multiple stations and connections to other transit services, access to the Great America station (with favorable ridership/revenue potential), avoidance of natural resource impacts due to elimination of refuge crossing and lowest costs of the alternatives that do not cross the refuge.
EB-5	In Caltrain right-of-way, adjacent to UP Coast Subdivision, Trimble, I-880	San José Diridon Santa Clara First Street/Trimble Tasman/I-880 Warm Springs BART	X		Yes							Provides service to a different commercial area (First Street/Trimble Road) than Alternative EB-4, has lower noise and visual environmental quality impacts than other alternatives while avoiding the natural resource impacts associated with refuge crossing.
EB-6	In Caltrain right-of-way, adjacent to UP Coast Subdivision, Trimble, Adjacent to UP Warm Springs Subdivision	San José Diridon Santa Clara First Street/Trimble Tasman/Great Mall Warm Springs BART	X		Yes							Multiple opportunities for connectivity and service in high employment centers and regional destinations. Moderate costs among all area alternatives.

¹ As described in Chapter 2, each alternative was evaluated against all screening criteria (as presented in Appendix E of this report). This table only summarizes those alternatives that ultimately proved to be a rationale to carry an alternative forward or withdraw an alternative. For example, all alternatives were evaluated for community impacts (in terms of property access disruption and traffic effects), but there were no alternatives that were recommended for withdrawal due to this specific criterion.

Altamont Corridor Rail Project Alignment Alternatives and Station Location Screening Results ¹												
Alternative	Description		Decision		Rationale to Carry Forward or Withdraw Alternative (P = Primary reason for withdrawal; S = Secondary reason for withdrawal)							
	Alignment	Stations	Carried Forward	Withdrawn	Meets Purpose and Need?	Design Objectives—Operating and Capital Cost	Design Objective—Connectivity/Accessibility	Design Objective—Ridership/Revenue Potential	Land Use—Land Use Compatibility	Constructability—Construction Difficulty/Right-of-Way Acquisition Risk	Natural Resources and/or Environmental Quality	
EB-7	I-880 (south of airport), I-880	San José Diridon Tasman/I-880 Warm Springs BART		X	No	S	P	P	S			Does not meet project purpose and need as it has only limited service to centers of employment with only one station between Fremont and San Jose. Impracticable due to highest relative cost among all area alternatives.
EB-8	I-880 (south of airport), Adjacent to UP Warm Springs Subdivision	San José Diridon Tasman/Great Mall Warm Springs BART		X	No		P		S	P	S	Does not meet project purpose and need as it has only limited service to centers of employment with only one station between Fremont and San Jose. Impracticable due to high constructability/right-of-way risk as a result of need for extensive residential/commercial property acquisition adjacent to UP Warm Springs Subdivision. Greatest noise and visual environmental quality impacts in residential areas adjacent to the UP Warm Springs Subdivision among alternatives that do not cross the refuge.
Fremont to I-680/SR 84												
EBWS-1	I-680 to near I-680/SR 84	Warm Springs BART I-680/SR 84	X		Yes							Least cost and most direct and fastest route among the area alternatives.
EBWS-2	Adjacent to UP Warm Springs Subdivision, tunnel south of Niles Canyon	Warm Springs BART I-680/SR 84	X		Yes							Alternative to an I-680 route.
EBF-1	Adjacent to UP Centerville line, Niles Junction, Niles Tunnel	Fremont Centerville I-680/SR 84		X	Yes			S	P	S	P	In combination with Alternative EB-1, would have greater impacts to the natural environment (due to impact on Don Edwards San Francisco bay National Wildlife Refuge) and greater noise and visual environmental quality impacts (in Fremont Centerville area). Impracticable as would be slowest of all alternatives to reach San Jose and would require substantial property acquisition, particularly in Fremont Centerville area (in combination with EB-1).
Union City to I-680/SR 84												
EBUC-1	Adjacent to UP Niles Subdivision, Niles Tunnel	Union City I-680/SR 84		X	Partial		S		S	P	S	Impracticable due to constructability/right-of-way risk because of need for extensive residential property acquisition adjacent to UP Niles Subdivision. Only partially meets purpose and need due to lack of direct connection at Union City Intermodal Station. Would result in greater level of noise and visual environmental quality impacts and land use incompatibility due to location in residential areas
EBUC-2	In UP Oakland Subdivision, Niles Junction, Niles Tunnel	Union City I-680/SR 84	X		Yes							Provides direct connection to Union City Intermodal Station. Relatively lower constructability risk than Alternative EBUC-1 as it would be located in a lesser-used UP right-of-way that is proposed for acquisition for the Dumbarton Rail Corridor Project and is a priority for Capitol Corridor and the City of Union City.
Tri-Valley												
TV-1	I-680, I-580	I-680/SR 84 Bernal/I-680 Dublin/Pleasanton BART Isabel/I-580		X	Yes					P		Impracticable due to high constructability risk resulting from need for extensive construction in and around the freeways and due to the need to accommodate a future BART extension. Constructability and right of way risks high along I-580 where parallel to proposed BART extension to Livermore due to limited median and/or need to route outside freeway right-of-way in commercial or residential areas.

Altamont Corridor Rail Project Alignment Alternatives and Station Location Screening Results ¹												
Alternative	Description		Decision		Rationale to Carry Forward or Withdraw Alternative (P = Primary reason for withdrawal; S = Secondary reason for withdrawal)							
	Alignment	Stations	Carried Forward	Withdrawn	Meets Purpose and Need?	Design Objective—Operating and Capital Cost	Design Objective—Connectivity/Accessibility	Design Objective—Ridership/Revenue Potential	Land Use—Land Use Compatibility	Constructability—Construction Difficulty/Right-of-Way Acquisition Risk	Natural Resources and/or Environmental Quality	
TV-2a	I-680, in former SP right-of-way in Pleasanton (aerial), along Railroad Avenue in downtown Livermore (aerial), adjacent to UP east of downtown Livermore	I-680/SR 84 Downtown Pleasanton (SP) Downtown Livermore Vasco Road (UP)	X		Yes							Lowest cost of all alternatives in this area with highest favorable connectivity/accessibility (with connections to two existing ACE stations and two future BART transit connections) and favorable revenue/ridership potential. Pleasanton opposes downtown Pleasanton alignment. Livermore concerned about aerial alignment through downtown Livermore.
TV-2b	I-680, in former SP right-of-way in Pleasanton (tunnel), Railroad Ave (tunnel), in former SP right-of-way east of downtown Livermore	I-680/SR 84 Downtown Pleasanton (SP) Vasco Road (SP)	X		Yes							Provides a downtown alternative to TV-2a that would ameliorate some of the noise and visual environmental quality impacts of Alternative TV-2a through use of tunnels in downtown areas. Pleasanton opposes downtown Pleasanton alignment.
TV-2c	I-680, in UP right-of-way in Pleasanton (tunnel), adjacent to UP right-of-way in Livermore (tunnel), in former SP right-of-way east of downtown Livermore	I-680/SR 84 Downtown Pleasanton (UP) Vasco Road (SP)		X	No	S				P		Does not meet purpose and need of providing for an independent right of way. Impracticable because this is highest cost of all alternatives in this area. Impracticable due to high construction/right-of-way risks associated with need for cooperative agreement with UP or acquisition of right-of-way from UP for active freight line through Pleasanton. Pleasanton opposes downtown Pleasanton alignment.
TV-3	SR 84, Isabel Ave, Railroad Ave, in former SP right-of-way east of downtown Livermore	I-680/SR 84 Vasco Road (SP)		X	Yes					P	S	Impracticable due to high constructability/right-of-way risk because of the need for acquisition of extensive area of private quarry land containing state-designated significant (MRZ-2) mineral resource. Highest level of impact to wetlands and farmlands of alternatives in the area.
TV-4	SR 84, south of Livermore, Vasco, adjacent to UP right-of-way east of downtown Livermore	I-680/SR 84 Vasco Road (UP)	X		Yes							Shortest and fastest route. Avoids community disruption in downtown areas.
Altamont												
A-1	Northern Alignment near I-580		X		Yes							Along an existing transportation corridor (I-580), and less impact on natural resources compared to Alternative A-2.
A-2	Southern Alignment through Patterson Pass		X		Yes							Lower costs and shorter, faster route compared to Alternative A-1.
Tracy												
T-1	Downtown Tracy	Downtown Tracy	X		Yes							Favorable connectivity/accessibility, revenue/ridership potential, and TOD potential because of the downtown station.
T-2	South of Tracy	South Tracy	X		Yes							Opportunities for reduced residential impacts, lower cost, and shorter service times compared to Alternative T-1, although with a tradeoff of potentially fewer TOD opportunities, potentially higher commercial property acquisition, and lower ridership/revenue potential.
San Joaquin River to Stockton												
TS-1	Adjacent to former SP right-of-way west of San Joaquin River, I-5, in former SP right-of-way near French Camp, in UP right-of-way(w/ 2 rail yards) near downtown Stockton	Lathrop/I-5 Downtown Stockton (Cabral)	X		Yes							Direct route from Tracy to Stockton with the fastest service time, viable freeway intercept station in Lathrop, opportunity for shared alignment with HST.

Altamont Corridor Rail Project Alignment Alternatives and Station Location Screening Results ¹													
Alternative	Description		Decision		Rationale to Carry Forward or Withdraw Alternative (P = Primary reason for withdrawal; S = Secondary reason for withdrawal)								
	Alignment	Stations	Carried Forward	Withdrawn	Meets Purpose and Need?	Design Objectives—Operating and Capital Cost	Design Objective—Connectivity/Accessibility	Design Objective—Ridership/Revenue Potential	Land Use—Land Use Compatibility	Constructability—Construction Difficulty/Right-of-Way Acquisition Risk	Natural Resources and/or Environmental Quality		
TS-2	Adjacent to UP right-of-way west of San Joaquin River, in former SP right-of-way in Lathrop, in UP right-of-way (w/ 2 rail yards) near downtown Stockton	Lathrop/Manteca (Louise Avenue) Downtown Stockton (Cabral)		X	Yes	S						P	Would require approximately 7-mile redundant HST alignment with associated environmental impacts. Secondly, this alternative would be impracticable because it would be substantially more expensive than other alignments in this area due to the capital and operational costs of the redundant section.
TS-3	Adjacent to UP right-of-way, East of UP right-of-way in Lathrop/Manteca area, in UP right-of-way(w/ 2 rail yards) near downtown Stockton	Lathrop/Manteca (West Yosemite Avenue) Downtown Stockton (Cabral)	X		Yes								Provides combined Lathrop/Manteca station for both Altamont Corridor Rail Project services (San José to Stockton and San José to Modesto), avoids need for redundant HST and Altamont Corridor Rail Project lines in the Lathrop/Manteca area, and has potentially lower noise and visual environmental quality impacts than other alternatives in the area.
TS-4	Adjacent to UP right-of-way west of San Joaquin River, East of UP right-of-way in Lathrop/Manteca area, along Airport Ave., in UP right-of-way near Stockton Cabral station	Lathrop/Manteca (West Yosemite Avenue) Downtown Stockton (Cabral)	X		Yes								Provides combined Lathrop/Manteca station for both Altamont Corridor Rail Project services (San José to Stockton and San José to Modesto), avoids need for redundant HST and Altamont Corridor Rail Project lines in the Lathrop/Manteca area, and avoids constructability risks associated with the two rail yards near downtown Stockton by routing along Airport Way.
San Joaquin River to Ripon/Escalon													
TM-1a	In former SP right-of-way in Lathrop area, turn back, Adjacent to UP Fresno Subdivision to Modesto	Lathrop/Manteca (Louise Avenue)		X	Yes	S						P	Would require approximately 7-mile redundant HST alignment with associated environmental impacts. Secondly, this alternative would be impracticable because it would be substantially more expensive than other alignments in this area due to the capital and operational costs of the redundant section.
TM-1b	Adjacent to UP right-of-way in Lathrop area, turn back, adjacent to UP Fresno Subdivision to Modesto	Lathrop/Manteca (West Yosemite Avenue)	X		Yes								Provides combined station for both Altamont Corridor Rail Project services (San José to Stockton and San José to Modesto) and avoids redundant project and HST alignments.
TM-2a	UP, SR 120, BNSF to E of SR 99 or BNSF to Modesto	Manteca/SR 120	X		Yes								Only alternative that would connect to the north-south Sacramento to Merced HST Section BNSF alignment (if selected). If the BNSF alignment is not carried forward in the HST evaluation process, then this alternative would be dismissed from further consideration.
TM-2b	SR 120, UP to Modesto	Manteca/SR 120	X		Yes								Most direct route to Modesto of all area alternatives with associated shorter service times, and would minimize property acquisition by being located within SR 120 right-of-way in the Manteca area.

5.10 CONCLUSIONS

The preliminary AA report evaluation confirms that a regional and inter-city commuter rail route is feasible for travel through the Altamont Corridor. Alignment alternatives carried forward would contain a variety of routes and stations and various vertical designs (at-grade, aerial, tunnel, etc.) and would allow regional service to operate between both Stockton and Modesto to San José. Alternatives carried forward would also include phasing options for incremental improvement from the Central Valley to Livermore, Fremont, or Union City. Phasing would provide opportunity for interim benefits to regional service. In addition, alternatives carried forward would be compatible with regional service and HST operations between Merced and Sacramento.

5.11 NEXT STEPS

This preliminary AA report informs the project description for the *Altamont Corridor Rail Project EIR/EIS*. It also sets parameters for the next level of engineering and environmental analysis. This ongoing work will provide the Authority, FRA, SJRRC and the Working Group more details of the engineering and environmental issues in each area and a comprehensive vision of the entire corridor.

Detailed operations studies will be performed for combining the Altamont Corridor Rail Project and HST scheduled operations for the corridor so that the design and phasing of project construction will inform the feasibility of the various alternatives.

As the engineering and environmental work continues, the Authority and SJRRC will continue to meet and engage the Working Group, local cities, counties, and resource agencies in a discussion about the various alternatives. If deemed necessary by the lead agencies, a supplemental AA report will be prepared to consider feedback received on this preliminary AA report and will discuss how the alternatives analysis will inform the detailed engineering, environmental and outreach activities on the Altamont Corridor Rail Project corridor. At the conclusion of this process, the alternatives that are determined feasible will be evaluated in the *Altamont Corridor Rail Project EIR/EIS*, which is currently scheduled for public comment in 2013.

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6.2 PERSONAL COMMUNICATIONS

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